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ABSTRACTS

ORAL PRESENTATIONS

OP-001

SURFACE RESPONSE METHOD AS AN OPTIMIZATION TOOL IN THE DEVELOPMENT OF A NOVEL PROCEDURE FOR HAIR DECONTAMINATION

José Restolho[1], Mário Barroso[3], Suzel Costa[3], Mário Dias[3], Benilde Saramago[2], Carlos Afonso[1]
[1]iMed - Research Institute for Medicines and Pharmaceutical Sciences
[2]Centro de Química Estrutural - Instituto Superior Técnico
[3]Instituto Nacional de Medicina Legal, I.P., Delegação do Sul

Method development is one of the most time-consuming tasks in forensic toxicology, and important human and material resources are often spent on this. The surface response method (RSM) is statistical tools that allows the planning of the whole procedure, aiming at identifying and investigating the effect of the controlled factors on the response (result of an experiment) and its interactions simultaneously, minimizing the effects of uncontrolled factors. Additionally, this method allows the researcher to achieve all of this with a minimum amount of experiments, since it aims to find the optimum conditions for the variables (in order to maximize the response).

In this work, RSM was applied to optimize a previously developed hair decontamination process for opiates, using a polar ionic liquid (IL), 1-ethanol-3-imidazolium tetrafluoroborate. Using the decontamination efficiency as response, the following independent factors were investigated: temperature (50–150 °C), time (8–24 h) and amount of liquid (50–200 mg). A central composite design (CCD) was used in order to obtain the response surfaces curves for each substance (codeine, morphine and 6-monoacetylmorphine). The final optimized conditions were obtained: 144 °C, 19 h and 142 mg of IL for codeine; 150 °C, 24 h and 178 mg of IL for morphine; 150 °C, 19 h and 126 mg of IL for 6-monoacetylmorphine (6-MAM). Bearing in mind that 6-MAM is the most important marker of heroin consumption, we decided to use as experimental conditions, the one obtained by RSM for 6-MAM. It is important to remark that the results obtained (specially for morphine) suggest that the optimum conditions would be obtained for higher temperatures, though the use of temperatures above 150 °C would compromise both IL and hair matrix. Since the responses of 6-MAM were predicted using a quadratic model (instead of an interaction model), we decided to evaluate the conditions obtained using a univariate approach. This approach led to the following experimental conditions: 150 °C, 18 h, 125 mg of ionic liquid, conditions very similar to the previously obtained by RSM. The influence of the amount of hair and the water content of the ionic liquid were also evaluated.

Concluding, here we present an optimized method for the decontamination of hair, suitable for application in routine analysis. This study also allows us to conclude that RSM, despite the fact that it isn't a "straight forward" tool in this particular case, allows the operator to narrow the range of each studied variable.

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OP-002

INCIDENCE OF ALCOHOL CONSUMPTION IN FATAL TRAFFIC ACCIDENTS IN SHANGHAI, CHINA, DURING 2008–2011

Yulan Rao[1], Ziqin Zhao[1], Yurong Zhang[2], Yonghong Ye[1], Runsheng Zhang[2], Chen Liang[2], Rong Wang[2], Yingying Sun[1], Yan Jiang[1]
[1]Department of Forensic Medicine (Center of Forensic Science), Shanghai Medical College, Fudan University, P. R. China
[2]Shanghai Institute of Forensic Science (Shanghai Key Laboratory of Crime Scene Evidence), P. R. China

A study was conducted on 925 people killed in traffic crashes to assess the effect of alcohol consumption. Crashes were from 6 urban districts and 7 suburban districts of Shanghai, China, spanning a 4-year period (2008–2011). The mean blood alcohol content (BAC) of the fatally injured drivers was 0.78 mg/mL in 2008, and this number decreased in the next 3 years, ranging from 0.39 mg/mL to 0.50 mg/mL. In 2008, 49.2 % of the drivers had a BAC above the legal limit of driving (0.20 mg/mL, limit of civil offense, set by the Law of the People's Republic of China on Road Traffic Safety) and 41.5 % of drivers had a BAC over 0.80 mg/mL (limit of criminal offense). These numbers decreased significantly in the next 3 years (2009–2011), though still 26.9–30.5 % of drivers had a BAC over 0.20 mg/mL, and 18.7–23.5 % of drivers had a BAC over 0.80 mg/mL. Drinking-drivers were pre-

dominately male and this phenomenon didn't change over the 4-year period. The mean BACs of women drivers (0.00–0.22 mg/mL) were much lower than men (0.42–0.79 mg/mL). With respect to age, in alcohol-negative cases (BAC<0.20 mg/mL), the highest proportion was from drivers of 40–49 year old (25.4–28.3 %) during 2008–2011. In alcohol-positive cases (BAC>=0.20 mg/mL), maximum alcohol involvement was from drivers aged 20–29 in 2008 (34.5 %), 40–49 in 2009 (40.8 %), 30–39 in 2010 (30.3 %), and 20–29 in 2011 (30.1 %). With respect to vehicle types, motorcycles were most likely to be involved in crashes, representing 29.6–46.7 % of alcohol-negative cases, and 49.4–58.6 % of alcohol-positive cases. In 2008, the mean BAC of motorcyclists was 0.90 mg/mL, which was a little lower than that of car drivers (0.97 mg/mL). During 2009–2011, motorcyclists had the highest mean BAC (0.56–0.72 mg/mL), followed by the drivers of car, electric bicycle, bicycle, and truck in that order. Though based on a small sample size (n=42 in 4 years), it was found that, high BACs were quite common among alcohol-positive pedestrians (the average BAC was in the range of 2.15–2.52 mg/mL). Our study also showed that, during 2008–2011, the majority of alcohol-negative cases were multiple-vehicle crashes (54.1–76.3 %), and single-vehicle crashes were over-represented in alcohol-positive cases (55.1–69.0 %). The alcohol-negative cases most often happened during the time period of 17:00–18:59, and the alcohol-positive crashes most often happened during nighttime hours of 19:00–20:59.

OP-003

DETERMINATION OF ETHYL GLUCURONIDE IN HUMAN HAIR BY HYDROPHILIC INTERACTION LIQUID CHROMATOGRAPHY - TANDEM MASS SPECTROMETRY

Nebile Dağlıoğlu[1], Fadile Yaldız[2], Ahmet Hilal[1], Alper Keten[3], Mete Korkut Gülmen[1]

[1]Department of Forensic Medicine, Cukurova University, School of Medicine, Adana, Turkey

[2]Advenced Technology Education, Research and Application Center, Mersin University, Mersin, Turkey

[3]Department of Forensic Medicine, Ataturk Education and Research Hospital, Ankara, Turkey

Ethyl glucuronide (EtG) is a direct metabolite of ethanol and has been used as a marker of alcohol abuse in hair. This study reports on the development, validation and application of a new hydrophilic interaction liquid chromatography-tandem mass spectrometry (HILIC-MS/MS) method for the analysis of EtG in hair. The linearity was assessed in the range of 5–2000 pg/mg hair, with a correlation coefficient of <0.99. The method was selective and sensitive, with a lower limit of quantification (LLOQ) of 5 pg/mg hair. Differently from the extraction methods in literature, a fast and simple liquid-liquid method was used and highest recoveries and cleanest extracts were obtained.

The method was successfully applied to 30 human hair samples which were taken from social drinkers. In the hair samples of the social drinkers participated in this study, EtG concentrations were found in the range of 1.34 and 82.73 pg/mg. These results revealed that determination of EtG concentration in hair might be indicative of the daily alcohol intake.

OP-004

DETERMINATION OF COCAINE AND ITS MAJOR METABOLITE BENZOYLECGONINE IN RABBIT HAIR BY GC/MS

Pınar Efeoglu, Ahmet Hilal, Nebile Daglliogluu, Fadile Yaldız, Mete Korkut Gülmen

Department of Forensic Medicine, Cukurova University Faculty of Medicine, Adana, Turkey

It is important to determine people who use drugs to prevent the use of them. In recent years, hair is routinely used on toxicological analysis as well as biological samples such as blood and urine. The major practical advantages of hair testing are larger detection windows; non-invasive sample collection; easy to transport and store in addition hair analysis can provide a retrospective calendar of an individual's drug use history.

Animal studies are helpful in understanding the mechanisms involved in the incorporation of drugs into hair. In this study, New Zealand rabbits weigh about 2–2,5 kgs were intraperitoneally administered with a single dose of cocaine and given two different concentrations (5 and 10 mg/kg). Following that hair samples were collected during the12th day. According to our data; cocaine is appealed the first 5 days after single dose of cocaine administration. This detection duration is shorter in other biological samples such as blood and urine. Benzoylecgonine was not detected after 3 days. Frequency of benzoylecgonine existence was lower than cocaine. We did not any significant between groups. Limit of quantification (LOQ) and limit of detection (LOD) for cocaine and benzoylecgonine were calculated for 0.1 and 0.3 ng/mg; as 0.03 ng/mg and 0.08 ng/mg respectively.

The aim of the present study was to determine detection of cocaine and its major metabolite BE in rabbit hair after a single-dose administration.

OP-005

OPTIMIZATION OF HEADSPACE SOLID PHASE EXTRACTED-GAS CHROMATOGRAPHY CONDITIONS FOR THE SIMULTANEOUS DETERMINATION OF ALCOHOLS IN BLOOD BY MEANS OF AN EXPERIMENTAL DESIGN

Hasan Ertaş[1], Pembe Öztürk[1], Aslı Erdem[2], Oğuz Polat[3], Serap Annette Akgür[2], Nil Ertaş[1]

[1]Ege University, Faculty of Science, Department of Chemistry, Izmir, Turkey

[2]Ege University, Institute on Drug Abuse, Toxicology and Pharmaceutical Sciences, Izmir, Turkey

[3]Muğla University, Faculty of Science, Department of Chemistry, Izmir, Turkey

BACKGROUND: Chronic or acute alcohol intoxication has been demonstrated to be connected with many serious pathologies and most criminal offences. The simultaneous determination of ethanol and other volatile substances in blood is especially important for the medicolegal purposes. The objective of the present study is to examine the main and interactive effects of different factors related with head space-solid phase extraction (HS-SPME) injection and gas chromatography (GC)

conditions for the simultaneous determination of alcohols (ethanol, methanol, isopropanol, n-propanol, n-buthanol) and acetone and to evaluate the simultaneous effect of the significant variables and optimize them by using chemometric methods.

METHODS: HS-SPME was used to extract the volatile compounds of the materials. The analyses were carried out with a Thermo Finnigan Trace GC coupled with a flame ionization detector (FID). The significant factors affecting the headspace extraction of alcohols on the SPME fiber was first deduced in a screening study, by applying Plackett-Burman design and Pareto charts were then utilized for screening the results. Afterwards a central composite design (CCD) was constructed for optimization and a detailed quantitative model is produced. Subsequently, response surface methodology (RSM), was used for interpreting graphically the effect on the response of each pair of independent variables.

RESULTS: According to screening test results, the factors that have a positive effect on peak areas are sample concentration, inlet temperature, carrier gas flow rate and solution volume. Based on the results of the screening study, to continue optimization, seven insignificant values were fixed at appropriate amounts (oven temperature: 50 C; detector temperature: 250 C, H2 gas flow rate: 35 mL/min; split flow rate: 30 mL/min; equilibrium temperature: 55 C, extraction time: 4 min.). The significant independent variables were used to determine the optimum levels of these parameters by using RSM based on the CCD. The optimized method for alcohol and acetone analysis via HS-SPME-GC was validated through spike recovery tests.

CONCLUSION: HS-SPME coupled with GC is a rapid, simple and convenient method that enables the extraction of methanol, ethanol, isopropanol, n-buthanol and acetone. This work demonstrated the use and importance of experimental design for the simultaneous determination of alcohols in blood.

OP-006

EVALUATION OF ACUTE POISONING IN GERIATRIC PATIENTS ADMITTED TO A UNIVERSITY EMERGENCY DEPARTMENT

Celal Katı[1], Akan Karakus[2], Mehmet Altuntas[1], Latif Duran[1], Fatih Ilkaya[3], Coşkun Kaya[4], Hasan Alacam[5], Yücel Yavuz[1]

[1]Department of Emergency Medicine, Ondokuz Mayıs University, Samsun, Turkey

[2]Department of Medical Education, Ondokuz Mayıs University, Samsun, Turkey

[3]Department of Pharmacology, Ondokuz Mayıs University, Samsun, Turkey

[4]Division of Nephrology, Department of Internal Medicine, Ondokuz Mayıs University, Samsun, Turkey

[5]Department of Biochemistry, Ondokuz Mayıs University, Samsun, Turkey

BACKGROUND: United Nations (UN) report on World Population Aging (2007) stated that the elderly population is rapidly expanding. This situation has led to increase health problems peculiar to this age group. Due to decreasing in mental capacity and biological functional activities, poisoning appears to be an important health problem in elderly. We aimed to evaluate the acute geriatric poisonings and its consequences in a university emergency department.

MATERIALS AND METHODS: Medical files of geriatric patients with and over 65 years admitted to the emergency department of a university hospital for acute poisoning between January 2005 and December 2011 were reviewed. The causes and origins (accident, suicide, homicide) of poisoning, and clinical, demographic characteristics of patients, Glasgow Coma Scale (GCS) score; duration and results of treatment were evaluated retrospectively. All data obtained from the study were statistically evaluated with X^2 Pearson and Fisher exact test. P values <0.05 were considered as significant.

RESULTS: One hundred twenty six (4.06 %) were geriatric poisonings cases in 3106 patients who were admitted to emergency clinic in the study period. The mean age of patients was 73.36 ±6.38. Sixty seven (53.2 %) were male and 59 (46.8 %) were female. The most common causes of acute poisoning were as fallows; 68 (54 %) drug intoxication, 34 (27 %) carbon monoxide poisoning and 16 (12.7 %) pesticide poisoning. Drug intoxication cases had significantly lower rates of hospitalization than other causes of poisoning (OR=0.16, p<0,001). The origins of poisoning (accident, suicide, homicide) were as fallows; 105 (83.3 %) accidental and 16 (12.7 %) suicide. In 5 (4 %) cases origin of poisoning could not be determined. The risk of suicide by using pesticide was significantly higher (OR=4.09, p=0.03) than other causes of poisoning.

CONCLUSION: The majority of acute poisoning occurred due to use of overdose of prescription drugs. In present study it is concluded that development of public health programs for preventing inadequate use of prescription drugs is mandatory. For the prevention of carbon monoxide and pesticide poisoning, it shall be useful to take security measures in the houses.

OP-007

WEGENER'S GRANULOMATOSIS - A RARE CAUSE OF SUDDEN DEATH

Prashantha Bhagavath[1], Francis Np Monteiro[2], Anuradha Ck Rao[3], Laxmi Rao[3], Pradeep G Kumar[1]

[1]Department of Forensic Medicine, Kasturba Medical College Manipal, Manipal University, Manipal, India

[2]Department of Forensic Medicine, AJ Institute of Medical Sciences, Mangalore, India

[3]Department of Pathology, Kasturba Medical College Manipal, Manipal University, Manipal, India

Discussions of pulmonary thrombo-emboli and pulmonary infarcts most often occur in the autopsy suite rather than the surgical pathology laboratory. Often it becomes a daunting task to build a scientific causation for such an occurrence. Ancillary investigations play a crucial role in such cases, especially in rare pathological conditions. Here we discuss a sudden death of a young lady from pulmonary infarction as a complication of Wegener's granulomatosis. Wegener's granulomatosis is an uncommon disease that involves inflammation of blood vessels (vasculitis) that affects the lungs, kidney and other organs. This can result in end organ damage. Auto-immune attack by an abnormal circulating antibody - ANCAs (anti-neutrophil cytoplasmic antibodies) is blamed for this disease. Treatment of this condition needs lifelong immunosuppression.

Diagnosis of Wegener's granulomatosis is confirmed by detecting both abnormal cellular formations, called granulomas, and vasculitis. Ancillary investigations played a vital role in elucidating the cause of death in this case.

OP-008

MORTAL ELECTRICAL INJURIES IN THE MEDICO-LEGAL PRACTICE IN ALBANIA

Albert Kreci[1], Bardhyl Cipi[2]
[1]Institute of forensic medicine
[2]Service of forensic medicine, faculty of medicine, university of Tirana

BACKGROUND: The large utilization of electricity in our country has increased the risk for related accidents accompanied with augmentation of deaths from electrical injuries.
In this paper the authors examine medico-legal aspects of mortal electrical injuries in Albania: medico-legal forms, profession of victims, autopsy findings, causes of death, etc.
METHOD: Reports of autopsy of mortal electrical injury cases of the Institute of Forensic Medicine in Tirana for the period 1972–1986 and 2006–2011; review of the respective literature.
RESULTS: Mortal cases of electrical injuries are in general not very common in Albania comprising around 2.8 % of all medico-legal cases. In general, they are classified as:
- accidental due to negligence from victim (60.9 %) using different electrical equipment, or leaving children without supervision, etc.;
- malfunctioning of electrical equipment;
- more rarely comprising suicide of victims with neurological disorders (depression, nervous breakdown, etc.)

In Albania, 89.85 % of the cases involve male victims and only 10.25 % of the cases involve female victims. Overall, victims are young ages 11–30 years old in several professions: general workers 30.45 %, electrical service workers 8.4 %, and children 26.1 %.

The paper presents a detailed analysis regarding the distribution of cases with respect time of the day and months of the year, signs of electrical injuries as the focal electrical injury, electrical burns, description of the "fern or branch like" pattern in death from lightning; cause of death; types of electrical equipment that caused death of victims and circumstances of death.

The paper summarizes the medico-legal diagnosis of our cases based on external presentation of injuries and internal electricity based injuries complimented with microscopic examination of tissues in the context of the detailed circumstances observed from the incident scene. The paper also illustrates the presentation of some typical cases.
CONCLUSION: Recognition and study of medico-legal aspects of mortal electrical cases reveals that they are not common in Albania and are often accidental.

The precise diagnosis of these cases requires combination of the observations from the examination of the cadaver with the circumstances of death, after excluding other causes of death.

OP-009

COCAINE-RELATED DEATHS IN LISBON JURISDICTION: COMPARING AUTOPSY FINDINGS WITH REVIEWED LITERATURE

Cátia Costa Viana, Md, Mário João Dias, M.sc, Luísa Eiras, Md, Cristina Mendonça, Phd, Jorge Costa Santos, Phd
South Branch of National Institute of Legal Medicine, IP, Lisbon, Portugal

BACKGROUND: Although there has been an increase interest in cocaine-related deaths (CRD) investigation, it is still very difficult to attribute cause of death specifically to cocaine intoxication.

According to "2010 National Report to the European Monitoring Centre for Drugs and Drug Addiction", the prevalence use of cocaine at least once in lifetime, in Portugal, was 1,9 %.
OBJECTIVE: Analyze CRD cases in Lisbon jurisdiction; analyze autopsy findings in cocaine intoxication and non-cocaine intoxication cases and compare them with the ones described in literature.
METHOD: Forensic autopsy reports performed at the DS-INMLCF in a 2-year period (2009–2010) in which toxicological analysis detected cocaine or its metabolites, were reviewed.

The positive cases for cocaine or metabolites were classified as cocaine intoxication cases (CI) or non-cocaine intoxication cases (NCI), according to cause of death assigned by the pathologist.

In the descriptive data analysis were included socio-demographic characteristics of the victims and autopsy findings, including histological and toxicological results.

A literature review regarding fatal cocaine intoxication cases was performed using medical databases.

A comparison of macro and histopathologic findings and toxicological results described in forensic autopsy reports was made, between CI and NCI cases, as well between these ones and CRD cases described in the literature.
RESULTS: Considering the 818 autopsies where a screening for drugs was performed, 38 (4,6 %) presented a positive result for cocaine and/or its metabolites. Among those positive cases, 89,5 % (n=34) were male and in 84,2 % (n=32) more than one substance was found in peripheral blood, urine or vitreous humor samples. A wide range of concentrations in peripheral blood was found and a not standardized description of macro and histopathology findings was observed.
CONCLUSIONS: Our results are, in general, according with reviewed literature.

Because more than one substance is usually found among CRD, substances interactions must be considered by the pathologist. This results may also reveal a pattern of polyconsumption by users, also important as far as public-health measures are concerned.

The wide range of concentrations of cocaine and/or its metabolites presented in the cases analyzed, highlights the difficulties for the pathologist in diagnosing "cocaine intoxication" as the cause of death.

Histopathology findings in CRD are an important tool for a differential diagnosis between CI and NCI deaths. Further studies in this field may help in achieving this differential diagnoses more accurately.

OP-010

FOUR FATAL CASES OF HEMOPHAGOCYTIC SYNDROME WITH A FULMINANT OUTCOME

Francesco Paolo Busardo[1], Francesca Portelli[2], Nunzia Albano[1], Paolo Procaccianti[1], Emiliano Maresi[2]
[1]Section of Legal Medicine - University of Palermo. Italy
[2]Department of Human Pathology - University of Palermo. Italy

INTRODUCTION: Hemophagocytic syndrome (HPS) is a severe illness which often causes pancytopenia due to uncontrolled histiocytes phagocytosis of blood cells and precursors.
HPS can be classified into two distinct forms: primary HLH and secondary HPS, which is more often associated to infections, immune disorders or malignancy. Clinical course may be fulminant and there is a high mortality rate.

The aims of this study have been to point out the main pathological features found in 4 autopsies, in which the diagnosis of HPS was made only after death.
MATERIALS AND METHODS: Between January 2008 and December 2011, 4 cases of HPS (2 male and 2 female) aged between 4 months and 52 years, came to our attention. In all cases the exitus occurred within 48 h of symptoms onset, which were absolutely non-specific and it was not possible to make a diagnosis. After a complete autopsy, organ samples were taken for histopathological examination, in particular bone marrow for HPS diagnosis, using routine histological and histochemical stainings, namely, hematoxylin and eosin, periodic acid–Schiff base (PAS) and Giemsa. Immunohistochemistry was performed by means of the streptavidin–biotin complex (StreptABC) using the following monoclonal antibodies: PGM1 (CD68), LCA (CD45), CD3, UCHL-1 (CD45RO), L26 (CD20), 4 KB5 (CD45RA), CD57. Serological investigation was performed in all cases.
RESULTS: After the autopsy and histological, histochemical investigation and serological analysis, it has been possible to make HPS diagnosis, in 1 case, (male, age 4 months) of primary HPS and in 3 cases of secondary HPS associated to viral infection in 2 cases and to Rickettsia in 1 case. From a moderate to a severe splenomegaly and hepatomegaly were observed in all cases. The bone marrow was hypercellular with striking histiocyte proliferation and active phagocytosis of erythroid, granulocytic and, to a lesser extent, thrombocytic series. HP was also visible cytologically in touch imprints. In all cases the myeloid lineage was hyperplastic, sometimes showing disturbed maturation and all cases showed a prominent histiocyte proliferation strongly positive to PGM1. A CD3+, CD45RO+infiltrate was invariably present in all cases.
DISCUSSION AND CONCLUSIONS: HPS is a clinical pathology which is very difficult to diagnose due to a lack of specific clinical signs. There are no specific macroscopic signs at autopsy. Splenomegaly, hepatomegaly or diffuse lymphadenopathy may suggest the diagnosis. Microscopic examination of harvested organs is required to certify the syndrome. Immune marker testing is necessary to type the histiocytes.

OP-011

PLANE CRASH IN THE BRAZILIAN AMAZON RAINFOREST WITH 154 DEATHS - A MEDICO-LEGAL AND A DISASTER VICTIM IDENTIFICATION STUDY

Samuel Teixeira Gomes Ferreira[1], Ricardo César Frade Nogueira[3], Aluisio Trindade Filho[3], Elvis Adriano Silva Oliveira[3], Karla Angélica Alves De Paula[2], Adriana Vieira De Moraes[2]
[1]Federal District Civil Police - Institute of Research of Forensic DNA - National Force - National Secretariat of Public Security - Ministry of Justice Brasília - Brazil
[2]Federal District Civil Police - Institute of Research of Forensic DNA- Brasília - Brazil
[3]Federal District Civil Police - Institute of Legal Medicine - Brasília - Brazil

In mass fatality incidents studies there are important issues to be discussed: management of the event, medico-legal examination and victims' identification. In September 2006 in Brazil, a plane crash between a Boeing 737 and a small jet in the Brazilian Amazon rainforest caused 154 deaths. All 148 passengers and 6 crew members of the Boeing 737 died. In this event, the Brazilian Air Force coordinated the search and rescue operation and the forensic team of the Federal District Civil Police was responsible for the medico-legal examination and the victims' identification. The aim of this study is to discuss the main challenges of a plane crash disaster management in the Brazilian Amazon rainforest, the work of the forensics' team during the event, the medico-legal examination and how the victims' identification was performed. Regarding medico-legal examination, this study will discuss the cause of death, kinds of trauma and injuries, condition of bodies and remains, degree of fragmentation and decomposition of the bodies in a plane crash in the Brazilian Amazon rainforest. Regarding victims' identification, all 154 victims were identified and fingerprinting analysis, forensic odontology, DNA analysis, forensic anthropology and medical findings played an important role, which will be discussed in this study. This work will discuss also chain of custody, the process of ante mortem and post mortem data collection, sample collection for DNA testing, according to the condition of the bodies and degree of decomposition and fragmentation, DNA tests and matching. The integrated work between the Brazilian Air Force and Army, the firefighter team, the forensic team of the Federal District Civil Police played a decisive role in the incident management, search and rescue, medico-legal examination and victims' identification.

OP-012

FLOODS AND MUDSLIDES IN RIO DE JANEIRO - THE BIGGEST NATURAL DISASTER IN BRAZIL: A MEDICO-LEGAL AND DISASTER VICTIM IDENTIFICATION STUDY

Samuel Teixeira Gomes Ferreira[1], Ricardo César Frade Nogueira[2], Rodrigo Grazinoli Garrido[3], Elvis Adriano Silva Oliveira[2], Heloisa Helena Kuser[4], Adriana Vieira Moraes[5]
[1]Federal District Civil Police - Institute of Research of Forensic DNA - National Force - National Secretariat of Public Security - Ministry of Justice - Brasília - Brazil
[2]Federal District Civil Police - Institute of Legal Medicine - Brasília - Brazil
[3]Civil Police of Rio de Janeiro - Institute of Research and Expertise in Forensic Genetics
[4]National Force - National Secretariat of Public Security - Ministry of Justice - Brasília - Brazil
[5]Federal District Civil Police - Institute of Research of Forensic DNA - Brasília - Brazil

In mass fatality incidents studies there are important issues to be discussed: management of the event, medico-legal examination and victims' identification. In January 2011, floods and mudslides in the mountainous region of the State of Rio de Janeiro caused the biggest natural disaster in Brazil. In this event there were 905 deaths. The National Force of the National Secretariat of Public Security of the Ministry of Justice worked together with many agencies of the State of Rio de Janeiro in the incident management, search and rescue, medico-legal examination and victims' identification. The aim of this study is

to discuss the main challenges of a natural disaster management of this magnitude, the work of the forensics' team during the event, the medico-legal examination and how the victims' identification was performed. Regarding medico-legal examination, this study will discuss the cause of death, kinds of trauma and injuries, condition of bodies and remains, degree of fragmentation and decomposition of the bodies, considering weather conditions, geographic region and nature of this disaster. Regarding victims' identification, it will be discussed the methods of identification used in this incident: fingerprinting analysis, forensic odontology, DNA analysis and forensic anthropology. This work will discuss also chain of custody, the process of ante mortem and post mortem data collection, sample collection for DNA testing, according to the condition of the bodies and degree of decomposition and fragmentation, DNA tests and matching. The integrated work between the forensic team of the National Force and the forensic team of the Civil Police of the State of Rio de Janeiro played an important role in the medico-legal examination and in the victims' identification.

OP-013

BOAT PROPELLER INJURIES SUSTAINED DURING RECREATIONAL ACTIVITIES IN WATER

Despina Nathena[1], Panagiotis Mylonakis[2], Katerina Kanaki[1], Antonios Papadomanolakis[3], Manolis Michalodimitrakis[1]
[1]Department of Forensic Sciences, Faculty of Medicine, University of Crete, Greece
[2]State Forensic Service, Thessaloniki, Greece
[3]State Forensic Service, Crete, Greece

Deaths in water during recreational activities due to boat propeller are usual. The type of injuries sustained by boat propellers are typically deep, parallel chop-type wounds, which involve soft tissues and often bone.

The victims of such fatalities could be of any age. As far as the manner of such deaths is concerned they are almost always ruled as accidents. The obvious cause of such accidents is the fact that during submersion in water while performing recreational activities only the head is over the sea surface. So, on the one hand the head of the victims is not easily distinguished by the boat drivers from sufficiently long distance in order to prevent the fatal event. On the other hand, the victim cannot react on time due to high velocity of the boats.

By the other hand, boat propeller injuries may be inflicted before or after death. The distinction often can not be done. Immersion of a body in water for a few hours usually causes leaching out of the blood from antemortem wounds. Thus, an individual may be found with a number of what appear to be bloodless postmortem wounds which are in actual fact antemortem. In our Department we have seen leaching out of blood as early as 2–3 h following immersion.

This artifact might cause problems when a body is pulled out of the water with propeller injuries on it. There may be no bleeding, not even microscopically, around these injuries. That initially leads the pathologist to the opinion that they were postmortem injuries, although these were antemortem injuries and eyewitnesses of nearby boats and verified that something was seen floating for hours before they realized it was a man. Only after, they rushed for assistance when the last boat hit the body.

To determine which boat is responsible, the boat propeller injuries must be examined very carefully, paying attention to the depths of the wound for any trace evidence left behind. Detailed examination of the suspicious boats and its propellers is substantial too and the assistance of a navy engineer is necessary.

Finally, the carefully examination of these injuries, as far as their nature, extension and location is concerned, may also exclude homicide with subsequent disposal of the body to simulate drowning. Two typical cases from our large collection are presented as examples.

OP-014

THE SIGNIFICANCE OF CLOTHES AS A POTENTIAL SOURCE OF EVIDENCE IN THE RESOLUTION OF A SUSPECTED CRIME

Ragaa Mohamed Abdelmaaboud
Department of Forensic Medicine and Clinical Toxicology, Assiut University, Assiut, Egypt

Clothes examination may provide important clues in crime investigation. In addition to its role in identification of the victim and sometimes the assailant, it may carry some physical evidences which have the potential to play a critical role in the overall investigation and resolution of a suspected criminal act. Clothes may be disordered indicating a struggle, or may be soiled or stained with blood or other biological stains including semen, hair, saliva or non biological evidences as fibers, paint, glass, debris and dirt as a result of contact with the assailant or the scene. The interposition of clothing may prevent the features of secondary projectile deposition and/or searing from occurring, so the examination of clothing by forensic scientists may provide essential evidence in cases involving firearms. These evidences shouldn't be missed or overlooked. So clothes should be photographed, examined thoroughly and described carefully before beginning the examination of the body. Clothes shouldn't be removed except by the medical man after recording the condition of rigor. Cuts or injuries sustained by the clothing should be carefully compared with the underlying surface of the body. It should be dried, preserved carefully in special bag or envelope and sealed with sealing—wax impressed with the private seal of the examiner. Chemical and or serological examination may be required. This paper aimed for recognition of the significance of clothing as a potential source of evidence for forensic scientist, physicians as well as emergency room and intensive care personnel, to adopt and follow the procedure designed to preserve such important evidence.

OP-015

STUDIES ON TIME OF DEATH ESTIMATION BASED ON POSTMORTEM HUMAN EYE TEMPERATURE

Michal Kaliszan
Department of Forensic Medicine, Medical University of Gdansk, Poland

BACKGROUND: Estimation of the time of death (TOD) is an important task of forensic pathologist performing the body examination at death scene. The accuracy of TOD estimation

methods used in practice, based on examination of hypostasis, rigor mortis, rectal temperature, or supra-vital reactions, both when using one of them or combining several, is still not satisfactory.

However, recent studies in pigs and humans have shown a possibility to significantly decrease the TOD estimation error, in particular regarding the very early post mortem period, by choosing eye as the temperature measurement site.

METHOD: The single eye, rectal and ambient temperature measurements were taken at the scenes of death in 10 cases with known TOD (1 h 35 min to 5 h), using pin probes connected to a high precision electronic thermometer (Dostmann-electronic). The eye temperatures ranged from 28.0 to 33.1 °C. Rectal temperatures were measured at the same time (35.0 °C to 37.4 °C). On top of these factors, ambient temperatures (12 to 24 °C) and environmental conditions (still air to light wind) were recorded every time.

RESULTS: TOD was calculated using a formula based on Newton's law of cooling previously successfully applied in comprehensive studies on pigs:

$$T = Ta - (T0 - Ta)\exp(-kct) \quad (1)$$

where T is the temperature of the body site, Ta is the ambient temperature (assumed to be constant during the course of cooling until the time of the measurement), T0 is the initial human eye temperature (assumed to be 34.9 °C), kc is a first order cooling rate constant, and t is the time since death. The mean value of kc=−0.113 h-1 had been previously determined in studies on the postmortem cooling process in pig eyeballs. Thanks to both the significantly faster postmortem decrease of eye temperature and the residual or lack of plateau effect in the eye, also no influence of body mass, TOD in the human death cases using eq. 1 could be estimated with good accuracy. The maximum TOD estimation error was 53 min during the post mortem intervals up to around 5 h.

CONCLUSIONS: The preliminary results from 10 cases with known TOD show that the presented method of TOD estimation is of satisfactory accuracy in the early postmortem period, particularly when applied to bodies found at room temperature and in normal environmental conditions (still air, normal humidity).

OP-016

SURVIVAL OF SPERMATOZOA ON DECOMPOSING SKIN OF SEXUAL ASSAULT VICTIMS: A SCANNING ELECTRON MICROSCOPY STUDY

Daniele Gibelli[1], Annalisa Cappella[1], Debora Mazzarelli[1], Francesca Magli[1], Agostino Rizzi[2], Marziale Milani[3], Claudio Savoia[3], Davide Porta[1], Marco Caccianiga[4], Cristina Cattaneo[1]

[1]LABANOF, Laboratorio di Antropologia e Odontologia Forense - Sezione di Medicina Legale, Dipartimento di Morfologia e Scienze Biomediche, Università degli Studi, Milano, Italy

[2]IDPA, Istituto Dinamica Processi Ambientali, CNR, Milano, Italy

[3]Dipartimento di Scienze dei Materiali - Università degli Studi Milano-Bicocca, Milano, Italy

[4]Dipartimento di Biologica, Sezione di Botanica Sistematica - Università degli Studi, Milano, Italy

BACKGROUND: In cases of sexual assault followed by homicide it may occur that traces of semen are present on skin (e.g. the abdomen, thighs, external genitalia) as well as or instead of in the vaginal or anal orifices. When decomposition sets in, standard methods of semen/spermatozoa detection (e.g. standard light microscopy, immunological tests) may be inefficient on decaying skin. Inspired by findings on a real case where scanning electron microscopy (SEM) on the abdominal putrefied skin of a murder victim showed the presence of sperm-like formations when other assays for sperm turned out negative, the authors set out to test the survival of spermatozoa and their detectability by SEM on decaying skin. Furthermore, if decomposing remains are in an external environment, the situation may become even more difficult due to the possibility of equally decaying microorganisms and protozoa mimicking cellular structures. This presentation therefore exposes the results of two experiments aimed at observing the microscopic survival and morphology of spermatozoa on decomposed skin by SEM and the possibility of microorganisms mimicking sperm parts.

METHODS: Fresh human semen previously tested for appropriate sperm count was applied on a fragment of fresh skin left to decompose in open air for 3 months; samples were taken every week and prepared for SEM analysis. A negative control sample was also set up. In parallel, cultures of protozoa (Euglena and Lacrymaria) were prepared, left to decompose and examined by SEM.

RESULTS: The results showed that although a reduction and partial fragmentation can occur, intact spermatozoa can still be detected up to 3 months after decomposition on putrefied skin exposed to environmental agents. They can be found isolated or in groups. Contamination of the sample by microorganisms, such as decaying protozoa, may challenge the observer with parts of cells which may look like spermatozoa but which can be usually distinguished due to size and fine structure.

CONCLUSION: These results shed some light on the possible aid SEM can give on searching for signs of sexual violence on decomposing human remains. They also contradict studies which state that after only a few days spermatozoa fragment and usually can no longer be detected in their entirety.

OP-017

SEXUAL OFFENCES ON VICTIMS UNDER 18 YEARS OLD: TWO YEARS OF MEDICO-LEGAL EXAMINATIONS IN LISBON

Tiago Silva Costa[1], Catia Viana[1], Bruno Miguel Santos[3], Jorge Costa Santos[2]

[1]South Branch of the National Institute of Legal Medicine and Forensic Sciences, Portugal

[2]Faculty of Medicine, Lisbon University, Portugal

[3]CENCIFOR – Forensic Sciences Centre, Portugal

BACKGROUND: The examinations of under 18 years old victims of sexual offences are an important component of the Clinical Forensic Medicine services of the South Branch of the National Institute of Legal Medicine and Forensic Sciences (DS-INMLCF), some of which are done in emergency settings (ES). The Portuguese law (Lei nº 45/2004) loosely defines ES as situations that require the assurance of a fast examination of the victim by a specialist in legal medicine on call, with a threshold of about 72 h.

METHODS: Reports of forensic medical examinations (n=383) of under 18 years old victims of sexual offences, performed by specialists in legal medicine of the DS-INMLCF during a 2 years

period (2009–2010), both in ES and non-emergency settings (NES), were reviewed. Focus was established on the differences between the intra-familiar (IF) and extra-familiar (EF) cases, as well as, between those that took place in ES or NES. Statistical analysis was done using Statistical Package for Social Sciences 12 for Windows.

RESULTS: Overall, 78.6 % of the victims were female, with a mean age of 10.56 years (standard deviation=4.74), being significantly younger in IF cases. The abuser was a cohabiting family member in 29 % of the cases. Occasional abuse was significantly more common in EF cases (60.4 %), accounting overall for 72.1 % of the cases seen in ES. NES accounted a significant difference between IF cases (55.4 %) and EF cases (34.1 %).

When we compare the cases where there was a disclosure of any form of penetration (oral, vaginal and/or anal), with the ones where there was not any, we find that some form of penetration is associated with EF abuse in a statistic significant way (66 %), being almost three times more common.

CONCLUSION: In general, findings are in accordance with those of the literature. The common occurrence of young victims and cohabiting offenders in IF contexts, suggests a relation of proximity between both the victim and the abuser. This facilitates the iterated nature of the IF abuses and helps to explain why less examinations were performed in ES for IF cases. We empirically noticed that the reported medico-legal conclusions were very much supported on the history of the event as disclose by the victims, as it is known that abnormal genital findings are not common in sexually abused children.

OP-018

A COMPREHENSIVE PSYCHO-SOCIAL SUPPORT PROGRAM FOR FEMALE PRISONERS AND THEIR CHILDREN

Asli Tevhide Akdas Mitrani[1], Birgul Haznedaroğlu[2], Fulya Seda Giray[2]
[1]Department of Psychology, Dogus University, Istanbul, Turkey
[2]Institute of Forensic Medicine, Istanbul University, Istanbul, Turkey

A comprehensive psycho-social support program for the female prisoners at Bakirkoy High Security Prison was implemented between April 2011 and April 2012. Seminars on mental health, physical health, child rearing in prison, prisoners' family relations were delivered to prisoners, in general. Minors under the age of 18 were delivered trainings on adolescence, reproductive health, violence and gender awareness. Mothers who serve sentences with their children were undergone "Effective Parenting Training (EPT)" program. Finally, prison administrators and officers were given seminars on special issues about working with the women and the role of nongovernmental organizations in the prison system. Present study is based on the data about the effectiveness of EPT program that was employed in the prison. Thirty mothers (X mother's age=28.9, sd=6.50) who cohabit with their babies (X baby's age=27.7 months, sd=14.15 months, with an age range of 3 to 60 months) have undergone the program. Positive discipline strategies were delivered for 6 h in group settings. Another group of 30 non-incarcerated women with babies of same age range served as a control group. The questions that were addressed were: 1) whether there are any difference between the parental attitudes and skills of the two groups of mothers, 2) whether a brief intervention to improve parental skills would make any change in the skills and attitudes of incarcerated mothers. A pretest–posttest with control group design was employed. Parenting Questionnaire-TR (Sanson, 1994) was administered to both groups. The incarcerated mothers were found to convey more warmth to their children, $t(40)=2.151$, $p<.05$, and were more punitive, $t(39)=3.003$, $p<.01$, in comparison to non-incarcerated mothers. Unexpectedly, results showed an increase in the punitiveness scores of the incarcerated mothers after the training, $t(17)=2.161$, $p<.05$. Possible implications of the interventions and the benefits of implementing such training programs in prisons were evaluated with respect to prevention of family violence, child abuse and juvenile delinquency. In the end, all 5 prisons for the women in Turkey have been visited by the authors in order to deliver trainings to the psychosocial support service professionals, prison officers and administrators. The original trainings delivered at Bakırkoy facility were manualized and manuals were disseminated in other prisons for the women by the end of March 2012.

OP-019

VICTIMIZED CHILDREN IN CYBERSPACE THROUGH PORNOGRAPHY

Mahmoud Malmir[1], Reza Baradaran Esfahani[2], Mina Agha Mir Ali Akbar[2]
[1]Department of Law, Islamic Azad University, Isfahan, Iran
[2]Student of Law, Islamic Azad University, Isfahan, Iran

Protection of children as a vulnerable and clean stratum has always been a global concern. Today, in addition to the classic crimes such as child abuse, involving children in panhandling by adults etc. in the actual space the attention should be concentrated on similar activities in the virtual space called 'cyberspace'. Children's curiosity, lack of proper supervision by the parents and lack of efficient website filters has provided a good chance for the moral criminals for hunting children through websites, chartrooms and emails. One of the most important crimes, which is committed against children in cyberspace, is child pornography. In fact, any kind of sound or picture or movie which shows people or children being raped or sexually abused and exposing sexual organs is used for arousal and promotion of sexual activity in children. To investigate the aspects of moral and physical child abuse through pornography in cyberspace and offering solutions for preventing this inhuman action and protecting these innocent angels.

OP-020

WHEN THE VICTIM IS A CHILD: PEDOPHILIA, PORNOGRAPHY AND CYBERBULLYISM IN THE ITALIAN REALITY

Simona Ricci, Loredana Petrone, Francesco Massoni, Domenica Pugliese, Carlo Emanuele Tucci, Marcello Pelosi, Serafino Ricci
Department of Legal Medicine University "La Sapienza", Rome, Italy

In Italy the problem of child abuse or neglect is coming out during the last 10 years when, very often, different cases of

abuse or homicide with these little victims have started to be present.

The diffusion of internet and the accessibility also to children or young people, the different education of children aged 8–15 years old and the lack of the family, especially of the father, represent a source where people with deviated behaviour find the "humus" in which they can find special victims for their crimes, both physical and psychological.

The authors present the Italian reality, they make the analysis of cases they have followed both as consultant for the Court and from cases observed inside specific research made in the University Department of Social Medicine.

OP-021

A PILOT STUDY ON RECOGNITION OF THE CONVENTION ON THE RIGHTS OF CHILDREN

Güliz Kolburan[1], Itır Tarı Cömert[1], Meltem Nater[1], Oguz Polat[2]
[1]Faculty of Arts and Sciences Department of Psychology, Istanbul Aydin University, Istanbul, Turkey
[2]Forensic Medicine Department, Marmara University, Istanbul, Turkey

INTRODUCTION: Children, who used to be defined as property of fathers in the past, have started to become citizens holding their own rights at the end of a long and uphill struggle. Supporting influence of the convention on the rights of the children on this transformation cannot be denied. General principles of the UN convention on the rights of the children emphasize four fundamental right groups. The convention grounds on use of these rights by all children irrespective of their religion, language, race and ethnic origin, and prohibits discrimination in this sense. The primary source for redefining the concept of a "good" child in the society must be the Convention on the Rights of the Children. It is stated that a large mass of people are not aware of the Convention on the Rights of the Children and/or content of this convention, accordingly are not aware of rights of the children.

PURPOSE: The purpose of this study is to determine the awareness ratio of children in the 15–18 age group and women and men at the age of 25 or higher who have a child in respect of the UN Convention on the Rights of the Children and/or content of this convention. This study attempts to illuminate to what extent Turkish people are aware of laws and regulations issued concerning rights of the children, international conventions signed by Turkey in this matter, and activities carried out in Turkey regarding rights of the children.

METHOD: 2 five-point Likert-type scales, which consisted of expressions concerning awareness of the convention on the rights of the children and/or content of the convention as well as certain demographic characteristics, were used within the scope of the study. Scales consist of 44 questions. It also contains 9 questions for children and 7 children for adults in order to evaluate demographic characteristics of them. Both of the groups include 5 questions aimed at evaluating awareness of the Convention on the Rights of the Children. Survey forms were administered to two groups: 15–18 age children's group and adult group of fathers-mothers at the age of 25 or higher. Sample of the study consists of 187 high school students at secondary education level and 132 adults, who have a child, working at various professions, all of whom were randomly chosen from Istanbul. Statistical operations of the study are in progress. Statistical operations are performed via SPSS 17.0 package.

OP-022

COVERT VIDEO SURVEILLANCE: CAN WE MAKE THE CHILD "ACT AS BAIT" TO TRAP THE ABUSER?

Melissa Rosa Rizzotto[1], Francesca Menegazzo[1], Rebecca Fedetto[1], Paola Facchin[1], Daniele Rodriguez[2], Anna Aprile[2]
[1]Child Abuse & Neglect Unit, Pediatrics Department, University of Padua, Italy
[2]Legal Medicine Institute, Environmental & Public Health Department, University of Padua, Italy

BACKGROUND: Covert video surveillance is a method of "diagnosis" sometimes used by the Police to confirm a suspect of child abuse, to find the guilty to grant to Justice. There has been controversy among professionals and the public surrounding the use of covert video surveillance (CVS) in cases of suspected child abuse. Opinion is divided as to whether it is necessary to make a "diagnosis" of child abuse and whether it is ethical and legal.

METHOD: We report the case of a child whose physical signs called for a diagnosis of child abuse, that was brought back at home and re-abused while covert video surveillance was ongoing to discover the abusive parent.

RESULTS: A 10 year old girl reached the paediatric ER accompanied by her father and his common-law wife. Taken in load by the sanitary operators, she presented "raccoon eyes" sign (intense ecchymotic oedema of both eyes) and numerous bruises on upper and lower limbs. The child was hospitalized and underwent a diagnostic work-up. The results of the clinical examination led to the diagnosis of serious physical maltreatment with cutaneous lesions and skeletal lesions (several fractures), and to the Court and Minor Court reporting.

Before any child protection action was taken by Child Protective Services, the father signed for self-discharge. The investigation authorities were informed of child discharge and did not take any immediate protective measure. The girl was discharged with the physicians adverse opinion and went back home. Later on, we got to know that the house and the whole family was subjected to covert video surveillance, right after discharge, and the proofs of maltreatment from both father and step-mother were collected. One month later, after the investigations ended-up, the child was promptly removed from the family of origin and put in foster care.

CONCLUSIONS: The Authors suggest the need of reflecting on the ethical aspect of this praxis: re-granting the child's custody to the potential abusive parent make the child to "act as bait" to trap the guilty. There are concerns that to obtain conclusive evidence for civil or criminal proceedings a decision to intervene may be delayed and the child may suffer unnecessary harm. We acknowledge and share many concerns expressed by various professionals, considering the potential fatal harm that child abuse can cause. This praxis should be considered cautiously and only when the clinical picture does not give enough evidence of the abuse being occurred.

OP-023

DRAW A TREE TEST

Ahmet Yilmaz[1], Gaye Özmen[1], Funda Akkapulu[2]
[1]Department of Forensic Science, Istanbul University, Istanbul, Turkey
[2]Child and Young Consulting Center, Istanbul, Turkey

The art of drawing is analyzed in art history, ethnology, sociology and psychology. According to psychologist, drawing indicates development of the intelligence level of children and their sense of imagination about their world.
Children draw pictures to discover, solve problems or to illustrate their ideas and observations.

Children's drawings are considered to be related to their age, impulsive behaviors, psycho-motor development, language skills, symbolic competency, imaginary, memory and perception capacity. It seems that children open the doors of their inner world to others through their drawings and these drawings are utilized as a language.

Projective tests have been known for many years to contribute significantly in clinics in the assessment of mental functioning. When a symptom occurs as an expression of spiritual conflict and the origin is not obvious, then naturally there is a need for tests. The symptom is the expression of the child's distress in a coded language. The tests help resolve this code.
AIM: The aim of this study is to determine how the children living under the supervision of Social Services and Child Protection Agency deal with authority and how they define their mental level. With these data, researchers aim to give support where the children have problems. Other aim of this study is to investigate the quality of the cognitive area, to work on depression position and to determine the differences of children drawings between children in latent and puberty living under the supervision of Social Services and Child Protection Agency.
MATERIAL AND METHOD: Drawing tests were applied on two groups. First group consisted of 42 children aged between 7 and 15 who live under the supervision of Social Services and Child Protection Agency. Second group consisted of 42 children aged between 7 and 12 living with their families. After preliminary meetings with the children, they were asked to draw "a tree" pictures. Once the child had finished the drawings, the question "which tree is this" and "does the tree have a story" was asked. Basically, we looked at the place and size of images and then the trunk, the limbs, the leaves, the roots, and a few other details.
RESULTS: It is found that children in first group are coherent with authority, they see themselves more unsuccessful than the second group. The first group have difficulties in creative thinking.

OP-024

CRIME AND ADOLESCENCE

Ahmet Yilmaz, Gaye Özmen, Coşkun Yorulmaz
Department of Forensic Science, Istanbul University, Istanbul, Turkey

INTRODUCTION: Children may not understand the rules and which rules they have to act in accordance with adequately due to their mental and pedagogical period. Majority of children can balance between to be fond of company and accord with social environment with the development process. Physical and psychological alteration begins with the adolescence which is the rank of development process. Negative effects that may occur in this process can damage children's development.

The most important attribution that allocates child crime than adult crime is that childhood contains the adolescence which is called problematic or alternation cycle. The crime that is attended must be evaluated in the period which the human being is in.
AIM: The aim of this study is to present the solution for children in conflict with law, by analyzing socio-economic features, style of crime, characteristics of family and the reasons of the juvenile delinquency.
MATERIAL AND METHODS: The sample consists of 121 children and adolescents between the ages of 12–17, who took place in forensic system as children in conflict with law between the years 2008 to 2011. These groups had confidential conversation with the juvenile court psychologist. All the data about these children and adolescents were taken from the reports of the court's psychologist.
RESULTS: The number of children that involved study is 121, of all children 89 (73.75 %) are males and 32 (26.5 %) are females. 23 (19 %) of all children are between 12 and 14 years, 98 (%80.1) of them are between 15 and 17 years. When we look for the ratio of crime style, 92 (76 %) of them against with law to commodity, 29 (24 %) of them against with law to human being.
CONCLUSION: It is seen that previous studies chose the children between the ages 16 to 17. In this paper 80.1 % of the children are between the ages 15 to 17. These data are coherent with the literature. In this paper, 73.5 % of the children conflict with law is males. It can be because the number of boys that take place in forensic system is more than girls, because they spent more time out of home and out of family control than girls.

Taking cases from one region and one court is the defect of the study.

OP-025

A CHALLENGE FOR AGE AND IDENTITY VALIDATION FOR CHILDREN ON SOCIAL NETWORKS

Ridvan Yilmaz, Aylin Yakupoglu
Institute of Forensic Science, Istanbul University, Istanbul, Turkey

According to statistics gathered from scientific studies, a staggering number of children are solicited by sexual predators on the Internet, with one in seven kids ages 10–17 receiving unwanted sexual solicitations online, while 75 % of youth who received an online sexual solicitation did not tell a parent.
In the United States of America, social-networking sites are under pressure to offer an elevated security system, as attorneys general nationwide are pushing for laws to punish sites that do not comply. As an example, some offered proposal laws impose fines of up to US $5,000 per violation for sites that fail to verify ages and obtain parental permission of users under 18.

In this collected work, it has been analyzed that "How to provide an effective way for age and identity validation at social networks". Some applications and implementations to verify user's ages and identities around the world has been analyzed to provide a safer online environment for children that actively use social networking sites.

OP-026

HOSPITAL-BASED CHILD PROTECTION CENTER AT MARMARA UNIVERSITY

Mehmet Akif İnanici[1], Emrullah Tolga Dagli[2]
[1]Department of Forensic Medicine, Marmara University, Istanbul, Turkey
[2]Department of Pediatric Surgery, Marmara University, Istanbul, Turkey

There are three main components of the child protection system in Turkey: social services and child protection agency, medical and legal systems. Until last 5 years the medical system functioned as provider of medico-legal reports or is seen as the treatment stage in child abuse issues. These services were not in a unitary system and accomplished by different health agencies. That kind of structure has disadvantages when it comes to the traumatized children and families such as retraumatizing the children while taking history repeatedly.

Abused children and their families, especially sexually abused ones, need professional evaluation and treatment. It is important to provide this services in a standard and unitary manner. Marmara University Child Protection Center was established in 2009 to create a standard model to overcome the difficulties in harmful evaluation practices in child abuse cases.

The aim of the presentation is to give information about the development process of this child protection center in our hospital and discuss its place in medical system.

OP-027

CHROMOSOMAL ABERRATIONS IN OPERATING ROOM NURSES EXPOSED TO WASTE ANESTHETIC GASES

Abeer Ahmed Zayed[1], Asmaa Abd El Aal[2], Reham Abdelaleem Afify[2], Dalia A Shaker[3], Aisha A Samir[3], Heba A Hagag[4]
[1]Department of Forensic Medicine & Toxicology, Cairo University, Egypt
[2]Department of Clinical and Chemical Pathology, Cairo University, Egypt
[3]Department of Occupational and Environmental Medicine, Cairo University, Egypt
[4]Faculty of Science, Cairo University, Egypt

BACKGROUND: Although eliminated rapidly from the body due to low solubility in blood and tissues, anesthetic gases have been reported to be neurotoxic, genotoxic, teratogenic and carcinogenic. In the present work, the genotoxic risk of occupational exposure to anesthetic gases in a group of operating room nurses was evaluated.
METHODS: A group of 27 operating room nurses exposed to waste anesthetic gases and 18 control nurses were examined for chromosome aberrations and sister chromatid exchanges (SCE) in peripheral blood lymphocytes.
RESULTS: A significant increase in chromosomal damage in exposed nurses as detected by total chromosomal aberrations, gaps, deletion and endomitosis was detected while the increase in centromere separation and chromatid breaks was not significant. There was an increase in sister chromatid exchange frequency in exposed nurses compared to control even though it was not significant. Most of these parameters of genetic damage in exposed nurses were positively correlated with age and duration of exposure to inhaled anesthetics.
CONCLUSION: The results of our study suggest that exposure to waste anesthetic gases have the potential to cause changes in human genome including chromosomal aberrations and SCE.

OP-028

MULTIPLEX REAL-TIME PCR ASSAY FOR THE ESTIMATION OF DNA DEGRADATION

Mohammad Ali Saremi[1], Mahnaz Saremi[2]
[1]Baqiatallah University of Medical Science, Research Center for Applied Virology, Tehran, Iran
[2]Reference Health Laboratory, Ministry of Health and Medical Education

Polymerase chain reaction (PCR)-based DNA diagnostics have grown in importance for assessing genetics forensic quality and safety. Multiplex PCR is the simultaneous amplification of more than one target sequence in a single reaction. PCR diagnostic reliability and sensitivity depend on the quality of the DNA extractions, including the extent of DNA degradation and the presence of PCR inhibitors.

An approach has been described that quantifies the extent of DNA degradation in bone samples using anchored real-time PCR (qPCR) assays that amplify target sequences ranging from <100 to >1000 bp, based human bone sequences. DNA degradation was quantified for model blood in the laboratory (Fresh Blood) as well as old blood samples. Considerably less than 1 % of the total DNA extracted from samples was available for amplification of the longest amplicons (830 and 1022 bp) from the most highly processed other sample.

The utility of anchored qPCR assays was demonstrated for characterizing the amount of DNA that is available for amplifying different-length PCR products from a range of bone samples. This approach should be useful for estimating the amount of amplifiable DNA in bone ingredients in cases where forensic processing has caused degradation of DNA

OP-029

POSTMORTEM MOLECULAR TESTING FOR SUDDEN DEATHS FROM UNKNOWN CAUSE

Motoki Osawa, Yoshihiko Inaoka, Fumiko Satoh, Iwao Hasegawa
Department of Forensic Medicine, Tokai University School of Medicine, Isehara, Japan

BACKGROUND: Sudden and unexpected deaths from unknown causes occur in infants and youths. The sporadic occurrence is sometimes explainable by dominant genetic disorders via de novo mutation. For sudden infant death syndrome (SIDS), the heterogeneity of pathogenesis, such as neurological, cardiac and metabolic disorders, is speculated. For instance, congenital central hypoventilation syndrome (CCHS) is characterized by shallow breathing during sleep with onset in the neonatal period. Hereditary long QT syndrome (LQTS) and Brugada syndrome are occasionally fatal through critical arrhythmia, called torsades de pointes. In the report, our attempt of postmortem molecular testing to SIDS is introduced.
METHODS: Nucleotide substitutions were detected by direct sequencing of PCR products, including exon and its boundaries, to the genes including PHOX2B, particularly to the polyalanine repeat, which is responsible for CCHS, and KCNQ1, KCNH2, KCNE1, KCNE2, and SCN5A, for LQTS. Written informed consent was obtained from the subjects' parents prior to experiments. This project has been approved by the institutional ethical committee.
RESULTS: A total of 65 DNA specimens were available. No mutations were found in PHOX2B, in contrast to the presence of

the expansions in all clinically diagnosed CCHS patients. A total of seven non-synonymous nucleotide substitutions were detected in the ORFs of KCNQ1, KCNH2, KCNE1, and SCN5A. In particular, a single C insertion into exon 16 of KCNQ1, resulting in truncation of the carboxyl terminal, was evident.

CONCLUSION: The symptom of apnea during sleep in CCHS patients is quite similar to that of SIDS victims, but the disease was unlikely to be involved in SIDS. While the seven unique and non-polymorphic substitutions in the LQTS-associated genes were found, the relation between genotype and arrhythmogenic phenotype was unclear. Only for the C insertion of KCNQ1, two distinct groups have reported that this mutation generates familial LQTS, suggesting the potential involvement of LQTS in SIDS. Sudden death that fails us to determine the cause of death constitutes one of the most important unsolved subjects in forensic pathology, so that postmortem molecular testing deserves of a diagnostic. We now have been developing massive DNA sequencing platform, known as next-generation sequencing, to explore genomic information comprehensively.

OP-030

EFFECTS OF PRESUMPTIVE BLOOD TESTS AND SURFACE TYPES ON DNA INTEGRITY

Ipek Esen Melez[1], Fatih Akyüz[1], Mustafa Özen[2], Cengiz Haluk Ince[1], Ömer Müslümanoğlu[1], Gülsüm Nurhan Ince[3], Deniz Oguzhan Melez[1], Murat Cantürk[1], Gülay Özel Cavlak[1]

[1]The Ministry of Justice Council of Forensic Medicine, Istanbul, Turkey

[2]Department of Medical Genetics, Istanbul University Cerrahpasa Medical Faculty, Istanbul, Turkey

[3]Department of Public Health, Istanbul University Istanbul Medical Faculty, Istanbul, Turkey

Presumptive blood tests' not having adverse affects on DNA tests is important. In this study, evaluation of all potential factors which may be considered to have effects on DNA output results is aimed with accepting the observation of 3 presumptive blood tests -used in the Ministry of Justice Council of Forensic Medicine Biology Department [luminol, phenolphthalein (Kastle-Meyer) and fluorescein]-' and 5 different surfaces' effects on DNA output results as a process model.

In practice, in order to generate concordance to daily life, 5 different surface types -including fabric, newspaper, glass, wood and stone- were obtained. 32 bloodstains on each surface type (totally 160 samples) −16 whole blood stains and 16 1/1000 diluted blood stains dropped 10 cm above each surface with 20 μl volume for each stain- were prepared. Each group for applying each reagent and the control groups were generated using equal number of each surface type in order to enable the groups to be compared containing equal number of samples on the same surface type. Thus, 3 different reagents' effects after two different time periods (40 h: early effect and 62 days: late effect) were observed having been applied to stain groups which had equal effects on the results. Besides, not only effects of reagents but also effects of surfaces were observed in this study. Results were evaluated on the basis of 5 parameters with either Student-*T* Test or Mann–Whitney *U* Test according to numerical or percental values of groups' being in normal distrubution or not; and with Fisher's Exact Test for (full +near full) against (null+near null) profile comparisons. As a result of 623 statistical comparisons performed among groups which had been generated according to reagents or surfaces with totally 160 samples, it has been evaluated that all 3 reagents (luminol, phenolphthalein and fluorescein) didn't cause significant loss in profiles on whole bloodstains but caused more significant loss in profiles on diluted bloodstains; phenolphthalein test caused statistically significant worse results when compared with luminol or fluorescein tests; and although the difference was statistically insignificant, fluorescein test gave slightly higher DNA output values when compared with luminol test application. The fact that the groups generated according to surface differences gave more indefinite statistical results when compared with the results of the groups generated according to reagent differences has been interpreted in the manner of reagents' having more potent effects on DNA integrity than the different surfaces' features.

OP-031

RECENT ADVANCEMENTS IN FORENSIC DNA PROFILING

Syed Sibte Hadi

University of Central Lancashire, Preston, UK

Forensic DNA profiling has been gaining further strength due to developments in the field. Though Short Tandem Repeat (STR) markers remain the major markers being used for human identification but other markers like SNPs are also being utilised for forensic purposes. There have been major developments in the technology which has led to improvements in the DNA analyser design. Forensic DNA profiling is moving quickly towards automating the process and there have been significant developments within this area. Most important among these developments is the development of a new player in the field which allows DNA extraction, PCR amplification & DNA profiling on a single automated platform. It is expected that with further developments this automated platform can impact on the current practices within forensic DNA profiling work.

This is undoubtedly the era of new multiplex kits that major commercial players within the Human Identification area have been able to market allowing the laboratories to develop profiles from challenging samples like old, degraded & mixed body fluid samples and also touch DNA samples. Important kits for autosomal, Y & X chromosomes would be reviewed.

Parallel to the recent advancements in equipment there has been development of software systems to manage laboratory processes that are now being employed more effectively. Quite recently DNA extraction, quantitation & PCR amplification has been optimized on automated lines that use computerized liquid handling robotic platforms. These systems use computer software's called laboratory Information Management Systems (LIMS) to control the various aspects of the processes & the protocols. Not only LIMS allows controlling automated tasks, it also acts as a bank of procedures, calibration of instruments, reagents control & validation. Automated lines were initially developed within UK laboratories & are expected to become standard equipment in large forensic DNA laboratories

Statistical analysis remains a challenging area. There have been efforts to provide online software's containing major allele frequency databases for the different STR loci being used in European countries. This software also allow for statistical calculations for case work laboratories in Europe.

The rapid advancements within the DNA profiling field need clear guidelines on the standardized use of different platforms & software for various purposes. It would be important to consider

such guidelines & proficiency testing mechanisms to ensure the iconic reliability of the technique.

OP-032

GENETIC ANALYSIS OF 17 Y-STR LOCI IN PASHTUN POPULATION FROM SWAT VALLEY, PAKISTAN

Muhammad Saqib Shahzad, Ziaur Rahman, Muhammad Ilyas, Niaz Muhammad, Muhammad Azam
Department of Molecular Biology, University of the Punjab Lahore

Humans are an intelligent species because of our incredible ability to evolve and sense of need for progress. The developments in forensic science have likewise introduced many vital crime solving techniques over the past few years. DNA analysis has revolutionized forensic science. Today, DNA evidence has become the "gold standard" of forensic testing and is an invaluable tool for the criminal justice community to the conviction or exoneration of suspects of various types of crimes e.g. theft, rape and murder cases. The disturbing possibility that DNA evidence can be faked is overlooked. Standard molecular biology techniques such as PCR, molecular cloning, and whole genome amplification enable anyone to produce practically unlimited amounts of in vitro synthesized DNA with desired genetic profiles and can be applied to surfaces of objects, incorporated into genuine human tissues or implanted in crime scenes.

The Indus Valley civilization is one of the oldest in the world dating back 5000 years. The area underwent successive invasions by Persians, Greeks, Scythians, Arabs, Afghans, and finally by the Turks. Swat is a beautiful valley in the northern areas of Pakistan. After a tug of war between the Yousafzai and Swatis, The Swatis were ultimately expelled to Hazara area towards the Block Mountains. The Yousafzai divided the land among the clans and became the landowners of the Valley. 17 Y-Chromosomal short tandem repeats (Y-STR) were analyzed in 71 unrelated Pashtun (Pathan) males residing in the Swat Valley of Khyber Pakhtunkhwa province, Pakistan. A total of 43 unique haplotypes were observed. The predominant haplotype reached a frequency of 23.94 %. The haplotype diversity was 0.860465 and the discrimination capacity 60.56 %. Analysis of molecular variance (AMOVA) reveals a considerable regional stratification within the country as well as between different Pashtun (Pathan) groups living in Pakistan.

OP-033

FORENSIC EPIGENETICS

Seyyed Mohammad Musavi[1,2], Mansur Salehi[3]
[1]Department of Medicine, Cellular and Molecular Biology Center, Medical University of Shahrekord, Shahrekord, Iran
[2]Genetic and Identification Lab, Forensic Medicine Office, Isfahan, Iran
[3]Department of Medical Genetics, Medical University of Isfahan, Isfahan, Iran

Flourishing in scientific assemblies, Epigenetic strongly challenged the previous suppositions on trait inheritance in animate beings and it claimed the mechanisms of environmental factors on inheritance and evolution process. Epigenetic mechanisms can modify and regulate the gene expression patterns in a cell without changing DNA nucleotide arrangement. In this way, epigenetic mechanisms affect both the growth of foetus and the characterization of different parts of multicellular organisms. DNA methylation, histone modification and variants, microRNAs, the complex transcription factors networks and the regulation of high-order chromatin structures are the most significant epigenetic tools. Currently, studying epigenetic and the related markers is boosting in biological and genetic fields. Besides it is being studied forensically. One the most significant applications of forensic examination of epigenetic markers is the analysis of biological samples with identical genetic bases. As a case in point, this method can be applied for identical twins with identical genetic base that their DNA samples analysis is impractical through typical genetic methods. However, the samples analysis is possible through epialleles, because the differences in the twins' epigenetic models have been demonstrated. Also, when the sample analysis or liquid biologic samples with identical genetic base like blood, saliva and sperm are concerned forensically, some tDMR markers (tissue-specific differentially methylated regions) like tDMRs of DDX4, DACT1, USP49, HOXA4, PEN3, PRMT2 and others that recently have been discovered can be utilized, because these genes have special methylation patterns for each tissue. It must be mentioned that other forensic applications of epigenetic patterns are identifying the samples containing destroyed DNA, the partial determination of age using saliva, and identifying fake DNA at the scene of the crime. This review is intended to introduce the mechanisms and markers, besides the role they play in forensic assessment will be scrutinized, that is considered highly important in forensic genetic studies recently.

OP-034

A RARE UNIPARENTAL MATERNAL ISODISOMY IN INVESTIGATION OF COMPLEX PATERNITY CASE

Ömer H. A. Müslümanoğlu[1], Mustafa Demir[1], Murat K. Cantürk[1], Ayşe Çerkezi[1], Özgür Sevim[1], Bestami Çolak[1], Sibel Uğur[2], Uğur Özbek[2], Haluk C. Ince[1]
[1]Departmyent of Biology, Council of Forensic Medicine, Istanbul, Turkey
[2]Institute of Experimental Medicine, Istanbul University, Istanbul, Turkey

The contemporary paternal cases requires father, mother and the child to be worked together. The acceptance of paternity is based on the passage of alleles located on the STR regions of nuclear DNA from father and mother to the child. In our case, autosomal PCR amplification was performed with AmpFlSTR® Identifiler, Investigator ESSplex and PowerPlex® 16 System kits to father, mother and boy child after isolation and quantification. The samples were processed for electrophoresis AB3130xl Genetic Analyzer afterwards. The analysis showed that in 20 out of 22 STR loci excluding the Amelogenin location determining the sex, the alleles were transferred from mother and father to son according to genetic rules and in D2S1338 and D2S441 loci there were no transfers from father to son. Gonosomal PCR amplification was performed to father and son with AmpFlSTR Yfiler kit which revealed that the data in the 16 Y STR region were the same in both subjects. The absence of allele transfer from father to son in only D2S1338 and D2S441 loci out of 22 autosomal STR region and the homozygous allele transfer in both loci brought up the possibility of

Maternal Uniparental Isodisomy of the son for the 2. chromosome. In order to investigate this possibility, Genome-wide Single Nucleotide Polymorphism (SNP) scan was performed; using Infinium ®HD HumanCytoSNP-12 BeadChip kit (Illumina, San Diego, CA, USA) which holds ~300,000 markers with an average genome resolution of 10 k bases to mother, father and son in Institute of Experimental Medicine, University of Istanbul (DETAE). As the result, the SNP data on chromosome 2 of the son were homozygous with each SNP of the mother's 2. Chromosome. This result together with the fact of the inconsistency of the results with the father in 2. Chromosome proved that the son had Maternal Uniparental Isodisomy. Also the copy count of the 2. Chromosome was the same which showed that there was no deletion.

This case showed the necessity to search for genetic problems like Uniparental Isodisomy of paternal or maternal origin in rare cases where the paternity can be rejected in routine STR tests while searching for paternity or maternity. The whole genome SNP investigation was very helpful in proving the paternity of the father in this case although it is not a routine test.

OP-035

SUDDEN DEATH OF A SPORTSMAN. AN UNUSUAL CASE OF IDIOPATHIC FORM OF PULMONARY HYPERTENSION

Marco Di Paolo[1], Benedetta Guidi[1], Valentina Bugelli[1], Giuseppe Antonio Naccarato[2]
[1]Department of Legal Medicine, Pisa University, Pisa, Italy
[2]Department of Pathologic Anatomy, Pisa University, Pisa, Italy

BACKGROUND: Pulmonary Arterial Hypertension (PAH) is a chronic disorder of the pulmonary vasculature, characterized by a progressive increase in pulmonary vascular resistance whilst in the more advanced stages there is a remodeling of the vascular walls. The pathogenesis of PAH is not thoroughly understood, nevertheless endothelial cell dysfunction is thought to play a key role in addition to smooth muscle cell migration and dysfunction and abnormal apoptosis. PAH can be idiopathic or associated with underlying conditions.

Idiopathic or primary hypertension is a rare condition that is considered in the clinical setting only after the exclusion of all heart and lung diseases known to cause elevation of pulmonary artery pressure and vascular resistance. Regardless of the etiology pulmonary hypertension provokes right heart failure and arrhythmias leading to death. Most patients experience gradually worsening symptoms of dyspnea, syncope and congestive heart failure, but a small number die suddenly and unexpectedly.

METHOD: This case deal with the description of a sudden death occurred in a 45-year-old sportsman due to idiopathic pulmonary hypertension.

Results At autopsy the heart weighted 405 g, whit right ventricular hypertrophy and dilatation of mitral valve. Lungs weighted 820 g the right and 660 g the left. They were congested and edematous. At microscopic examination we described abnormal muscularization of distal precapillary arteries, medial hypertrophy of large pulmonary muscular arteries, neointimal formation particularly occlusive in vessels 100 to 500 um in size and formation of plexiform lesions in these vessels.

CONCLUSION: The diagnosis of pulmonary hypertension can present challenges to the clinician. When diagnosis missed in life, the result could be sudden death. The forensic pathologist must be aware of pulmonary hypertension as a potential cause of sudden death and look for the characteristic gross and microscopic features. On autopsy, right ventricular hypertrophy and dilatation will likely be the first sign of pulmonary hypertension. All forms of pulmonary hypertension have certain pathologic features in common. These include medial hypertrophy of the muscular and elastic pulmonary arteries as well as dilation and intimal atheromas of elastic arteries. Constrictive and complex lesions of the pre- and intra-acinar pulmonary arteries are present to varying degrees. Dilation lesions and arteritis are less commonly encountered in pulmonary hypertension and tend to be associated with plexiform lesions.

OP-036

YOUNG ATHLETE'S FATAL COLLAPSE: A STILL UNRESOLVED DRAMA

Anna Razou[1], Antonios Papadomanolakis[2], Siew S Feng[3], Manolis N Michalodimitrakis[1]
[1]Department of Forensic Sciences, Medical School, University of Crete, Heraklion
[2]State Forensic Service, Crete, Greece
[3]National Institute of Forensic Medicine, Hospital Kuala Lumpur, Malaysia

According to the legend the Greek soldier Pheidippides suddenly collapsed and died after having completed his run from Marathon to Athens in 490 B.C. to deliver the message of the victory over the Persians. During the last decades several stories about famous athletes dying suddenly and unexpectedly during competitions have caused headlines in the newspapers. Most non-violent, free of drugs including anabolic cadence production are in reality sudden unexpected deaths in the young population have undiagnosed in the majority cardiac causes, and the potential for prevention is unknown. In young athletes suffering sudden death autopsy most often reveals structural cardiovascular lesions such as hypertrophic cardiomyopathy (HCM) or arrhythmogenic right ventricular cardiomyopathy (ARVC) or in a less degree anatomic coronary malformations.

More than 20 pathologic entities have been identified as causes of Sudden Death (SD) in young athletes. Studies in the U.S. and Europe showed a higher prevalence of hypertrophic cardiomyopathy (HCM), arrhythmogenic right ventricular cardiomyopathy (ARVC), Marfan syndrome, and ion channelopathies (e.g., long or short QT syndrome) account for the vast majority of sudden deaths in young athletes. Other less common causes include coronary artery anomalies, myocarditis and the rest clinically unsuspected structural disease. Although the specific diseases cited in the studies are the same, the frequency with which they are associated with sudden death differs considerably, i.e., most commonly hypertrophic cardiomyopathy (HCM) in the United States and arrhythmogenic right ventricular cardiomyopathy (ARVC) in Europe.

OP-037

CRIMINALITY AND PSYCHOPATHY

Cemal Onur Noyan[1], Gencer Genc[2]
[1]Department of Psychiatry Service, Gumussuyu Military Hospital, Istanbul, Turkey
[2]Department of Neurology Service, Maresal Cakmak Military Hospital, Erzurum, Turkey

INTRODUCTION: Forensic psychiatry is a multidisciplinary specialty upon risk assessment, epidemiology of violence, treatment outcome and prevention studies within the context of mental health and criminality. Mental health professionals' ability to predict future violence risk is one of the most attractive issues on criminality(3). Previous studies suggest that although offender's lifestyle, employment status, education level, residential location, history of mental health problems have partial effect on recidivism, psychopathy as measured by the Psychopathy Checklist—Revised(PCL-R) is a robust predictor of recidivism and violence across all forensic populations(1).

Subsequently discharging from prison, individuals with psychopathy are three times more likely to reoffend and four times more likely to reoffend violently than other offenders(2). We aimed to lay out the differentiation of Antisocial Personality Disorder(APD) and psychopathy and relationship between psychopathy and previous criminal behavior for preventing strategies.

METHODS: 120 male subjects diagnosed with APD without any comorbid neurologic disease, assessed by semi-structured questionnaire including information on personal history, as well as from legal documents and previous records of offences committed by the subjects, Aggression Questionnaire and Psychopathy Checklist-Revised(PCL-R). Subjects with APD diagnosis divided into two groups as 'psychopathic' and 'nonpsychopathic' by using PCL-R scores. 30 point was used as cut point for psychopathy diagnosis regarding previous studies

RESULTS: Psychopathic group (n=68) significantly differed from nonpsychopathic group (n=52) at higher aggression scores (p= 0,000), lower education level (p=0,019), unemployment status (p=0,039), experiencing criminality at earlier age (p=0,014), versatility of prior crimes (p=0,021), higher number of prior convictions (0,018). PCL-R scores and number of prior convictions correlated significantly (p=0,001) within the group.

CONCLUSION: The results indicating the differentiation of psychopathy and APD diagnosis by using PCL-R in forensic population is important for assessing future violence risk identifying criminologic risk factors, and different types of offenders for preventive treatment programs.

OP-038

SEXUAL ASSAULT SERVICES: CHALLENGING CURRENT PRACTICES

David Wells[1]
[1]Victorian Institute of Forensic Medicine, Australia
[2]Department of Forensic Medicine, Monash University, Australia

There have been considerable advances in the delivery of medical services to victims of sexual violence. The drivers for this have been research, challenges to beliefs and practices and the desire to have practice supported by a strong evidence base.

Nonetheless, a considerable number of challenges remain in service delivery in this field. These include the use of outdated literature, a misplaced dependence on physical signs to corroborate allegations and the incorporation cultural beliefs and practices in medico-legal services.

If services to complainants of sexual assault are to improve then these outdated practices must be challenged. Failure to do so will jeopardize health care and negatively impact on the criminal justice system.

OP-039

SEXUAL VIOLENCE BETWEEN YOUNG PEOPLE: ANALYSIS OF A CASUISTRY OF THE JUVENILE COURT OF BRESCIA FROM 2008–2011

Luisa Ravagnani, Anna Antonietti, Emma Avezzù, Carlo Alberto Romano
University of Brescia, Faculty of Law, Brescia, Italy

The law 66/1996, dealing with sexual abuse, placed this crime in the crimes against personal freedom. Also this law unified "carnal violence" and "acts of lust" once punished separately.

Moreover, this law added the crime of sexual assault committed by more than one person, previously not contemplated in the criminal code (art. 609 octies c.p.).

This study is based on the cases of sexual violence judged by the Juvenile Court of Brescia which has the jurisdiction of four provinces (Brescia, Mantova, Cremona, Bergamo) in the period from 2008 to 2011

The socio-personal characteristics of the authors and the victims, their relationship and some characteristics of the crime (sexual behaviour, number of sexual intercourses and the place) were analyzed as well as the applied sentences

The consequences of sexual violence are complex and differed and can be reduced with activities that take into consideration the whole complexity of the situation and the multitude of needs emerging when the crime is committed. For this reason only a multidisciplinary approach can offer ad hoc answers for the victims and their families.

OP-040

DO RECENT LESIONS OF FEMALE GENITALIA NECESSARILY IMPLY SEXUAL ASSAULT?

Julie Lejeune[1], Frédérique Guillet May[1], Serge Briançon[2], Neelesh Dhuny[1], Henri Coudane[1], Laurent Martrille[1]
[1]Service de médecine légale, CHU de Nancy, 54500 Vandoeuvre-les-Nancy
[2]Service d'épidémiologie et évaluations cliniques, CHU de Nancy, 54500 Vandoeuvre-les-Nancy

The number of women who are sexually assaulted remains high in spite of increased information and prevention campaigns. Taking in charge and studying this population is rendered complicated by its diversity of age groups. It is well known that sexual assault could induce no lesion, but could consented intercourse induce gynecological wounds?

Our aim is to compare the results of gynaecological exams carried out on women who have consensual sexual intercourse and women who have been sexually assaulted.

MATERIAL-METHODS: The subjects included in the study are women aged 14 years or more, divided into two groups: 113 women who have suffered recent (less than 5 days) sexual assault and 150 women who have not been assaulted and who have recent (less than 5 days) consensual intercourse, excluding atypical intercourse. Information was gathered by means of an interview grid, and by filling up another form while carrying out examination.

RESULTS: Seemingly recent genital trauma was found among 17,2 % of the women who experienced sexual assault, and among 13.3 % of those who had had consensual sexual intercourse in the 5 days preceding the examination, with no significant difference.

Within both populations, the lesions were found were either hymeneal tear, or the following: erythema or erosion of the inner labia or of the posterior vaginal cervix.

Among women who were not sexually assaulted, 12,7 % had a yielding hymen despite regular sexual intercourse.

DISCUSSION: Very few studies have compared women who are victims of sexual assault and those are not. These studies highlight the frequency of genital trauma when sexual intercourse is forced. Physiological hymeneal tear and incomplete hymeneal trauma can be mistaken for one another, specially by poorly experimented clinicians. Hymeneal trauma may exist after a rape but not in all cases: the apparition of traumatic lesions is dependent on age, on hormonal status and on type of sexual assault. It is admitted that the hymen healing depends on where the lesions are situated, their depth and how extended they are.

CONCLUSIONS: Interpretation of seemingly fresh genital trauma needs to take the general picture into account. Our study shows that such wounds are not always consecutive to forced or violent sexual intercourse. When confronted to trauma during the gynaecological examination of an allegedly assaulted woman, the physician should be very precautious in their interpretation. Studies should be carried out on larger samples in order to support our results.

OP-041

EVALUATION OF SEXUAL VIOLENCE IN MOVIES

Itır Tarı Cömert[1], Eylem Gül[2], Beyhan Ceylan[3], Onur Gül[4], Itır Erkan[2], Emel Hülya Yükseloğlu[2]

[1]Department of Psychology, Faculty of Arts and Sciences, Istanbul Aydın University

[2]Institute of Forensic Medicine, Istanbul University

[3]Istanbul Security Directorate Narcotics Agent

[4]Department of Radio TV Cinema, Faculty of Communication, Marmara University

PURPOSE: Sex is one of the most important aspects of life. It has been a symbol of judgments, taboos and social values of communities through the human history and civilization. Sexual behaviors and fantasies of human beings mean more than continuation of species and pleasure-related issues. Including perversion and uncommon sexual acts and making up a part of legal projections of such behaviors, the concept of "Sex Crimes" consists of two words that seem to be very ironical semantically. This irony has the characteristics of "sexual act or sex" which is easy, natural and pleasure-oriented, which is observed in all kinds of living beings, and which keeps living beings alive and continues species and "crime" which harms physical integrity and becomes destructive for order. That is to say, a basic need comes to such a state that it involves violence towards partner or the person himself/herself, becomes a crime element under certain legal circumstances, and accordingly requires "penalty" in return for it. In this sense, sexual violence faces us as a social problem affecting all societies. Today, there are important problems experienced by sexual violence victims in many regions across the world. Sexual violence leads to moral and conscientious investigations in every society. Although sexual violence is frequently observed in every society, it does not have much coverage in media including cinema as a theme. This study aims at examining how sexual violence phenomena are focused on in 20 movies.

MATERIALS AND METHODS: Twenty movies including sexual violence were examined in accordance with purpose of the study. The movies under examination are Baise-moi (2000), Irréversible (2002), Run! Bitch Run! (2009), I Spit on Your Grave (2010), Tomboys (2009), Akmareul boatda (2010), Law Abiding Citizen (2009), The Last House on the Left (2009), Kill Bill: Vol. 1 (2003), Kill Bill: Vol. 2 (2004), The Manson Family (2003), Scrapbook (Video 2000), The Girl with the Dragon Tattoo (2011), La piel que habito (2011), Gegen die Wand (2004), Mutluluk (2007), Üç Maymun (2008), Güz Sancısı (2009), Kurtuluş Son Durak (2012), and Barda (2007). In each film, important themes such as justice, securing the justice, justice—law relationship, conscience, ethics, punishing offenders, anger of acquaintances of victims with offenders and attitude of society to crime are analyzed within the framework of Kohlberg's theory of moral development.

DISCUSSION AND CONCLUSION: Content analysis and statistical evaluation of the study are in progress.

OP-042

ANALYSIS OF ADOLESCENT AND CHILD SEXUAL ASSAULT CASES OF FOUR HOSPITALS IN TAIWAN

Hsiao Lin Hwa[1], Sheng Mou Hsiao[2], Lin Kang[3], Cheng Yang Shih[4]

[1]Department and Graduate Institute of Forensic Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

[2]Department of Obstetrics and Gynecology, Far Eastern Memorial Hospital, Taipei, Taiwan

[3]Department of Obstetrics and Gynecology, National Cheng Kung University Medical College and Hospital, Tainan, Taiwan

[4]Departments of Obstetrics and Gynecology, National Taiwan University Hospital Yun-Lin Branch, Yun-Lin, Taiwan

BACKGROUND: Sexual assault is a form of interpersonal violence with significant consequential health problems. The purpose of this study was to describe the characteristics of the adolescent (aged 12 to 17 years) and child (aged under 12 years) victims, assaults, and associated physical trauma of sexual assault cases in Taiwan.

METHOD: Data were retrospectively collected from the medical records of sexual assault victims who visited the Emergency Departments of two hospitals in North Taiwan and two hospitals in South Taiwan from 1988 to 2009. The characteristics of the adolescent and child victims, assaults associated factors, forensic and physical examinations performed, and documented general body and anogenital injuries were analyzed from the medical records.

RESULTS: There were 854 adolescent and child sexual assault victims, including 825 females and 29 males, with 165 aged below 12 years. There were 47.9 % (79/165) and 50.2 % (331/660) of victims aged below 12 years and between 12 and 17 year, receiving examination within 72 h, respectively. Among the child victims of the two hospitals in North Taiwan, 56.8 % (50/88) underwent examination within 72 h, whereas only 43.3 % (29/67) of child victims of the two hospitals in South Taiwan underwent examination within 72 h. For victims receiving physical examination within 72 h, general body trauma and anogenital injuries were found in 24.1 % (99/410) and 40.0 % (164/410) of victims, respectively. For victims receiving examination after 72 h, 7.2 % (30/418), and 9.1 % (38/418) were documented with general body trauma and anogenital injuries, respectively. For victims aged under 12 years, general body trauma and anogenital injuries were noted in 24.1 % (19/79) and 51.9 % (41/79) of cases underwent examination within 72 h. For victims aged 12 to

17 years, general body trauma and anogenital injuries were noted in 24.2 % (80/331) and 37.2 % (123/331) of cases underwent examination within 72 h. Sexual assault victims with physical examination within 72 h showed a significantly higher percentage of evidence of noted injuries, compared to those with examination after 72 h.

CONCLUSION: The result of physical examination is associated with the interval between sexual assault occurrence and physical examination undertaking. The child victims of the two hospitals in South Taiwan tend to delay reporting and receiving forensic and medical examinations.

OP-043

DETECTION OF SEXUAL ASSAULT BY PHYSICIANS AND THEIR AWARENESS OF LEGAL REGULATIONS IN TURKEY: A QUESTIONNAIRE STUDY

Yusuf Tunç Demircan, Serra Tekin, Ugur Evcin, Belkis Karabakir, Nurcan Hamzaoglu
Institute of Forensic Sciences, Istanbul University, Istanbul, Turkey

There are institutions in various countries which are specialized in assessing sexual assault cases and qualified for the collection and preservation of medical evidence, diagnosis and treatment. As a result, physicians in these institutions are more aware of their legal obligations as well as their professional responsibilities. Unfortunately there are no such specialized centers in Turkey. In the hospitals and other health care institutions a majority of physicians seem to be not trained enough in properly assessing the sexual assault cases. For that reason sexual assault victims cannot receive the necessary medical care and legal support which results in the crime to remain a secret. The current study aimed to determine the detection rate of sexual assault cases by physicians and to investigate their awareness of their legal obligation to notify the authorities in regard to the Turkish Criminal Code. A questionnaire was carried out with physicians working in two major hospitals in Istanbul. They were asked to read short narratives and then decide if the narrative was a sexual assault case where the police should be informed. Even though physicians come across such cases in their professional lives, the results demonstrate that there is still a need for further training for health professionals in order to raise more awareness of sexual assault cases. The more acquainted the physicians are with the Turkish Criminal Code, the more aware they will be about their legal obligations. In this manner, all the victims will be able receive the needed care and further violence by the offenders will be prevented.

OP-044

MEDICAL EVALUATION OF CHILD AND ADOLESCENT SEXUAL ABUSE ON PHOTOGRAPHS: INTER-OBSERVER VARIABILITY

Novella Chinnici[1], Laura Marasciuolo[1], Tiziano Motta[2], Marina Ruspa[2], Alessandra Kustermann[2], Andrea Gentilomo[1], Cristina Cattaneo[1]
[1]Section of Legal Medicine - Department of Human Morphology and Biomedical Sciences, Università degli Studi di Milano
[2]SVSeD (Soccorso Violenza Sessuale e Domestica), Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Milano

BACKGROUND: it is often difficult, especially with children, to physically evaluate and interpret possible signs of sexual abuse. For this reason training and experience are of paramount importance. In certain cases an added problem is that the expertise is requested on photographs of genitals, since the victim may have been examined months or even years before juridical action. Several court cases in Italy have suffered from the ambiguity which arises when evaluating photos particularly as concerns inter-observer differences.

METHOD: in this study, 50 cases were selected from the case record of the SVS (Soccorso Violenza Sessuale, Sexual Violence First Aid Service) in Milan, a 20 year old rape, domestic and child abuse centre with gynaecologists, paediatricians, forensic pathologists, psychologists and social workers.

The cases selected were females younger than 18 years where medical and gynaecological examination was accompanied by good photographs of the ano-genital regions.

The photographs were evaluated by groups of clinicians with different experience in sexual abuse, each group being composed of two forensic pathologists, two gynaecologists and two paediatricians. Examiners were asked to fill in a form with the ano-genital structures and anomalies visible, the type of hymen when present and variants and specific signs of abuse according to Adams' classification and finally state how they would conclude the expertise.

RESULTS: Results showed that in a significant sample inter-observer difference was high. Specific training for abuse seemed to influence knowledge of regional anatomical variants as well as interpretation of findings; particularly, gynaecologists and pathologists performed better than paediatricians. The most interesting results concerned the critical differences in evaluation and in interpretation of whether child abuse, or even trauma, had occurred. Finally, most observers noticed that evaluation from pictures created considerable difficulties, possibly increasing inter-observer error.

CONCLUSIONS: Sexual abuse court cases sometimes are based on photographs for several reasons: for example the child or adult was examined and photographed time before court action and a different person may have been chosen as the court expert The present study has proven that inter observer error in the description of signs and especially in their interpretation is high. The main reasons were found to be different backgrounds and training as well as the pitfalls behind photographic material. Two main cautionary notes have emerged from this study: the danger of expertise performed on photographs in cases of child abuse and, once again, the importance of specific training.

OP-045

INCEST: ANALYZING WITH A CASE

Gaye Özmen, Ahmet Yılmaz, Coşkun Yorulmaz
Department of forensic science, Istanbul University, Istanbul, Turkey

INTRODUCTION: Child abuse and neglect, still continuing to be a universal problem, leaves physical and psychological damages that negatively affect well-being and life-long development of exposed children.

Sexual abuse of the children has not only mental, behavioral and emotional short-term effects but also the long- term ones in many dimensions. The perception of the event and the effects are related to the child's age and the relationship between the offender and the child. The offender's being known adult, child is more likely to experience distress and this event can cause long-term psychological problems.

The person who abuse victim may come from all the socio-cultural and economic types of society. The witness of abuse is so rare. This case is a secret between the offender and victim. From the age

infanthood to adulthood, children can be the victim of sexual abuse. Children are easy targets of abuse, it has various reasons.

In our country, incest cases are treated under the Turkish Criminal Code under the term "Sexual Exploitation".

AIM: The aim of this study is to clarify the signals about sexual abuse and incest with a case.

METHODS: The confidential conversation was carried out with the victim and with her mother in 2009. The case is 13-year-old girl in that date, very successful secondary pupil, and the victim of incest. Offender of the case is father, who is a taxi driver. It is said that father is very aggressive; he was in treatment since 2005. He has not a sexual relationship with his wife. It is said that the sexual abuse started 2007 to 2009.

CONCLUSIONS: It is so hard to reveal incest because it is forbidden and also it occurs in family. Our case is coherent with the literature about the characteristics of offender and victim. But the attitude of the mother is different from literature. This attitude helps to reveal this case.

OP-046

IDENTIFICATION OF TRACES OF SEXUAL ACTIVITY IN UNDERAGE CHILDREN THROUGH LABORATORY TESTS

Francesca Teresa Jimeno
Servicio Médico Legal Chile

Within the wide variety of crimes, this study concentrates, on the "detection of sexual abuse on children under 12 years old".

Throughout the investigation, is the clinical test that allows the evidence of rape on those with vaginal/anal damage and in the best of cases it helps with the identification of the aggressor if sperm and ADN are found.

Sexual abuse without violence is a difficult crime to prove, a frequent and silent aggression leaving no physical traces in the victim's body which could help as evidence.

Laboratory expertise using microscopy for the detection of sperms, is less successful due to the deterioration of the sperms by the time the perpetrator is caught.

It's an investigation subject to find an alternative sexual abuse expertise that replaces the previous shortcomings; this is through chemiluminescence of "prostate antigen", coming from both, the semen and the masculine pre-ejaculation fluids which are found in the child's body or on his/her clothes. These no doubt are not only evidence of a "SEXUAL ABUSE" but they also allow to obtain the ADN fluids which in terms helps with the ultimate identification of the abuser.

The antigen identification took place on the samples of underage children registered in the laboratory for alleged sexual crime, once the instrumental method and its fluids positivity were tested on excited voluntary male adults.

The results were as follows: The total case of children received between 2009 and 2011, those with positive concentration of antigen, 81,2 % show low concentration of antigen and without sperms, with 100 % coincidence between finding and reporting abuse, with 70 % of coincidence between report and clinical finding. In addition, with an investigated sub-group, a 54,14 % of coincidence with finding of masculine genetic profile. (ADN was investigated in a feminine sub-group).

Therefore, it is possible to conclude that the antigen detection through this technique, is a tool that: By itself, it is conclusive in cases of rape or abuse, if the antigen is found in a child in vaginal or anal contents or in their clothes respectively. It allows to detect abuse in cases whose samples did not allow sperm conservation (anal content) or there was no ejaculation or a preservative was used. Its identification together with the ADN identification help to identify the abuser.

OP-047

KILLING FOR REVENGE OF THE HONOR

Amir Jameel Hamuod
Medicolegal Institution

INTRODUCTION: This mean the man of the family killed the woman when he caught her in illegal relationship with the man or sometimes just somebody say that she in love with a man not in real relationship.

Mothers had been distressed that their daughters had been killed under the name of killing for revenge of the honor and this punishment had been done only for cultural rules.

So under the name of killing for revenge of the honor many husbands who want to get rid of their wives killed them under the name of killing for revenge of the honor without any hesitation because they know that there is a law let their punishment lesser if they kill the victim under the name of killing for revenge of the honor and the law says the killer will be in prison for less than 6 months.

And I think its better to correct this law to save the women.

SCENARIOS: There are four scenarios demonstrate the way of killing the victim under the name of killing for revenge of the honor:

First scenario: the victim comes with amputated right hand and the male couple with amputated penis.

Second scenario: her family killed her and tries to mislead the forensic pathologist by burn, buried or confabulate a wrong story.

Third scenario: new married with no bleeding during first intercourse because she had elastic hymen membrane.

Fourth scenario: she was raped and fears to tell her family and when she becomes pregnant her family kills her.

RESULTS: So I study 40 cases and I found there are two types of representation of victims

First: (12 victims) her family brings her after killed her and right hand had been cut from the wrist.

Second: (28 victims) her family killed her and tries to mislead the forensic pathologist by burn, buried or confabulate a wrong story.

CONCLUSION: And I found 4 criteria to diagnose killing for revenge of the honor

Age 18–40 years

There is no grieve reaction from her family

There is long time between the date of death and time when her family bring her.

Some time they bring together the girl with cutting hand and her male couple with cutting penis

OP-048

WOMEN IN PRISON: RELATIONSHIP BETWEEN THEIR PREVIOUS VICTIMIZATION, THE COMMITTED CRIME AND THEIR DRUG ADDICTION

Luisa Ravagnani, Anna Antonietti, Carlo Alberto Romano
University of Brescia - Faculty of law, Brescia, Italy

The research investigates 116 women imprisoned in Italian facilities (North, Centre and South) by asking them 64 questions in an anonymous way, concerning their life before prison under different point of view.

For this purpose the Authors used a questionnaire that has been created and administered for the first time in Oklahoma, in this way data belonging from the two Countries will be compared to find possible differences and analogies. Further administration of the same questionnaire are planned to be done in other EU and non EU Countries, as soon as the collection procedure will be completed.

One of the most important section of the research worked on the victimization of criminal women: Authors tried to investigate if women in prison have been victims of domestic violence, sexual violence or other kind of violence before coming to prison and try to discover the possible links between the victimization, the type of the committed crime and the development of some kind of drug dependence.

Demographical data and juridical data have been considered as well, as a framework for the analyzed field.

OP-049

DENTAL AGE ESTIMATION OF LIVING PERSONS: COMPARISON OF DENTAL MRI WITH CONVENTIONAL ORTHOPANTOMOGRAM

Pia Baumann[1], Thomas Widek[2], Heiko Merkens[2], Julian Boldt[3], Andreas Petrovic[4], Barbara Kirnbauer[5], Norbert Jakse[5], Eva Scheurer[1]

[1]Ludwig Boltzmann Institute for Clinical-Forensic Imaging and Medical University, Graz, Austria

[2]Ludwig Boltzmann Institute for Clinical-Forensic Imaging, Graz, Austria

[3]Department of Prosthodontics, Julius Maximilians University, Würzburg, Germany

[4]Ludwig Boltzmann Institute for Clinical-Forensic Imaging and University of Technology, Institute of Medical Engineering, Graz, Austria

[5]Department of Oral Surgery and Radiology, Medical University, Graz, Austria

INTRODUCTION: In the last years the need for forensic age estimations in living adolescents increased with migration, particularly from countries where birth dates are not reliably documented. To date, the gold standard of dental age estimation is to evaluate the mineralization and eruption stages of the third molars using an orthopantomogram (OPG). Based on published reference values, the stages are converted in an age estimate in years. However, the use of ionizing radiation without medical indication is ethically controversial and not permitted in many countries. Thus, the aim of this study was to investigate if dental MRI can be used for the assessment of dental age with equally good results as when using an OPG.

METHODS: 10 healthy volunteers (9♀, 1♂, age 20±2.6 years, range 14.5–22.5y) with at least two present third molars underwent an MRI scan of the jaw within 14 days after a clinically indicated OPG. The examinations were performed on a 3 T Magnetom scanner (TimTrio, Siemens AG, Erlangen, Germany) using an 8-channel receive–only CPC coil (Noras MRI products GmbH, Hoechberg, Germany). The protocol consisted of a 3D TSE and a 3D CISS sequence. Mineralization and eruption stages of the molars were independently analyzed on OPGs and MR images by two blinded dentists according to the staging system established by Demirjan and Mincer. Pooled data were used to correlate the results and linear regression was performed. Cohen's Kappa was determined to assess inter-rater agreement.

RESULTS: After the exclusion of single teeth due to technical reasons, 112 molars were evaluated in the OPGs and 110 M in the MRI data. The developmental stages could well be differentiated in MRI. The stages found in the OPGs correlated linearly with those in MRI. While mineralization in MRI tended to be associated with stages up to 2 stages higher than in the OPG (linear regression: $y=0.7\times+2.3$, $R=0.87$), eruption showed an almost perfect correlation between both methods ($y=0.99\times+0.01$, $R=0.95$). Inter-rater agreement was moderate for mineralization (OPG $\kappa=0.47$, MRI $\kappa=0.53$) and good regarding eruption (OPG $\kappa=0.72$, MRI $\kappa=0.61$).

CONCLUSION: The comparison of dental MRI with the OPG demonstrates that there is a relatively good correlation between both imaging methods. Reasons for the observed differences for mineralization might be that there exist more stages for mineralization than for eruption. Although more data is needed for statistical validation, these results could be the first step towards a replacement of the OPG by MRI.

OP-050

THE ROLE OF AIR AS A CONTRAST MEDIUM FOR POST-MORTEM COMPUTED TOMOGRAPHY ANGIOGRAPHY

Guy Rutty[1], Jade Barber[1], Vimal Raj[2], Jasmin Amorosa[1], Claire Robinson[2], Bruno Morgan[2]

[1]East Midlands Forensic Pathology Unit, University of Leicester, Robert Kilpatrick Building, Leicester, LE2 7LX, UK

[2]Imaging Department, University Hospitals of Leicester, Leicester Royal Infirmary, Leicester, LE2 7LX, UK

It has been realised by practitioners and researchers alike that post-mortem angiography is an essential tool in cross sectional imaging of the dead. Currently, three methods are described within the literature, the choice of use depending upon religious and cultural beliefs and the primary purpose of the examination, for example the identification of a post operative vascular leak verses the examination of coronary artery pathology. All three methods utilise positive contrast, either water or lipid based. Only the targeted system described by Saunders et al. uses air as a negative contrast in addition to positive contrast.

We have undertaken over 200 targeted post-mortem computed tomography angiography (PMCT-A) research scans to date as part of an on going grant funded research program using both manual and automated systems. Air was used as a negative contrast medium. Each case has a full autopsy performed on the following day. In addition to this we have used our own system of whole body angiography with both positive and negative contrast mediums.

This talk will introduce the audience to the use and importance of air as a contrast medium for PMCT-A. It will illustrate how the vasculature of the body can be demonstrated by use of air with whole body systems and the coronary arteries with targeted systems. It will also however demonstrate the downside of air when used with whole body angiography, question its use in the investigation of vascular trauma and demonstrate how the external appearance of the body can be altered by use of such medium whereas internally air does not have an effect on the organs or pathology present. The talk will also discuss that air when used with a targeted approach does not affect subsequent toxicology, biochemistry, immunology or microbiology investigations.

Overall, in the correct context, air is a powerful contrast medium for use with PMCT-A. When used in the context of

targeted PMCT-A it has advantages over traditional positive contrast medium, has no associated cost, is freely available, can be used with manual and automated systems and demonstrates vascular pathology equally if not at times better than traditional coronary artery dissection.

OP-051

CAN TARGETED ANGIOGRAPHY ASSISTED POST-MORTEM COMPUTED TOMOGRAPHY REPLACE THE NEED FOR AN INVASIVE AUTOPSY EXAMINATION?

Guy Rutty[1], Sarah Saunders[1], Vimal Raj[2], Angus Mcgregor[3], Kevin West[3], Catherine Richards[3], Laurence Brown[3], Roger Hew[3], Rebecca Harrison[3], Amanda Jeffery[4], Theresa Visser[1], Jasmin Amorosa[1]

[1]East Midlands Forensic Pathology Unit, University of Leicester, Robert Kilpatrick Building, Leicester, LE2 7LX, UK

[2]Imaging Department, University Hospitals of Leicester, Leicester Royal Infirmary, Leicester, LE2 7LX, UK

[3]Cellular Pathology, University Hospitals of Leicester, Leicester Royal Infirmary, Leicester, LE27LX, UK

[4]Home Office Forensic Pathologist, PO BOX 1147, Winscombe, BA25 9AF, UK

We present data from our ongoing grant-funded research study considering the role of targeted cardiac post-mortem computed tomography (PMCT) angiography. The study ultimately aims to evaluate if targeted PMCT cardiac angiography can provide sufficient cardiac information to assist in deriving a cause of death (COD) for natural and un-natural, non suspicious or homicide deaths without the necessity to undertake an invasive autopsy. To date 200 cases have undergone targeted PMCT-A as described by Saunders et al. with subsequent autopsy examination.

The study is split into sections to consider specific questions, for example the effect of PMCT-A on toxicology, the use of air as a contrast medium or issues related to methodology design. For this talk we present the findings of the section assessing 25 cases designed to build upon the previous publication of Jeffery et al. who considered whether the substitution of the PMCT report for the autopsy internal examination was sufficient, in forensic cases, to enable the pathologist to complete the report and provide a COD without need for an invasive examination.

The clinical history, external autopsy examination, PMCT-A report, and relevant laboratory investigations were provided to three groups of independent, blinded reviewers from pathological and radiological backgrounds. For this part of the study they were asked to provide a COD based on the information provided to them. The purpose was to compare this to the autopsy findings and the final autopsy report, not to evaluate whether PMCT-A provides equivalent information to an invasive autopsy as this part of the study is completed and forms the basis of another presentation.

We show that by using PMCT-A in conjunction with an external examination, clinical history and available laboratory tests, a COD was proffered in between 76 and 100 % (reviewer dependent) of the cases. Where a COD was offered, between 10 and 14 % were discrepant with that of the autopsy report. This suggests that, even allowing for a reduced comparable rate when the larger data set analysis is completed later in the year, it can be predicted that in the future a "view, scan and grant" protocol utilising targeted PMCT-A could be used to replace a significant number of non-forensic, medico-legal autopsies. Similar results are predicted with whole body PMCT-A assuming comparable coronary artery imaging is achieved. This part of the study shows a higher degree of COD prediction with the use of PMCT-A than previous studies who have used PMCT without angiography.

OP-052

CONTRAST OF ARTIFICIAL SUBCUTANEOUS HEMATOMAS IN DIFFERENT MRI SEQUENCES OVER TIME

Eva Maria Hassler[1], Andreas Petrovic[3], Thomas Widek[2], Kathrin Ogris[1], Eva Scheurer[1]

[1]Ludwig Boltzmann Institute for Clinical Forensic Imaging, Medical University Graz, Austria

[2]Ludwig Boltzmann Institute for Clinical Forensic Imaging, Graz, Austria

[3]Ludwig Boltzmann Institute for Clinical Forensic Imaging, Institute for Medical Engineering, University of Technology Graz, Austria

INTRODUCTION: In clinical forensic medicine hematomas and other externally visible injuries are used for the reconstruction of events. However, dating of hematomas based on their external aspect is difficult. In intracranial hemorrhage MR imaging (MRI) has shown to be able to classify the time of hemorrhage according to its MR properties. Thus, the aim of this study was to use different MRI sequences to measure contrast changes in subcutaneous hematomas over time regarding their time of origin.

MATERIALS AND METHODS: In 10 volunteers (5 females, 5 males, age 25.1±3.9) 4 ml of own blood were injected into the subcutaneous tissue of the thigh. The artificial hematoma was scanned directly after the injection and after 3 h, 24 h, 3d, 7d, and 14d. All measurements were performed on a 3 T Magnetom scanner (Siemens, Erlangen) with a protocol consisting of 5 sequences with different tissue contrast behaviour. Data was analyzed by measuring signal intensities in the hematoma, the muscle and the subcutaneous tissue using three sequences (PDw FS, TIR, T2w FS) at 6 time points, and the Michelson contrast coefficients for blood versus fatty tissue and blood versus muscle tissue were calculated.

RESULTS: The signal intensity of the hematoma reached its maximum 3 h after the injection with a subsequent decrease, whereas the signal intensities of musculature and fatty tissue stayed constant throughout the entire examination time of 2 weeks. The time course of the Michelson coefficients in PDw FS showed an initial plateau of about 24 h prior to slowly decreasing. After 1 week, the contrast between blood and muscle tissue completely disappeared. The PDw FS sequence yielded the highest contrast between blood and fatty tissue whereas in the TIR both contrast coefficients were similar. Both decreased, particularly after 72 h, and showed a large variability. In the T2w sequence the coefficients stayed practically unchanged

DISCUSSION and CONCLUSION: The results showed clear contrast changes of artificial subcutaneous hematomas over a period of 2 weeks. The highest contrast was observed within the first 24 h. This leads to the conclusion that MR imaging for the detection and dating of subcutaneous lesions should be performed as soon as possible. Of the evaluated sequences PDw FS showed to be the most suitable for the characterization of subcutaneous hematomas. Although we suppose that the optimization of sequences will further enhance the detection and characterization of subcutaneous hemorrhage, this study already provides information which can be implemented in forensic practice.

OP-053

VALUE OF MINIMALLY INVASIVE, POSTMORTEM CT ANGIOGRAPHY IN DETERMINING CAUSES OF SPONTANEOUS HEMOPERICARDIUM

Sarah Parsons, Chris O'donnell
Victorian Institute of Forensic Medicine

INTRODUCTION: With few exceptions, all deceased persons admitted to our Institute since 2005 have been CT scanned. Whole body postmortem CT angiography (PMCTA) was introduced in 2010 as a tool for the investigation of fatal hemorrhage. This presentation will examine the capacity of our PMCTA technique to adequately fill the aorta and left ventricle, and its ability to demonstrate sites of rupture in hemopericardium.
METHODS: All PMCTA case files, preliminary and angiographic CT images were reviewed. Candidate cases for PMCTA are selected on the basis of circumstances and preliminary CT findings. Full autopsies are performed were possible. PMCTA scans were assessed to determine the degree of ascending aortic and left ventricle filling. Cases of hemopericardium were then studied to determine the underlying cause and degree of contrast leak into the pericardial sac.
RESULTS: 60 PMCTA studies were performed with autopsy correlation in 48. Adequate left ventricle filling was identified in the majority of cases. 8 cases of hemopericardium were identified. In 6 of these a cause/site of rupture was identified, i.e., 3 cases of left ventricular rupture and 3 of thoracic aortic dissection. All were confirmed at autopsy. In 1 case a malignant hemorrhagic effusion was identified and in one case of left ventricular rupture, no leak was identified on PMCTA due to inadequate filling of the left ventricle.
DISCUSSION: Hemopericardium is easily detected on postmortem CT imaging. In the vast majority of cases filling of the aorta and left ventricle is achieved on arterial phase PMCTA. When the left ventricle is adequately filled with contrast, the site of rupture is readily detected on PMCTA whether it is the ascending aorta or left ventricle.

In situations where a family has requested that no autopsy be performed, as allowed by the Victorian Coroners Act 2009, minimally invasive PMCTA provides a means by which a cause of death may be determined albeit without macroscopic and histological confirmation.
CONCLUSION: Our technique of arterial phase PMCTA adequately fills the aorta and left ventricle in the vast majority of cases allowing determination of rupture point in cases of spontaneous hemopericardium due to left ventricle rupture or aortic dissection. In concert with routine postmortem CT imaging it is particularly useful in determining cause of death when families object to autopsy.

OP-054

FACIAL IMAGE COMPARISON COMBINED WITH IMAGE COMPARISON OF HANDS AND OTHER BODY PARTS

Zeno Jean Geradts Phd[1], Arnout Ruifrok Phd[1], Bernice Oude Grotebevelsborg Md[2]
[1]Department of Digital Technology and Biometrics, Netherlands Forensic Institute
[2]Department of Forensic Medicine, Netherlands Forensic Institute

In forensic image analysis often the question is asked if the person on a certain image (e.g. from CCTV, documents, child porn) is the same as the suspect. Sometimes, only a part of a body is visible, so the question is asked to compare parts of a body with the suspect.
METHOD: The method that we use for comparison of objects and of humans is to position the person or object in the same position as the questioned image. If the camera system is not available, a 3D image will be made of the person, such that the 3D image can be positioned in the same way. For facial comparison, there is a methodology for comparison which is used in different scenes. For other parts of the body, such as hands publications are known. For other parts of the body such as abdomen, genitals there is no structured approach known to the authors, however similar methods can be used.
RESULTS: In casework we worked on different features of the body, where also the skin characteristics as well as the shapes are used. The reference images of the body are taken with a forensic physician. During the comparison different features are compared manually where the investigator will provide information on:

Apparent similarities and differences are further evaluated by classifying features as:
1. WD. Weakly discriminating, e.g. shape and size of body parts
2. MD. Moderately discriminating, e.g. lines and position of veins
3. SD. Strongly discriminating, e.g. the shape and position of a scar or pigmentation.

The comparison should preferably be performed by three independent investigators. The lists are combined after careful deliberation of the investigators into the list of observations added to the report. The list of observations can be used to check the reported comparison results and conclusions.
CONCLUSION: There is a need to have an automated comparison and a more statistical approach for this kind of research. Large databases with standardized image material could be helpful to have a Bayesian approach in this biometric comparison. Since it is not solved yet for facial comparison, it is expected that in the mean time the visual comparison based on features and describing the differences and the similarities will be an important approach for this kind of examination.

OP-055

SEXUAL DIMORPHISMS OF THE SHAPE AND MEASUREMENTS OF FORAMEN MAGNUM BY 128-SLICES CT SCAN AMONG THE INDONESIAN POPULATION

Mahendro Aji Panuntun, Jacub Pandelaki, Djaja Surya Atmadja, Joedo Prihartono
Department of Radiology, Faculty of Medicine University of Indonesia, Indonesia

BACKGROUND: The sexual dimorphisms on the adult skeleton has been recognized, and widely used for forensic personal identification. The use of high-tech imaging methods, such as multi-slice Computed Tomography scan (CT scan) has changed the forensic practice for its fast and accurate results. Foramen magnum plays important role in personal identification, because it usually persisted in the case of burn, skeletonized remains, long burial remains, or even mutilation cases. However, the information about the sexual dimorphisms of foramen magnum are only a few in the literatures and in Indonesian population the reference values of foramen magnum calculated by digital imaging is not existed up to now. The objective of this study is to find the CT scan reference value of the shape and measurement of foramen

magnum among the Indonesian population and to evaluate whether they show the sexual dimorphisms or not.
METHODS: As many as 98 patients (49 males and 49 females), aged 16–40 years old (44.5+16.8 years old) who had underwent 128 slices CT scan on the skull and neck were included in this study. The anteroposterior diameter, transverse diameter and wide of FM were measured and the shape of foramen magnum was also determined. The data between male and female were compared to find the statistical differences.
RESULT: Foramen magnum with the shape of tetragonal was the most common among the Indonesian male (40.8 %), meanwhile the shape of hexagonal (28.6 %) was the most common among the Indonesian female. This study showed that there were sexual dimorphisms on (1) the anteroposterior diameter (3,6±0,3 cm in males vs 3,4±0,2 cm in females), (2) the transverse diameter (3,1±0,3 cm in male vs 3,0± 0,3 cm in female), and (3) the surface area (7,9±1,2 cm2 in male vs 7,4±1,0 cm2 in female). This study also showed that the irregularity of the foramen magnum border was the same between male and female (did not show sexual dimorphisms)
CONCLUSION: Foramen magnum examined by 128 slices CT scan showed sexual dimorphisms on its antero-posterior diameter, transversal diameter as well as the surface area among Indonesian population.

OP-056

MICRO-CT ANALYSIS OF GUNSHOT RESIDUE IN FIREARM WOUNDS DAMAGED BY FIRE

Paolo Fais[1], Chiara Giraudo[2], Rafael Boscolo Berto[1], Alessandro Amagliani[1], Diego Miotto[2], Guido Viel[1], Giovanni Cecchetto[1]
[1]Department of Molecular Medicine, Section of Legal Medicine, University of Padova, Padova, Italy
[2]Institute of Radiology, University of Padova, Padova, Italy

BACKGROUND: A review of the literature reveals many cases involving gunshot wounds altered by fire. The burning process can cause severe morphostructural changes (such as splits, shrinkage, crumbling) that are capable of altering or obscuring gunshot residue evidence and of producing post-mortem heat lesions on the skin, similar to gunshot wounds.
Aim of the study.

The present study is aimed at evaluating and comparing the amount and differential distribution of gunshot residue (GSR) through the analysis of unburned and burned gunshot wounds, performed with a microcomputed tomography (Micro-CT) technique.
MATERIALS AND METHODS: Thirty-six experimental shootings at three different firing distances (5,15 and 30 cm) and 12 stab wounds, produced by a pointed instrument, were inflicted on human calves. Twenty-four specimens (6 for each tested distance and 6 for the stab wounds) were formalin-fixed, while the other were placed inside a wood-burning stove (4 min, 400 °C), before formalin fixation. Each entrance and exit wound was sampled, cutting a parallelepiped specimen (1×1×2,5 cm) of epidermis, dermis and subcutaneous fat, surrounding and including the substance defect. All specimens were scanned using a Skyscan 1172 High Resolution Micro-CT, analyzing only particles with a density higher than 1000 HU, assumed to be GSR. Each sample was stained with hematoxylin–eosin and examined with a Leica DM-4000B optical microscope. Statistical analyses were performed using a two-way- and a one-way-ANOVA test.
RESULTS: As the unburned samples were easily recognizable, the visual and histological investigation on the burned samples cannot distinguish the entrance gunshot wounds from the stab wounds or the exit wounds.

In the unburned specimens the Micro-CT analysis detected particles with a density higher than 1000 HU on the epidermis layer around the hole and on the dermis layer. In burned samples the GSR was detected only in the dermis layer. In burned and unburned samples GSR particles were not detected in either the stab wounds or in the exit holes. Statistical analysis reveals that GSR percentage was in inverse ratio to firing distance with a non-linear fashion and was abated after the burning process.
DISCUSSION AND CONCLUSIONS: Micro-CT is a useful screening for the study of charred wounds, capable of distinguishing gunshot entrance wounds from the exit wounds or other similar lesions. Further examinations, even in different experimental conditions (temperature, time of exposure), are necessary in order to corroborate the correlation between firing distance and GSR percentage on samples damaged by fire.

OP-057

SEM/EDX ANALYSIS OF GSR PERSISTING ON THE HANDS OF A SHOOTER FIRING A 6.35-MM PISTOL

Lino Aranda Assunção[1,2,3], Luís Fernandes[4], Daniela Silva[5], António Teixeira De Sousa[6], Agostinho Santos[1,2,3,7]
[1]National Institute of Legal Medicine and Forensic Sciences, North Branch, Porto, Portugal
[2]Faculty of Medicine of Porto University, Portugal
[3]Forensic Sciences Center - CENCIFOR, Portugal
[4]Portuguese Federation of Firearms Shooting, Portugal
[5]Materials Research Center of Porto University - CEMUP, Porto, Portugal
[6]Engineering Graduate Institute of Porto, Polytechnic Institute of Porto, Portugal
[7]Health Sciences School of the University of Minho, Braga, Portugal

BACKGROUND: Gunshot residues (GSR) are particles produced during the discharge of a firearm. Most researchers agree that the time up to which GSR may be reasonably expected to be detected on the hands of a shooter ranges between 2 and 4 h, but in no previous studies was a 6.35 mm Browning pistol used (one of the most common firearms encountered in the Portuguese setting).
METHODS: Experimental shots were fired in a controlled environment, mimicking a intermediate range shot (50 cm) and using a 6.35 mm F.N. Browning® handgun (Mod. 1906) and Speer Lawman® ammunition (Total Metal Jacket). A total of 24 shots were fired, of which 20 were taken into consideration for this study (4 other shots were fired in a preliminary study). Carbon coated stubs were used to collect samples from the hands of the shooter (one stub for the back and one for the palm, for each discharge), immediately after the firearm discharge, and then at 1, 3 and 6 h after shooting. Samples were analyzed at the Materials Research Center of the University of Porto (CEMUP), on a FEI Quanta 400FEG ESEM equipped with a EDAX Genesis X4M EDS. The automation software used was the FEI gunshot residue analysis package (GSR-Magnum®). Data were analyzed with descriptive statistics methods.
RESULTS: High variability in particle counts from shot to shot was found, whether considering both samples of the hand collected at a given post-firing interval or just the sample from a single surface (spatial distribution analysis appears to be of limited practical value). There was a clear count drop related to post-firing

sampling time, with the largest loss occurring after the first 3 h (93.7 % of all the analyzed particles were detected within this time period), which is consistent with previous published studies. Only 37.3 % of the particles were spheroid (although most authors argue that 70 % of GSR particles have this shape). Of all the particles found, 67.2 % were below 5 μm, which is consistent with previous published studies. Ba-Sb particles were the most commonly found (59.7 %), which may be explained by the jacketed ammunition used (TMJ), which reduces the Pb contribution to GSR particles.

CONCLUSION: Given the number of variables that can be accounted for in firearm discharge incidents, a case-by-case analysis, always taking into consideration the gun and ammunition used, is clearly preferable to a more formal approach (i.e. a strict analysis and interpretation protocol).

OP-058

DEATHS BY GUNSHOT WOUNDS IN KOSOVO DURING THE YEARS 2006–2011

Naim Ruzhdi Uka[1], Musa Gashi[1], Arsim Gerxhaliu[1], Flamur Blakaj[2], Naim Haliti[2]
[1]Department of Forensic Medicine of Kosovo - Justice Ministry of Kosovo
[2]Medical Faculty of Prishtina, Prishtina University

Deaths caused by gunshot wounds have very high rate in the countries that passed through armed conflicts. Kosovo, as one of these countries has received high percentage of deaths caused by gunshot wounds, immediately after the armed conflict in 1999. This study represent only some parts of large analysis done in this subject. It includes period of time from 2006 to 2011.

Gender, age, region, number of bullets, manner of the death are only some of the variables used in this study. SPSS 15.0 was used to build a database and to analyze data collected. Different statistical analyze, descriptive and conclusive analysis were used to reach results. 305 cases were analyzed. Approximately 51 deaths per year caused by gunshot wounds have been examined in Department of Forensic Medicine in Kosovo. From these data, the highest rate of death caused by gunshot performed in autopsy room were in 2010. 85 % of death cases examined were male and only 15 % female, while the group year from 26 to 55 years creates a biggest age groups examined in autopsy room.

This study shows a real discrepancy between the number of deaths caused by gunshots wounds and the number of those who are reported and examined in Department of Forensic Medicine in Kosovo.

OP-059

THE IMPORTANCE OF USING AN EXPERT IN ALL STAGES OF A PENAL TRIAL: A CASE REPORT

Serkan Turkdogru[1], Pınar Turkdogru[2], Ahsen Kaya[3], Arzu Sayin[4], Mehmet Altinok[3], Coskun Yorulmaz[3]
[1]Istanbul Bar Association, Istanbul, Turkey
[2]Istanbul University, Institute of Forensic Sciences, Istanbul, Turkey
[3]Istanbul University, Cerrahpasa Faculty of Medicine, Department of Forensic Medicine, Istanbul, Turkey
[4]Halic University, Faculty of Arts and Sciences, Department of Molecular Biology and Genetics, Istanbul, Turkey

BACKGROUND: Turkish Criminal Procedure Code, which has been changed, gives a chance to both sides of a court case to get an expert testimony about the event. Also, the experts, who prepared a scientific report, can invite to the court, so cross examination can be done. In this study, it is aimed to discuss the effectiveness of these new procedures on the basis of a case.

METHOD: A case, whose application was made to Department of Forensic Medicine for determination medico-legal findings that would help to detect the origin and this case's court procedure, was evaluated.

RESULTS: In the event that the cause of death was head injury, the suspect was arrested according to not facing gunshot residues on his and deceased's hands, long-distance shooting. Deceased's hand swabs were taken at the hospital approximately 2 h later. Suspect's hand swabs were taken immediately at the crime scene. In autopsy, shooting distance was found compatible with long-distance because of not detecting gunshot residues on her head. In camera records and photographs, there were bloodstains and an acute angle skip on the wall. Court delegations decided for a crime scene investigation (CSI) with an official expert. On demand of suspect's lawyer, private expert joined to CSI, too. Both experts analyzed the crime scene and documents in the file, so they prepared their reports. Official expert indicated it wasn't possible for that shot being a long-distance gunshot, it was a close-range shot and blood spatter pattern on the wall was extraordinary. Private expert reported that bloodstains on the wall was compatible with "Back spatter" pattern, deceased's bushy and long hair acted as a barrier and prevented gunshot residues reaching to skin, in his experimental study, it was shown that gunshot residues couldn't reach to skin, even if the shooting was from 10 cm, gunshot residues at hand swabs significantly decreased in 2-h period, as a result, suspect's expressions were in harmony with scientific data. File was sent to The Turkish Council of Forensic Medicine in order to resolve the contradictions related to shooting range, if the residues decreased or not in activities after shooting.

CONCLUSION: Scientific report and cross examination are one of the most important factors in revealing the realities during trial period. It is an opportunity that mustn't be missed for judicial quarters to evaluate cases with all aspects in the place where the scientific views are presented face to face.

OP-060

FIRE-SCENE RECONSTRUCTION AND ITS CRIMINALISTIC ASPECTS

Rajvir Pratap Sharma[1], Chinmayi Sharma[2], Amit Deshpande[3]
[1]Department of Police, Government of Karnataka, Bangalore, India
[2]NALSAR University of Law, Hyderabad
[3]Legal Profession

Fire is an agent with the ability to wreak havoc and destruction and fire scenes fall outside the ambit of a typical crime scene. The investigation and examination of the fire scene, therefore are also atypical and must be carried out in an assiduous and cautious manner.

Fire is an emergency and fire scenes may have a wide-ranging spectrum of causes from fire mischief to serious fire-related crimes. There are three facets essential to the effective tackling of any fire scene investigation.

1. Fire Management
2. Investigating the cause of the fire
3. Documentation of the evidence collected at the scene

However, more often than not fire management becomes the main focus leaving the other 2 aspects relatively unaddressed.

Fire scene management is a very complex task particularly in view of the diverging requirements of fire handlers and investigators. These can be successfully met with if fire handlers and investigators are sensitized to the handling of these requirements and develop a synergy in their approach. Such synergy can only be developed by imparting a combined cohesive training.

Any fire scene also requires a thorough and intensive investigation as compared to normal circumstances as the details to be ascertained are many. Unfortunately, a large number of these details are either lost during fire management or are diluted to the extent that they lose evidentiary value. Very often the investigator does not make an effort to isolate these evidences and thus, investigation in a large number of these fire cases is perfunctory in nature. Furthermore, a lack of appreciation for the collection and preservation of these evidences very often results in wrongful classification of these cases as mere accidents.

Another crucial aspect of any fire scene investigation is the collection of evidences and subsequent documentation. The systemisation of such documentation imperative for efficient collection and handling of evidences at a crime scene. Prompt recording of evidence at the fire scene is another aspect pivotal to the analysis of the incident along with techniques such as visual mapping of the crime scene and the maintenance of an audit of damages. Innovation in investigation methods and consultation with experts from various fields can also contribute to the successful analysis and resolution of cases.

This paper aims at developing a comprehensive methodology in dealing with fire scene investigations and is based on case studies of major fire scene cases in India.

OP-061

LIP FORENSICS FOR CRIMINAL IDENTIFICATION

Pakkirisamy Chandra Sekharan, Teresa Regina Kumari
Forensics International, Bangalore, India

A careful glimpse of the lips instantly tells us the mood of the individual. The lips are the most expressive and the most mobile, or flexible facial feature, but in its normal relaxed state, it can be described quite accurately. Since the tendency is to watch the lips of another when he or she speaks, sight recognition of the lips should have a more lasting impression and the witness will be able to describe the lips better than any other facial feature. Thus the description of lips becomes an important aspect in facial recognition and identification.

The microstructure (grooves and wrinkles) contrary to the earlier findings, are not age-sable like finger prints, neither are they 'environmental-stable'. Therefore there may be some working disadvantages when lip prints of criminals are compared after a long lapse of time with the crime prints made earlier.

Nevertheless, the macrostructure, namely, the size of the lips, the shape of the oral fissure, upper and lower vermillion borders and protrusion of lips are age stable and environmental stable. Therefore the classification system of macrostructure can be potentially used for the processes of personal appearance identification.

In fact in one of the sensational case investigated by the Q-branch police of the state of Tamil Nadu the system developed in this work has already been successfully put into use in identifying a terrorist-suspect as per the description of the lips given by the witnesses.

The technique developed is of great use for every investigating police officer as well as for every dutiful citizen. It will also inculcate the awareness of public participation in crime investigation and stress the importance of sight recognition of lips in terrorists' activities.

OP-062

CRIME AWARENESS AND SELF-ESTEEM EVALUATION IN COUNTERFEIT HANDBAGS CONSUMERS

Ayşe Selcen Güçhan[1], Gaye Özmen[1], Aykut Taner Güven[1], Ahmet Yılmaz[2]
[1]Forensic Medicine Institute, Istanbul University, Istanbul, Turkey
[2]Medicine Faculty Forensic Medicine Department, Istanbul Bilim University, Istanbul, Turkey

OBJECTIVE: The U.S. Secret Service and private corporations use several branched of forensics to detect counterfeiting. Besides money, counterfeit goods (such as handbags) comprise an illegal enterprise that is estimated to be a $600 billion a year problem. In the past two decades, counterfeiting, in part fueled by consumer demand, has grown over 10,000 %. Approximately 5 %–7 % of the world trade is in counterfeit goods. According to international laws, producing and selling counterfeit goods is illegal but not using them. In this research, we aimed to determine the brand and counterfeit awareness of consumers and self-esteem level in consumers of counterfeit handbags.
METHOD: We formed one test group (n: 15) among buyers of counterfeit handbags (some of them busted buying counterfeit handbags in shops) and applied Coopersmith Self-Esteem Inventory (CSEI) to evaluate their self-esteem. The control group (n: 15) was formed among authentic handbags buyers and was subjected to the same Inventory. Both groups were questioned about the illegal side of counterfeiting and about the brand awareness. All data gathered were calculated with SPSS 17.00 statistic program. We have an ongoing research on 384 participants to evaluate the orientation that drives them to choose authentic or counterfeit handbags.
RESULTS: We have found that buyers prefer counterfeit bags because it's cheap (53,3) and there's no difference between the authentic one (46,7 %). 92,9 % of the control group know that "it's not a crime to use a counterfeit bag" whereas 75 % of the test group assume that "it's a crime". They all (n:30) know when they buy a counterfeit and know the brand of the handbag. 6,7 % of the test group has low self-esteem score in Coopersmith Self-Esteem Inventory, 13,4 % has medium level. Whereas only 6,7 % of the control group has medium level self esteem score, 93,3 % has high self-esteem score.
CONCLUSIONS: Producing replica/knock-off/counterfeit goods is illegal but buying a counterfeit handbag falls into a grey area of the law because it's legal. A New York City Councilor is trying to make illegal to buy replica in the popular Chinatown shops that are renowned for counterfeit. We have concluded that buying a counterfeit doesn't strictly relate with low education, low income and low self-esteem level. Wearing counterfeit can cause people to feel inauthentic but both group just complain of the high pricing of authentic. Adjusting the price of the authentic can help more to reduce problem than making illegal buying counterfeit.

OP-063

THE PERCEPTION AND THE INTERPRETATION OF HATE CRIMES IN TURKEY

Serra Tekin[1], Dilek Çelik[2]
[1]Department of Psychology, Maltepe University, Istanbul
[2]Institute of Forensic Sciences, Istanbul University, Istanbul

OBJECTIVE: "Hate crime" is a term which is used to describe the aggression and violence directed to certain social groups. Such crimes have an impact on the society as the offenders deliver a message of

hostility and fear and this diffusion is what distinguishes hate crimes from others. Even though crimes committed with prejudiced motives have recently attracted attention; the definition and the characteristics of them are still not well-known by the society. The current study aims to investigate individuals' perception of hate crimes in Turkey.

METHOD: In order to assess the perception of seriousness, level of violence, offender and victim acquaintance, the responsibility to report to the authorities and the offenders' group (i.e. majority or minority), an online survey was conducted (n=814, 518 female, 296 male, mean age: 30.41). The survey consisted of fictional scenarios of hate crimes with different level of violence and offender-victim status. Participants were asked to rate the seriousness of the scenarios, determine whether the incidents fit the definition of hate crimes and responded to questions about their opinions on hate crime legislation.

RESULTS: Our results demonstrate that individuals perceive crimes as more serious when the level of violence increases and therefore are more likely to report the violent incidents to the authorities. On the other hand, when the incidents did not have any physical violence as in aggravated assault or homicide, they were less likely to be identified as a hate crime. Prior contact of the offender and the victim appears to be another factor in determining the incident as a hate crime. The results suggest that the nature of hate crimes is still not well-known and legislation is required in order to raise more awareness.

OP-064

EPIDEMIOLOGY OF COMPLETED SUICIDES ON THE ISLAND OF CRETE, GREECE, 1999–2010

Anastasia E. Kastanaki[1], Elena F. Kranioti[2], Pavlos N. Theodorakis[3], Maria S. Madentzoglou[4], Manolis Michalodimitrakis[4]
[1]State Mental Health Hospital of Chania, Crete, Greece
[2]Department of Archaeology, University of Edinburgh, Scotland
[3]Open University of Cyprus, Nicosia, Cyprus
[4]Department of Forensic Sciences, Faculty of Medicine, University of Crete, Greece

INTRODUCTION/BACKGROUND: Previous research on suicide has revealed that suicide rates and patterns differ between the geographic divisions of Greece. Within this framework, the goals of the current study were to investigate the epidemiological characteristics of completed suicides on the island of Crete, Greece, and to identify and suggest probable preventive measures to address this public health problem.

MATERIALS AND METHODS: A retrospective study was undertaken, reviewing all suicide cases (n=502) in the region from January 1, 1999 to December 31, 2010. Data on suicide was collected from the Department of Forensic Sciences of the Faculty of Medicine of the University of Crete, and the Department of Justice for the region. Yearly and mean gender- and age-/method-specific suicide rates were calculated per 100,000 of the population. Male and female suicide rates were age-standardized on the world standard population.

RESULTS: There was no significant difference in the frequency of suicide deaths over the 12-year period (Goodness of fit $\times 2$=17.63, df=11, p=0.090); suicides had a maximum value of 61 in the year 2000 and a minimum value of 28 in the year 2004. The overall age-standardized suicide rate ranged between 6.6 per 100,000 in 1999 and 4.5 per 100,000 in 2010, with mean incidence of 5.9. Males (n=399; 79.5 %) outnumbered females (n=103; 20.5 %), and the male to female ratio was 3.9:1. The mean and the range age of the male suicide victims were 51.1±19.5 and 13–96, whereas for the females were 54.4±18.9 and 17–94, respectively. There was no significant difference in age distribution of the suicide victims between males and females (p=0.262). A gradual rise of the suicide incidence was evident with increasing age in both sexes, but the increase was more prominent in males. Hanging ranked first in terms of method preferred for both genders. Next in frequency were firearms in males, and self-poisoning (primarily intentional poisoning with pesticides) in females.

DISCUSSION: We estimated that in the Cretan region, comprising 5.5 % of the Greek population, the age-standardized suicide rate for the period under study (1999–2010) was 5.9 per 100,000 of the population, which is the highest so far reported among other Greek regions, higher even than the respective rate for continental Greece during the last semi-centennial. However, this discrepancy should be interpreted with caution, since differences among geographic regions on the availability and accessibility of lethal means may as well result to marked geographic variations in suicide rates.

OP-065

THE CAUSES, CONSEQUENCES AND SOLUTION SUGGESTIONS OF LACKING MOTIVATION AMONG FORENSIC SCIENCE WORKERS

Ibrahim Avci[1], Ipek Esen Melez[2], Deniz Oguzhan Melez[2], Fatma Suheyla Aliustaoglu[2], Gulsum Nurhan Ince[3], Cengiz Haluk Ince[2]
[1]The Ministry of Interior Civil Inspection Board, Ankara, Turkey
[2]The Ministry of Justice Council of Forensic Medicine, Istanbul, Turkey
[3]Department of Public Health, Istanbul Medical Faculty, Istanbul University, Istanbul, Turkey

Expert witness, either individually or institutionally, means to fulfill the duty of helping the court/judge/prosecutor by expressing scientific and technical opinions on topics which require expertise when needed by the judge during a trial. The expert defines the evidences that help to prove the claims scientifically, prepares the explicit technical and/or scientific reports for the court in the light of these evidences and presents these reports to the discretion of the court. The Council of Forensic Medicine (CFM) serves as an official scientific expertise institution in Turkey. Besides serving the justice system, CFM also raises the necessary labor force required in the field of forensic sciences. The aim of the study was to examine the loss of motivation and the future anxiety among the forensic science workers, to define the problems and to develop potential solution suggestions. The current study was conducted in 2009 among 222 CFM workers (specialist physicians, residents and the non-physician forensic science experts) filling a structured questionnaire with face-to-face conversation technique. A five-point Likert Scale was used for the propositional statements. The data was defined as percentages, mean and median values and were analyzed with a chi-square test.

The following response was selected by 25.5 % of the participants: "The forensic medicine resident physicians select this specialty knowingly and willingly". Among the residents, 87.2 % complained of inadequacy in their education due to the busy workload. The forensic medicine residents (89.4 % of participants) were in the belief that "they do the work that normally should be done by the auxiliary staff". The percentages of the participants who were in the belief that nonmedical fields have been ignored in CFM were as follows: 36.2 % of the forensic medicine specialists, 50 % of other physicians, and 92.7 % of the non-physician forensic science experts.

In conclusion, trying to increase their work enthusiasm by giving professional support after reviewing the work and social conditions of the forensic science workers will make contribution to fast and accurate delivery of the expertise service needed during trials.

OP-066

RESEARCH QUALITY IN FORENSIC MEDICINE AND TOXICOLOGY: PRESENT SITUATION AND FUTURE CHALLENGES IN EGYPT

Ibrahim Sadik Elgendy
Forensic Medicine and Toxicology Department, Faculty of Medicine Benha University, Egypt

BACKGROUND: In Egypt, forensic medicine has been undergoing a steady decline in academic status and the research output of forensic medicine and toxicology has been regarded as insufficient and as of poor quality in the last years. Case histories make up a great part of publications in forensic medicine, especially forensic pathology, but their treatment by Egyptian researchers is insufficient and some journals exclude them from publication. In forensic medicine research mainly means applied research.
AIM: To explore research tasks and study types in forensic medicine and toxicology in Egyptian Universities, to stimulate forensic medicine departments to develop quality research.
MATERIAL AND METHODS: A survey of Egyptian publications on forensic medicine and toxicology of Medicine Faculties submitted to the scientific promotion committee from 1\3\2009 to 28\2\2010 was performed.
RESULTS: Twenty researchers from 12 universities submitted their researches. The total publications were 167; 60 on forensic medicine mostly (38 %) on anthropology and 107 on toxicology mostly (74 %) on toxicological and prophylactic effects on experimental animals. Research in post-mortem (00 %), analytical (8.5 %) and clinical toxicology (4.7 %), applied forensic research regarding findings in cadavers (1.6 %), the probative value, intersection between medicine and law, stain analysis, as well as comparison and validation of methods are not or poorly addressed. The only case history on forensic medicine was not from the fieldwork; it was from a hospital. Only three publications were published internationally and one regionally.
CONCLUSION: Unfortunately, the research of forensic medicine and toxicology in Egypt is of poor quality; either from lack of resources or because of the separation of those who practice forensic medicine from those who profess to teach it in universities. So there is no fieldwork and the system is deficient. It is impossible to perform a quality research unless one has continuing practical experience of the subject. To give future to forensic medicine as an academic discipline, research must be given priority over routine casework and quality aspects have to be considered. Case histories should be the basis for systematic or hypothesis based research; their role in forensic medicine fields is mainly the augmentation of experience based knowledge.

OP-067

INSTITUTIONS OF FORENSIC MEDICINE AND SCIENCES IN LATVIA

Ojars Teteris
Riga Stradin's University, Latvia

Scientific forensic investigations in Latvia mostly are implemented in State Forensic Science Bureau at Ministry of Justice, Forensic Service Department at Ministry of the Interior and Latvian State Centre for Forensic Medical Examination at Ministry of Health. All the mentioned institutions also provide scientific and educational function by preparing the new forensic experts and by rising qualification. For the provision of quality of investigations there is determined conformity of these institutions, laboratories and equipment (study methods) to the quality standards, which is approved by Forensic Expert Council, Ministry of Justice. Forensic Expert Council certify forensic experts of various branches once in 5 years by making requirements on practical, scientific, pedagogical activities and rising of qualification during the mentioned period which is estimated in credit scores. The Forensic Expert Council keeps also state register of all the active forensic experts.

Rights of Forensic medical expert to carry out forensic expertise is stated by certificate of medical person, certificate issued by Latvian Medical Association in specialty of forensic medicine expert after graduation of 3-year residency and certificate issued by Forensic Expert Council according to the previous two certificates. In case of primary certification besides examination of knowledge and practical skills in particular branch of forensic science the Forensic Expert Council makes also examination on knowledge in legal issues.

Professional activities and rights to make forensic expertise, order of certification and re-certification, responsibility of experts and annulations of certificate, social guarantees of forensic scientific institutions as well as of separate state and private forensic experts are stated by Law on Forensic Experts. The Law also states composition and activities of Forensic expert council. Actions of forensic experts in legal procedures are also regulated by Criminal Procedure Law, by Civil Procedure Law and Administrative Procedure Law. Activities of institutions are harmonised with suggestions promoted by ENFSI, EU Forensic Medical Council regarding quality standards of laboratories, autopsy rules and education. Action with separate objects of expertise, for example, for the dead persons, is stated by law "On the protection of the Body of Deceased Human Beings and the Use of Human Tissues and Organs in Medicine". Activities of forensic experts are stated by ethical codes for forensic experts as well as for forensic medical experts.

During the last years in the Baltic States can be noticed tendency to combine forensic scientific centres for the acceleration of investigations and for making them more economical.

OP-068

MALPRACTICE AS A THREAT FACING THE FORENSIC INSTITUTIONS' INTEGRITY: VIEWS FROM THE FIELD

Hasan Büker
Turkish National Police Academy

BACKGROUND: Forensic science has become a gold standard for the criminal and justice systems. Several intentional misleading and unintentional erroneous examination reports bring the issue of malpractice in these institutions to the public attention. These malpractices of forensic experts can easily deceive the courts and cause wrongful convictions. It is, therefore, extremely vital to identify the root causes and figure out effective prevention strategies of these problems. This study intends to make contributions in this regard.
METHOD: Following a qualitative methodology, in this research study semi-structured, in-depth interviews were conducted with 28 forensic experts. Their reactions to the examples of notorious malpractice cases, views on the causes and suggestions to prevent these cases were asked in a by-one-by interview setting. The transcripts of the interviews were analyzed with axial and open coding strategies to figure out the patterns. Based on the patterns, a general theoretical development was made in order to point out specific policy options to maintain integrity of examinations conducted in these labs.

RESULTS: The interview data indicated that the occurrence of malpractice cases are resulted from multiple factors embedded both in and around the forensic institutions. First set of factors were from the organizational environment like the courts and law enforcement agencies. Second set of factors were within the organization itself. In this regard, participants indicated the failures of the individual forensic examiners (active failures), failures in the management strategies of these organizations (latent failures) and the failures of ineffective checks and balances.
CONCLUSION: This research indicates that the malpractice in forensic institutions is far more complicated than individual breakdowns of forensic experts. An effective prevention strategy, hence, should maintain a holistic perspective which should; a) consider defeating negative effects of external organizations' surrounding forensic institutions, b) decreasing active failures of forensic examiners, c) removing managerial deficiencies (latent failures), and d) strengthening quality assurance mechanisms (checks and balances).

OP-069

FACIAL SOFT TISSUE THICKNESS OF COLOMBIAN ADULT POPULATION USING CONE BEAM TOMOGRAPHY

Nestor Alonso Perlaza
Department of Morphology, Universidad del Valle, Cali, Colombia

The facial reconstruction is a wide technique used by the Forensic Science for the identification of human bone remains and for that it is necessary the knowledge of the facial soft tissue thickness values, characteristic for each population group. In Colombia, there are no conclusive values about the facial soft tissue thickness of mixed racial origin that also consider the nutritional state. For this study images of 30 individuals alive of both sexes, 26 males and 4 females were used with a range between 18 to 35 years old, obtained by means of tomography cone beam from a mixed-race population from the city of Cali (Colombia) taken in a seated position and with 0.3 mm of resolution.

The stature and weight of all individuals were determined and their body mass index (BMI) calculated. Seventeen facial thicknesses were measured over the respective anatomical landmarks of the skull. It was found that there is no significant difference associated with the sex in the majority of the craniometric points. However, for the ones who were submitted, mainly were placed on the craniometric points of the midline and particularly with a greater value on men. Differences were noticed on the thickness for the Colombian population at the time these were compared with other studies. The facial soft tissue thickness values characterize the mixed racial origin of the Colombian population and they let a major approximation to the facial reconstruction with forensic purposes.

OP-070

HUMAN DECOMPOSITION IN FIVE DIFFERENT CONDITIONS IN WESTERN CROATIA – A RETROSPECTIVE STUDY WITH SPECIAL EMPHASIS ON MUMMIFICATION AND SKELETONIZATION

Anja Petaros, Dijana Begonja, Morana Cengija, Ivan Sosa, Alan Bosnar
Department of Forensic Medicine and Criminalistics, Rijeka University School of Medicine, Rijeka, Croatia

BACKGROUND: Human decomposition and taphonomy make an important research area within forensic anthropology and pathology. Given that prospective studies on humans are limited to a number of research facilities in the USA, most of the published papers are still based on animal models. However, studies have confirmed the usefulness of retrospective data in understanding human decomposition.
AIM: The aim of this study was to identify the differences and characteristics of human decay in western Croatia in five different conditions: (1) cadavers found in outdoor and (2) indoor settings, (3) those recovered from water, (4) hanging victims and (5) buried corpses.
MATERIAL AND METHODS: Autopsy reports of 178 decomposed bodies were gathered from the archival sources of the Department of Forensic Medicine and Criminalistics, Rijeka, Croatia. Five different conditions from which the bodies have been retrieved, were analyzed with regards to the approximate postmortem interval (1st week/1st month/1–6 months/>6 months), decomposition stage (initial and advanced late postmortem changes, partial skeletonization/mummification, complete skeletonization/mummification, adipocere formation) and season. A special emphasis was given to the rate and characteristics of skeletonization and mummification in the sample.
RESULTS AND CONCLUSION: Of the 178 cases analyzed, 69 were found in enclosed settings, 49 outdoors, 22 in water, while 28 were hanging victims and 10 buried cadavers. The postmortem interval ranged from 3 days to 21 months. The decomposition stages were significantly correlated with postmortem interval (with slight variations between the analyzed conditions). The major differences observed between the five conditions were related to decomposition rates and stages. Cadavers recovered from ground and water expectedly exhibited slower decay rates, while hanging victims had significantly higher frequency of complete mummification in comparison to other categories. Partial mummification was noted also in victims from outdoor (35 %) and indoor (21 %) settings, but only hanging victims and a minor number of outdoor victims showed mummification of the whole body. Skeletonization was most often observed in victims retrieved from outdoor settings (48 %), followed by hanging victims (29 %). Differences in mummification/skeletonization rates were observed also between cadavers from indoor and outdoor settings. Although saponification was present in cadavers retrieved from outdoor settings (21 %), ground (10 %) and water (28 %), complete saponification of the body was observed only in the last two.

These results confirmed the influence of postmortem interval and decomposition condition on human decay. Some of the observed differences can be attributed to the climatic peculiarities of the studied region.

OP-071

MORPHOLOGICAL EXAMINATION OF PHOTOGRAPHS FOR ESTABLISHING IDENTITY

Sashi Bhatia[1], P. K. Chattopadhyay[2]
[1]Department of Anthropology, Lucknow University, Lucknow, U.P. India
[2]Amity Institute of Forensic Science, Amity University, NOIDA, U.P., India

Photographs of 200 individuals, all adults, belonging to two endogamous caste groups (Kayasthas and Brahmins) have been examined morphologically for establishing identity. Since the direct measurements on photographs are liable to change because of their size

differences, indices of measurements have been compared. A close similarity in the indices between a set of two photographs indicates that they most likely belong to a particular individual while dissimilarity means they are from different individuals.

OP-072

FACIAL SOFT TISSUE THICKNESS OF COLOMBIAN ADULTS

Nestor Alonso Perlaza
Department of Morphology, Universidad del Valle, Cali, Colombia

The facial reconstruction is a wide technique used by the Forensic Science for the identification of human bone remains and for that it is necessary the knowledge of the facial soft tissue thickness values, characteristic for each population group. In Colombia, there are no conclusive values about the facial soft tissue thickness of mixed racial origin that also consider the nutritional state. For this study images of 30 individuals alive of both sexes, 26 males and 4 females were used with a range between 18 and 35 years old, obtained by means of tomography cone beam from a mixed-race population from the city of Cali (Colombia) taken in a seated position and with 0.3 mm of resolution. The stature and weight of all individuals were determined and their body mass index (BMI) calculated. Seventeen facial thicknesses were measured over the respective anatomical landmarks of the skull. It was found that there is no significant difference associated with the sex in the majority of the craniometric points. However, for the ones who were submitted, mainly were placed on the craniometric points of the midline and particularly with a greater value on men. Differences were noticed on the thickness for the Colombian population at the time these were compared with other studies. The facial soft tissue thickness values characterize the mixed racial origin of the Colombian population and they let a major approximation to the facial reconstruction with forensic purposes.

OP-073

MASS GRAVE FROM WORLD WAR II: FORENSIC EXCAVATION AND ANALYSIS

Milos Dakic, Tamara Pavlovic, Stefan Velickovic, Nikola Velickovic, Ksenija Djukic
Laboratory for Anthropology, Institute of Anatomy, School of Medicine, University of Belgrade, 4/2 Dr Subotica, 11000 Belgrade, Serbia

BACKGROUND: Near the end of 2011 a mass grave from World War II was found in the city of Kragujevac, in central Serbia. The investigated sample comprised of minimum 27 individuals which are assumed to be victims of mass executions in the area near the end of 1944.

The aim of this study was to analyse the skeletal material from this mass grave, to determine biological markers, as well as personal belongings that could help identify the victims, and if possible to reconstruct the manner of death.

METHOD: Age and sex determination, dental status and stature assessment were based on standards for data collection from human skeletal remains edited by J. E. Buikstra and D. H. Ubelaker. Further analysis included bone radiography and morphological observations for signs of bone pathology.

RESULTS: Forensic analysis of the remains showed that 11 individuals (40,74 %) were males and 5 (18,52 %) were females while for 11 individuals (40,74 %) sex could not be determined. All individuals were adults, except one person who was approximately 17 years old. Four individuals had distinctive bullet holes located on the skulls, and one female individual had a "keyhole" wound on the left parietal bone. Bullet casings were found next to the skeletal remains which suggested that these individuals were shoot on this site. Along with the bullet casings, several personal belongings, including wallets, combs, mirrors and several fragments of clothing were found.

CONCLUSION: Historical records suggest that the Communist authorities executed hundreds of people on several occasions in 1944 in the area of Kragujevac, basing on the supposition that they cooperated with the occupiers and were considered traitors. Our findings (adult male and female civilians with their personal belongings) support the assumption that the discovered skeletal remains belong to one group of people who were executed by the Communist regime.

OP-074

PATTERN OF PERI-MORTEM TRAUMA IN SKELETONS RECOVERED FROM MASS GRAVES FROM THE SPANISH CIVIL WAR (1936–1939)

Luis Rios[1], Almudena Garcia Rubio[1], Berta Martinez[1], Lourdes Herrasti[3], Francisco Etxeberria[2]
[1]Unit of Anthropology, Department of Biology, Universidad Autonoma de Madrid, Madrid, Spain
[2]Legal and Forensic Medicine, Faculty of Medicine, Euskal Herriko Unibertsitatea, Donostia, Basque Country Spain
[3]Department of Anthropology, Aranzadi Sciences Society, Donostia, Basque Country, Spain

BACKGROUND: During the Spanish Civil War (1936–1939) it is estimated that more than 120.000 persons were killed away from the battlefields. Most of these victims were buried in mass graves and since 2000, more than 250 graves have been exhumed and more than 5000 skeletons have been recovered. We present here the study of gunshot wounds in 400 skeletons recovered from more than 30 mass graves. From the testimonial and archival information, the killings took place in three different contexts: kidnapping from places of residence and subsequent assassination and burial in the countryside; official detention with no charges, release from jail and subsequent assassination and burial in the countryside or cemetery; official detention with charge of assistance to rebellion, fake trial and death penalty by firing squad, and burial in the cemetery.

METHODS: A complete reconstruction and study of each skeleton was carried out in order to locate and describe any sign of peri-mortem trauma. A detailed photographic record of each lesion was kept. A database was built with basic information regarding number, location (e.g. by bone and anatomical unit), features (e.g. entrance, exit, fractures) and direction of fire (e.g. posterior to anterior, right to left, etc.) of the gunshot wounds.

RESULTS: The majority of the skeletons presented in the cranium or mandible at least one entrance or exit (80 %), or a pattern of fractures indicative of a gunshot wound (90 %). In the cranium, the most common location of the entrances were the occipital (40 %) and left parietal bone (10 %), and the most common direction of fire was from posterior to anterior (70 %) and from

left to right (57 %). Only 40 % of the skeletons presented signs of peri-mortem trauma to the post cranial skeleton. Skeletons exhumed from different graves and context (extrajudicial killings, firing squad) presented different frequency and pattern of trauma location.

CONCLUSIONS: The pattern of lesions presented constitutes the first attempt to systematize the information regarding the gunshot wounds suffered by the victims buried in mass graves from the Spanish Civil War. This pattern can provide a better understanding of the context in which the observed lesions occurred, and it can also constitute the base for a broader inquiry into the violations of human rights that happened in Spain during the Civil War.

OP-075

COLOR CHANGES OF TEETH IN TIME AND DIFFERENT STORAGE CONDITIONS - A PRELIMINARY STUDY

Anja Petaros[1], Amila Zukanovic[2], Alma Dozic[3], Anita Bajsman[2], Sadeta Secic[2], Slobodan Trninic[2], Samir Prohic[2]

[1]Department of Forensic Medicine and Criminalistics, Rijeka University School of Medicine, Rijeka, Croatia

[2]Faculty of Dentistry, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

[3]ACTA, Academic Center for Dentistry in Amsterdam, Department of Dental Materials, Amsterdam, Netherlands

BACKGROUND AND AIM: Color analysis is an important part of forensic anthropology/taphonomy research. Color alteration in bones, and more rarely teeth, has been used to determine the effects of heating, burning, trauma, body deposition and aging. The present study is part of a larger project that focuses on teeth color alterations in time and various environmental conditions and its potential use in forensic taphonomy. The aim of this study is to test color modifications of teeth (not yet exposed to color-altering factors) in time and different storage conditions.

MATERIAL AND METHODS: Thirty fully impacted human third molars were used for this study. The color analysis was performed on the vestibular surface of each tooth by an objective measuring instrument- a spectrophotometer that uses the CIELAB (L*a*b*) color scale. The tooth color was examined in three different storage conditions (dry condition, wet condition and after rehydration of dry teeth) and three time intervals (baseline, 7 weeks, 1 year).

RESULTS AND CONCLUSION: The most significant color differences were noted in the dry group. Here, a significant increase of values in the green-red (a*) and blue-yellow (b*) specter was observed. After a year, a* values (mean a2*=12.08) differed significantly from baseline values (a1*=2). The increase of values occurred also in the blue-yellow specter (b1*=33.7; b2*=51.8). Such differences were neither observed in the wet group nor in the dry group after 7 weeks. However, after rehydration of the dry sample, the colors returned to their baseline value. Lightness (L*) showed both an initial increase (7-weeks group) and decrease of values (1-year group).

Although there are color differences arising from taking the shade multiple times on the same area and between teeth belonging to the same group, the significant alterations observed in this sample can be attributed to exposure differences. If the same pattern of changes is going to be observed in teeth that were previously exposed to oral environment and naturally occurring environmental factors, color changes might be used in approximating postmortem interval in skeletons found in dry conditions (i.e. cadavers from enclosed settings). Considering that skeletonization can occur after few days in favorable conditions, teeth color changes could help to establish whether death occurred days, months or years ago. Larger and long lasting research conducted on cadavers must be undertaken in order to allow the implementation of this type of research in practice.

OP-076

ROBBER'S PERSONAL IDENTIFICATION BY MORPHOMETRIC COMPARISON BETWEEN RECORDED IMAGES AND 3D AVATAR OF THE SUSPECT

Antonio De Donno[1], Sergio Lubelli[1], Pasquale Beltempo[1], Valentina Ronco[1], Valeria Bruno[1], Gianluca Percoco[2], Luigi Maria Galantucci[2], Francesco Introna[1]

[1]DIPARTIMENTO INTERDISCIPLINARE DI MEDICINA (D.I.M.) SEZIONE DI MEDICINA LEGALE, UNIVERSITA' DEGLI STUDI DI BARI ALDO MORO, BARI, ITALY

[2]Dipartimento di Ingegneria Meccanica e Gestionale (D.I.M.E.G.), POLITECNICO DI BARI, BARI, ITALY

After attending this presentation, attendees will be familiarized with the use of 3D morphometric comparison to seek a robber's personal identification.

The goal of this presentation is to show an objective but not invasive technique for a robber's personal identification through an analysis of recorded images and 3D avatar superimposition.

BACKGROUND: Personal identification based on 3D digital photogrammetry presents a natural evolution of our previous research in this field and of the so-called "parameterized superimposition" (PS). Limits to PS technique were need for a total cooperation from the suspect and from the structure where the offense was perpetrated.

METHOD: The new technique involves four steps:

- The PREPARATORY PHASE, in which the recorded images of the robber are studied and improved. Frames with better view of robber's face landmarks are then chosen.
- The 3D ACQUISITION PHASE, during which a 3D photogrammetric avatar of the suspect face is created; this phase only requires 4 photos made simultaneously with a calibrated camera.
- The SUPERIMPOSITION PHASE is preparatory for the final step and involves a meticulous spatial orientation of the 3D avatar in the same position taken by the offender in the selected frames. A snapshot of the 3D avatar is now taken.
- During the METRIC IMAGE ANALYSIS a quantitative comparison between the image of the robber's face and the snapshot obtained is used. To perform this step it is necessary to clearly recognize at least five landmarks on the robber's face using a suitable calculation program. The same points are marked on the suspect's face obtained at the end of the best superimposition. The absolute and relative distances between the marked points, the perimeters and the areas of the triangles obtained by connecting the points and the compactness indices are automatically calculated on both images in the analyses. Two series of five sets of numerical parameters can then be obtained. The five sets are then compared to calculate the correlation coefficients. If the values of all the five correlation coefficients are >0.99 a personal identification can be formulated on a mathematical basis between the suspect and the robber.

RESULTS: The technique described is objective, repeatable, and not invasive. Technical skills are required meaning there can be no improvisation permitted.

CONCLUSION: The authors present promising results of a preliminary study, involving experimental subjects and cross comparisons between them.

OP-077

APPLICATION OF THIN CT SCAN AND IMAGE RECONSTRUCTION FOR STERNAL END OF CLAVICLE IN BONE AGE ESTIMATION

Yahui Wang, Guangyou Zhu
Institute of forensic sciences, Ministry of Justice, People's Republic of China

BACKGROUND: The main method of living person's age determination is bone age estimation, which is evaluated by X-ray according to the time sequence of secondary ossification center appearance and epiphyseal closure. Comparing traditional X-ray imaging technique, the CT imaging is more sensitive and clear to show the ossification centers and epiphyseal closure states. The purpose of this study is to investigate thin layer CT scan and image reconstruction in analyzing the time sequence of secondary ossification center appearance and epiphyseal closure of sternal end of clavicle and to explore its application value in bone age identification. Method One hundred Chinese Han teenagers aged from 16 to 26 years old and with normal physical development, 50 persons for male and female respectively. After CT scanning for the sternal end of clavicle, the coronal multiplanar 2D recombination (MPR) and three-dimensional surface covering recombination (SSD) for the sternal end of clavicle is acquired. Then, in accordance with bone development grading method proposed by Schmeling, sternal end of clavicle epiphyseal growth was divided into four grades. Results The Max age, Min age, Median age and the 95 % reference value range of different grades were calculated by statistical analysis(Table). Mann–Whitney's *U*-test with $P<0.05$ revealed that bone age in different development levels of sternal end of clavicle showed significant difference between the sexes, and the bone development of the female teenagers is earlier about 1~2 years than that of male teenagers. Meanwhile, empirical distribution function displayed that 100 % of the teenagers with stage 1 for classification of the sternal end of clavicle were under 18 years old, 75 % of the teenagers with stage 2 were under 18 years old, 94.5 % of the teenagers with stage 3 were over 18 years old, 100 % of the teenagers with stage 4 were over 20 years. Conclusion Thin layer CT scan and image reconstruction may be expected to become more sensitive and reliable technology in bone age identification.

OP-078

RELIABILITY ANALYSIS OF THE METHODS FOR BONE AGE ESTIMATION

Guangyou Zhu, Yahui Wang
Institute of forensic sciences, Ministry of Justice, People's Republic of China

BACKGROUND: In recent years, we have investigated the development of the secondary ossification centers and epiphyseal closure of the sternal end of the clavicle and limb joints including shoulder, elbow, wrists, hip, knee, ankle and established "bone development standard atlas of bone age estimation" and "mathematical model of bone age estimation" for modern Chinese Han teenagers. This study is to test the reliability of these two methods of bone age estimation.
METHODS: One hundred and twenty Chinese Han teenagers with normal physical development and aged from 14 to 20 years old were selected, 60 persons for male and female respectively. DR films were taken from sternal end of clavicle, shoulder, elbow, carpal, hip, knee and ankle joints of the individuals, and individual's bone age were evaluated by "bone development standard atlas of bone age estimation" and "mathematical model of bone age estimation". Then, the reliability of the methods of bone age estimation was analyzed by comparing the bone ages with living ages of the individuals.
Results: For the method of "bone development standard atlas" and the method of "mathematical model", (1) If the error is ±0.5 age, the accuracy of male group are 68.5 % and 63.9 %, the corresponding Kappa value are 0.782 ($P=0.039$) and 0.753 ($P=0.048$); while the results of female group are 70.5 % and 65.7 %, Kappa value are 0.812 ($P=0.033$) and 0.776 ($P=0.042$) respectively. (2) When the error set up to ±1.0 age, the accuracy of male group are 87.6 % and 84.8 %, the corresponding Kappa value are 0.882 ($P=0.028$) and 0.806 ($P=0.036$); the results of female group are 90.1 % and 86.9 %, the Kappa value are 0.902 ($P=0.022$) and 0.875 ($P=0.031$) respectively. The chi-square test $P<0.05$, it means that the accuracy rate of "standard atlas method" slightly higher than "mathematical model method's".
CONCLUSION: The "bone development standard atlas of bone age estimation" is better than "mathematical model of bone age estimation" in age identification for Chinese Han teenagers.

OP-079

THE UTILIZATION OF STABLE ISOTOPES ANALYSIS FOR ESTIMATING THE GEOGRAPHIC ORIGINS OF CORPSES

Stuart John Mclean, Noboru Ishikawa, Daisuke Miyamori, Hiroshi Ikegaya
Kyoto Prefectural Medical University, Department of Forensic Medicine

BACKGROUND: While there is a large body of literature documenting the use of stable isotope analysis in determining the authenticity and origin of beverages, food and food ingredients, recently stable isotopes analysis has been utilized in the field of forensic science; in determining the origin of drugs, banknotes, gun shot, humans and a corpse. In 2007 the utilization of stable isotope analysis assisted authorities in the identification of an unknown male body which was found on an expressway in Germany, following different criminalistics and forensic methods (e.g. tooth status, fingerprint or DNA-analysis) failing to identify the person in question, showed the potential value of stable isotope analysis to forensic science.
METHOD: Following a pilot study consisting of three regions, urine samples from a further eight regions throughout North America, Europe, Asia and Australasia were collected. 6 samples were collected from each region, samples were collect from volunteers who were given no dietary instruction prior to sample collection. Hydrogen (H), oxygen (O), carbon (C) and nitrogen (N) stable isotope ratios were established using an automated stable isotope ratio spectrometer.
RESULTS: While statistically significant differences were found in H and O stable isotope ratios between the different regions, statistically significant differences were not found in N and C stable isotope ratios.
CONCLUSION: The results suggest that with further research the determination of origin of unidentified corpses through stable isotope analysis may be a useful tool in forensic science. As a result of globalization and resulting trade of foods, foodstuffs and animal feed the use of C and N stable isotopes analysis alone in the assignment of origin of unidentified corpses is limited. While, the use of H and O stable isotope analysis is promising. Therefore, it is suggested that further research in this field concentrates on the use of O and H stable isotope analysis, which may be utilized in the construction of stable isotope maps to allow quick and simple comparisons.

OP-080

EVALUATION OF FRONTAL SINUS INDEXES BY CT SCAN FOR IDENTIFICATION IN IRANIAN POPULATION

Arash Ghodousi[1], Roshanak Ghafari[2], Elham Zamani Pozveh[3], Mahsima Madine E[3]
[1]Department of Nursing and Midwifery, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran
[2]Department of Oral and Maxillofacial Radiology, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran
[3]School of Dentistry, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran

OBJECTIVE: Frontal sinuses are valuable for human identification. CT scan images have fewer disadvantages than conventional sinus radiographs. The aim of the study was frontal sinus indexes evaluation in Iranian population samples using a simple classification system for identify of unknown persons.
MATERIALS-METHODS: In this descriptive analytic study, frontal sinus CT scans of 103 cases between the age of 12–81 were collected on PACS software. Then the information of frontal sinuses such as presence or absence, symmetry or asymmetry, kind of septum and superior border outline form were evaluated. FSS (frontal sinus, septum, scalloping) classification system was used as a simple system. Furthermore total width of two sinuses, the distance between the highest points of the two sinuses and the distance of each sinus to its maximum lateral limit were measured and then the data were analyzed using Fisher's test, *T*-test and Pearson correlation test.
RESULTS: Bilateral and unilateral absence of frontal sinus was observed respectively 3 % and 1 % and there was no significant relation between the age (p=0.57) and sex (p=0.22) with frontal sinus presence. Most dimensions of men were larger than women. There was no significant relation between the age and the quantitative indicators (Overall width of the sinus, The width of the right sinus, The width of the left sinus, The height of the right sinus, The height of the left sinus, The longest distance between two sinus). Probability of the frontal sinus uniqueness was 75 % in our samples and it was increased to 100 % by adding Quantitative indicators.
CONCLUSION: The success rate of 75 % implying the FSS classification method could be useful for practical purposes of identification in Iranian population especially along with the using quantitative indicators.

OP-081

DOMESTIC VIOLENCE IN THE LISBON METROPOLITAN AREA - A SAMPLE FROM 2011 IN REVIEW

Tiago Costa[1], Bruno Miguel Santos[3], Jorge Costa Santos[2]
[1]South Branch of the National Institute of Legal Medicine and Forensic Sciences, Portugal
[2]Faculty of Medicine, Lisbon University - Portugal
[3]Cencifor – Forensic Sciences Centre - Portugal

BACKGROUND: Domestic violence affects the health not only of the direct victim(s), but also of those indirectly exposed, namely children. In Portugal, domestic violence constitutes a crime with obligatory reporting ("a public crime" in the criminal law), often leading the victims to examination at the Clinical Forensic Medicine services of the National Institute of Legal Medicine and Forensic Sciences (INMLCF). That contact may be the only interaction the victim has got with a physician under this context, reinforcing the importance of the experts' role.
METHODS: Reports of forensic medical examinations (n=65) performed at the South Branch of the INMLCF, in Lisbon, during the year 2011, on alleged victims of domestic violence, were reviewed. The data include sociodemographic characteristics of the victims, relationship with the offender, aggression characteristics and resulting injuries and/or sequelae. Statistical analysis was done using Statistical Package for Social Sciences 12 for Windows.
RESULTS: Results show that 95.4 % of the victims are female, with a mean age of 37.89 years. The aggressor was the spouse or partner in 72.3 % of the cases, with a history of co-habitation in 87.7 % of the total. The offense occurred at home in 72.7 % of cases, with 80 % of the total being of repeated nature. Children, with a mean age of 11.33 years, lived in the household in 61.5 % of the cases. Injuries resulted from blunt force trauma in 95.4 % of cases, with only 30.8 % of the victims accessing medical care. According to the Portuguese criminal law, the slip of time between the offense and the cure of the resulting injuries must be expressed in "days of disease", assigned when appropriate, with a mean of 8.29 days. The majority of the cases (95.9 %) evolved towards the cure.
CONCLUSION: The majority of the victims was females between 25 and 45 years old, repeatedly abused by their partners, with whom they lived. The vast majority of the injuries evolved towards the cure, leaving behind no physical trace that the violence ever occurred. This might contribute to a misunderstanding of the full consequences of domestic and inter-partner violence, underplaying the serious social and developmental issues it raises on victims and witnesses, such as children. In fact, the exposure of children to domestic violence should be considered as a form of emotional abuse, and the role this vicarious phenomena has got on the perpetuation of the violence itself is worthy of further study in our social reality.

OP-082

DOMESTIC VIOLENCE AND HUMAN RIGHTS VIOLATIONS IN GHARBIA GOVERNORATE, EGYPT (INCIDENCE AND CONSEQUENCES)

Rabab Sayed El Kelany, Mohammed Abel Aziz Saad
Deprtment of Forensic Medicine & Toxicology, Tanta University, Egypt

Violence is sadly a frequent component of our patient's lives. Domestic violence encompasses a wide variety of actions that coerce, control, or demean the victim. The response of the health care in our community has been variable and unfortunately lacking in many sectors because of barriers we face in the office or emergency room setting. The aim of this study is to throw light on medico legal aspects of cases of domestic violence in Gharbia Governorate, Egypt. The present study was carried out on 52 cases (25 males and 27 females) of domestic violence, during the period from January 2008 to December 2008. The cases were studied according to the distribution of their age, sex, type of violence, instruments used as tools for violence, site and type of injuries, type of perpetrators, outcome of violence and causes of death. The results showed that 88.4 % of the cases were subjected to physical violence, 7.6 % to sexual violence and 3.8 % were subjected to psychological violence. Fractures were the most detected findings (26.9 %). Most of the perpetrators (80.7 %) were males. Death was the outcome in 20 cases (38.46 %). In short, forensic identification and documentation by family physicians of patients experiencing domestic violence, is an essential component of an overall safety plan that victims of abuse can use to break the cycles of domestic violence.

OP-083

FORENSIC ANALYSIS OF THE MAIN MODUS OPERANDI USED IN WOMEN HOMICIDES BY THEIR PARTNER AND EX-PARTNER (FEMICIDES), COMMITTED IN SPAIN FROM 1997 TO 2008

Miguel Lorente[1], Elena Martinez[2]
[1]University of Granada. ILM. Spain
[2]General Hospital. SAS. Jaen

Violence against Women has a very high incidence in most of the countries. In Spain there are around 600.000 cases of aggressions to women per year committed by their partner or a former partner, and an average of 68 homicides under the same circumstances. The analysis of the elements of the homicides gives us some keys to understand this criminal behaviour, and to develop preventive measures.

We analysed the different modus operandi used along these last years around these indicators:

– Mechanism and instrument used
– Use a simple mechanism and instrument or more than one (simple or mixed)
– Direct use of the hands to kill
– Degree of violence used
– Time of the day when the homicide was committed

Under this indicators we get different significant conclusions for Forensic Sciences and other disciplines related to the assistance and study of Gender based Violence:

– There is not a constant neither common pattern in the mechanisms of death used by men to kill their partner or ex-partner.
– The most common modus operandi is stabbing.
– Depending on the degree of violence exist two main groups related to the degree of violence used to commit the homicide that evolve in time
– The most violent homicides usually are committed at night

OP-084

MEDICO-LEGAL ISSUES RELATED TO OCULAR TRAUMA IN THE ALBANIAN HEALTH CARE SYSTEM

Eglantina Bulica[1], Admir Sinamati[2]
[1]UHC Mother Theresa, Tirana, Albania
[2]Institute of Legal Medicine, Tirana, Albania

INTRODUCTION: Ocular traumas have a huge impact in terms of invalidity, insurance or malpractice litigation, and other health-related general aspects. If left untreated, glaucoma, cataract and retinal detachment might follow, with very important immediate and long-term sequels.

OBJECTIVES: To determine the impact of the ocular trauma in the medico-legal issues that may lead to litigation processes and/or lawsuits.

MATERIAL AND METHODS: Ocular traumas have been classified according to three medico-legal criteria: 1) the risk of possible fatal outcome, in an emergency condition; 2) irreversible loss of working ability and 3) disfiguration and/or cosmetic damage.

Ocular traumas visited in the emergency structures of Tirana, capital of Albania, during the period 2004–2008, were registered. Cases brought to court were summoned as well.

RESULTS: From a total of 23 cases brought to court for liability compensation, or malpractice litigation, as well as for lack of coverage from third party-payers, some 11 cases (47 %) were remunerated in a sum halving the financial request of the victim. The highest compensations were accorded when concomitant cranial trauma and a period of loss of consciousness accompanied the ocular trauma.

CONCLUSION: Ocular traumas are randomly misinterpreted in the context of a head and neck trauma, and under such circumstances are more consistently remunerated following a litigation process. However, disfiguration complaints and pertaining decisions have been twice formulated in an Albanian court; both interesting a third party-payer. A precise medico-legal classification of severity of the trauma will help the victim to collect the legal and financial rights that apply.

OP-085

FORENSIC IDENTIFICATION OF ERECTILE DYSFUNCTION FOR RAPE CASES

Feixiang Wang, Guangyou Zhu
Department of Forensic Clinical Medicine, Institute of Forensic Science, Ministry of Justice, PRC, Shanghai, China

During the trial in rape when the lack of sufficient evidence, such as the victim's body was no found suspect sperm, some criminal suspects claimed they were impotent, rape can not be implemented. At this point, an objective assessment of their erectile function as a key evidence. Some studies have assessed the use of rape index for psychology, but there is a dispute. In our Institute we use objective examinations to conduct a comprehensive assessment so as to provide scientific evidence to the trial judge

OBJECTIVE: Through retrospective analysis on cases of rape suspects to provide beneficial reference for the trial of rape cases.

METHODS: During 2008–2011 our institute received 6 cases of male sexual function identification which were all suspected rape but no enough evidence. Firstly, all cases received audio-visual sexual stimulation test(AVSS). If AVSS screening erectile function was normal (positive), we could conclude the suspect had no impotent. Secondly, if AVSS were negative then the following lab examinations should be completed: Nocturnal penile tumescence (NPT) to distinguish psychogenic erectile dysfunction from organic erectile dysfunction. Neurophysiological examination (the pudendal nerve evoked potential, quantitative sensory testing, etc.) to confirm the pudendal nerve conduction. Penile Doppler blood flow to confirm the penis blood flow condition. Hormone testing to confirm the endocrine hormone levels.

RESULTS: One case was positive (normal erectile function) through AVSS, the remaining five cases were negative. Through NPT testing, two patients presented with organic erectile dysfunction(pic.1) and were found that there were nerves or vascular system diseases by neurophysiological examination and penile Doppler blood flow(pic.3/pic.4/pic.7). The remaining three cases were normal penile erectile function(pic.2) and no organic causes(pic.5/pic.6/pic.8). So our conclusions were that two cases were really impotent but other four cases had normal erectile function. The conclusions were all adopted by the Court.

CONCLUSION: For any suspected cases of rape suspects without sufficient evidence, Male sexual function should be identified to ensure the legitimate rights and interests.

OP-086

COMPARATIVE STUDY BETWEEN PSSR AND PSEP IN EVALUATING ERECTILE DYSFUNCTION CAUSED BY PELVIC FRACTURE ASSOCIATED WITH POSTERIOR URETHRAL DISRUPTION

Guangyou Zhu, Feixiang Wang, Yan Shen
Institute of Forensic Science, Ministry of Justice, Shanghai, PRC

AIMS: After traffic accidents many patients with pelvic fracture associated with posterior urethral disruption complained erectile dysfunction (ED). These studies were intended to compare the value of penile sympathetic skin response (PSSR) with penile nerve somatosensory evoked potential (PSEP) in diagnosing neurogenic ED. And reveal the relationship between autonomic nerves system injury and erectile dysfunction in those cases.
METHODS: PSSR was used in 20 patients whose ED were caused by pelvic fracture injuries of the posterior urethra and 10 volunteers without any signs of ED, together with penile nerve somatosensory evoked potential (PSEP) and nocturnal penile tumescence (NPT). NPT (Rigiscan) was used as the gold standard to confirm organic ED.
RESULTS: 15 patients were organic ED in cases group, and in which 16 showed abnormal PSSR, 7 showed abnormal PSEP. In control group, 10 volunteers' NPT were normal, and in which 9 showed normal PSSR, 10 showed normal PSEP. PSSR showed 66.7 % sensitivity and 100 % specificity in cases group, 90 % sensitivity in control group use Rigiscan as the gold standard. PSEP showed 50 % sensitivity and 28.6 % specificity in cases group, 100 % sensitivity in control group use Rigiscan as the gold standard.
CONCLUSIONS: PSSR showed better sensitivity and specificity than PSEP in evaluating ED caused by pelvic fracture associated with posterior urethral disruption. Our study revealed the possible mechanism of ED in patients with pelvic fracture and posterior urethral disruption was autonomic nerves injury. We conclude that the PSSR should be the examination of choice for the primary etiological diagnosis in ED.

OP-087

LIFE-THREATENING CHOP INJURIES TO THE HEAD: OPTIMISING INJURY INTERPRETATION USING 3D CT RECONSTRUCTION OF PRE-TREATMENT IMAGING

Christopher Paul Johnson[1], Sharon Melmore[1], Oliver Ross Johnson[3], Robert Campbell[2], Andrew Dunn[2]
[1]Forensic Pathology Unit, Royal Liverpool University Hospital
[2]Department of Radiology, Royal Liverpool University Hospital
[3]University of Birmingham

Computerised tomography is being increasingly advocated to support or replace traditional postmortem investigation of the dead and the potential benefits and risks of widespread introduction of the methodology, is currently the subject of much debate in the UK. In contrast, the value of using the CT data captured during initial emergency imaging prior to treatment of a subject's life-threatening injuries is under recognised and inadequately explored.

We report the use of 3D CT reconstruction to support the medico-legal assessment of a man allegedly assaulted with an axe, whose surface injuries had been debrided and sutured, hampering injury interpretation. Whilst the diagnostic CT report addressed the clinical management issues in documenting the presence of a complex anterior skull vault fracture, with pneumocephaly, this provided no information about the potential number of blows that may have been landed on the cranium and facial skeleton, which became a key question in the subsequent legal proceedings.

3D reconstruction of the pre-treatment imaging was found to have captured much of the scalp, face and skull vault trauma pattern prior to the surgical intervention. In conjunction with review of the clinical records, available (but suboptimal) post treatment photographs and examination of the clothing, this allowed the clear delineation of at least 4 separate forceful blows to the head and face from an axe or axe-like chopping weapon, with additional defensive chop trauma to the left arm and hand. This case raises the important question of how such 3D CT imaging of bony trauma should be reported and subsequently introduced and presented at crown court. We believe that joint reporting by an experienced consultant radiologist (preferably with musculoskeletal expertise) and a specialist forensic pathologist provides the best opinion in such circumstances, combining day to day experience of CT imaging with expertise in assessing skull vault and facial fractures in the forensic setting. This approach allowed all the medical evidence to be successfully presented in the court proceedings by the instructed forensic pathologist without the need for the clinical radiology team to give evidence in the relatively unfamiliar (and potentially hostile) environment of the criminal court.

This case highlights the potential importance of reviewing and 3D reconstructing emergency pre-treatment CT imaging, in all victims who suffer major head and face injury allegedly sustained in an assault, particularly where sharp and blunt penetrating bone trauma is suspected

OP-088

DOCUMENTING TORTURE, FORENSIC EVIDENCE AND THE ROAD TO EXPERIENCE - A RESIDENT FORENSIC PATHOLOGIST LEARNING FROM PRACTICAL EXPERIENCE

Gordon Thomas Jehu
Department of Forensic Medicine, University of Copenhagen

The International Rehabilitation Council for Torture Victims (IRCT) is a health-based umbrella organisation that supports the rehabilitation of torture victims and the prevention of torture worldwide. Since 2009 the IRCT in collaboration with the Department of Forensic Medicine, University of Copenhagen, has been in charge of an EU financed project with the objective of contributing to the prevention of torture through promoting

forensic documentation of torture, facilitating investigation and prosecution of court cases concerning allegations of torture and establishing an international network of forensic experts. Resident forensic pathologist Gordon Thomas Jehu has participated in one of the documentation missions and will talk about his training experience.

OP-089

COMPARISON OF TWO STRATEGIES FOR MANAGEMENT OF BODY PACKERS CARRYING INGESTED DRUG PACKETS: A STUDY PROTOCOL

Bertrand Becour, Zakia Médiouni, Wali Abi Ayad, Agnès Dechartres, Isabelle Boutron, Jean Louis Pourriat
Assistance publique hôpitaux de Paris

BACKGROUND: The treatment applied to body packers at the medico-judicial unit (MJU) of Paris is an intravenous hydration, a regulator of transit and a mild laxative.

We assume that clinical and biological monitoring without systematic treatment is non inferior to the routine treatment with intravenous hydration, regulator of transit and mild laxative.

Our study aims to show that a clinical and laboratory monitoring without systematic treatment is non inferior in terms of length of stay in hospital and rate of complications to a treatment consisting, in addition to this monitoring, in intravenous hydration, a regulator of transit and a mild laxative.

Our study population will include 132 persons suspected of internal drug concealment of cocaine admitted to the MJU starting from October 1st 2012. Body packers carrying drug inserted vaginally or rectally are excluded, as are persons carrying packets containing other substances than cocaine, those who had ingested drug sachets and presumed carriers of drug pellets non visualised on imaging and carriers of heterogeneous pellets.

METHOD: Monocentric randomized controlled open trial of non-inferiority comparing a simple clinical and laboratory monitoring to a treatment consisting, in addition to this monitoring, in intravenous hydration a regulator of transit and a mild laxative. The primary endpoint is duration of hospitalization expressed in days. The secondary endpoint is the complication rate. The expected duration of the study is 14 months. The duration of participation for each patient is length of stay at hospital. The average number of inclusions per center per month is 10.

The data collected will concern the daily kinetics of drug and packets evacuation, the changes revealed by imaging and the results of urinary assays for toxic substances. In case of surgical extraction, the following data will be collected: date of surgery, type and time of surgery as well as any postoperative complication. In case of acute intoxication by the ingested drug, the following data will be collected: clinical signs presented, results of biological assays, including liver and pancreatic function tests as well as the kinetics of urinary toxic substances.

Legal characterization of the study is a study in routine care.

CONCLUSION: As the internal concealment of narcotic substances is illegal, this study will perforce include subjects held in legal custody and will be conducted in a secure hospital environment. The aim of this research work is to improve the medical management of body packers.

OP-090

VIOLENT AND CRIMINAL BEHAVIOUR IN PATIENTS WITH SCHIZOPHRENIA: RELATIONSHIP WITH POSITIVE AND NEGATIVE SYMPTOMS

Esat Sahin[1], F. Süheyla Aliustaoğlu[1], Alaattin Duran[2], M. Feyzi Şahin[1], Deniz Oğuzhan Melez[1], Nurhan İnce[3]
[1]The Council of Forensic Medicine, Istanbul, Turkey
[2]Department of Psychiatry, Cerrahpasa Faculty of Medicine, Istanbul University, Istanbul, Turkey
[3]Department of Public Health, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey

BACKGROUND: The aim of this study is to evaluate relationship between violent criminal behavior with positive and negative symptoms in patients with schizophrenia

METHOD: 95 schizophrenia patients among whom 64 patients committed crime have been included in the study. The study group has been divided into two considering if they had committed a crime or not in order to build up a control group including only schizophrenia patients who had not committed crime. Inquiry Form of Sociodemographic Features, Scale for the Assessment of Positive Symptoms (SAPS), and Scale for the Assessment of Negative Symptoms (SANS) have been applied to both groups.

RESULTS AND CONCLUSION: As a result, criteria of male gender, education level of primary school or lower, irregular treatment history and living outside the city center have been found to be statistically higher in the group of patients committed crime than the control group. Besides, lower functionality and more than 10 years of disorder history have been found to be higher in the group of patients committed crime although statistically significant ratios have not been reached for these two parameters. Victims of these crimes have been found to be mostly the first degree relatives of schizophrenia patients with 43.8 %. In addition, the most frequent type of crimes has been found to be physical violence and the second frequent type has been found to be homicide.

According to the SAPS scale, SAPS total score, auditory hallucinations, commenting voices, conversation voices, visual hallucinations, global evaluation of hallucinations, sum of hallucination sub-scale, persecutory delusions, delusions of imagined incest, global evaluation of delusions, sum of delusion sub-scale, aggressive behaviour, sum of odd behaviour sub-scale and average scores of inappropriate affect have been found to be significantly higher than the control group. According to SANS scale, decrease in spontaneous movements, paucity of expressive gestures, global evaluation of blunt affect, global evaluation of decrease in energy and appetite and sum of sub-scale average scores of decrease in energy and appetite have been found to be higher than the control group. We suggest that for especially the evaluation of dangerousness of schizophrenia patients being kept in legal guarding and for the decision of social healing, positive and negative symptoms that have been found to be meaningful in our study will be useful.

OP-091

POLICE CUSTODY FOLLOWING DRIVING UNDER THE INFLUENCE OF ALCOHOL OR DRUGS: A PROSPECTIVE STUDY

Patrick Chariot, Aude Lepresle, Tiao Saysouda Mahindhoratep, Fouad Chiadmi, Joël Schlatter, Cyril Boraud
Department of Forensic Medicine, Hôpital Jean-Verdier (AP-HP), Bondy, France

BACKGROUND: Drink and drug driving is a crime and traffic offences are a common cause of detention in police custody. Legal assessments of intoxications are based on breath or blood testing for alcohol and on blood testing for drugs. We hypothesize that alcohol or drug intoxication could correspond to singular medical characteristics of the detainee, possibly assaulted or injured during the arrest. Our objective was to determine medical characteristics of detainees held in custody for drink or drug driving and to collect data regarding reported assaults or observed injuries in these individuals.
METHODS: Prospective study (April 23, 2010–December 31, 2011) of drink or drug drive arrestees. Controls were 2,107 non-selected persons aged over 18, held in police custody (June 22, 2010–August 31, 2010), consecutively referred to a forensic physician for assessment of fitness for detention and detained for other reasons than suspicion to be drink or drug driving. Data collected concerned persons' characteristics and reported assaults or observed injuries. In a first step, we compared drink drivers, drug drivers, and controls. In a second step, we compared drink drivers who were positive for breath alcohol to drivers who refused breath alcohol testing or were unable to perform it.
RESULTS: A total of 1477 drivers were included, as follows: 1272 drink drivers and 205 drug drivers, of whom 204 were positive for cannabis, 2 for cocaine, and 2 for opiates. Among drink drivers, 231 (18 %) refused or were not able to complete breath test, because of heavy inebriation. Drink drivers and drug drivers requested medical examination more rarely than controls (16 % and 12 %, vs. 45 %, $P<0.0001$). Drink drivers had less experience of custody than controls, and even less than drug drivers (first custody in 45 %, 29 % and 21 %, $P<0.0001$). Drink drivers more often reported assaults and had more frequent traumatic injuries than drug drivers (17 % vs. 6 % and 18 % vs. 6 %, $P<0.0001$). In the subgroup of drink drivers who did not complete breath test, reported assaults and recent traumatic injuries were more frequent than in other drink drivers (29 % vs.14 %, $P<0.0001$). No drug drivers and only 2 % of drink drivers were unfit for detention after medical examination, vs. 3 % of controls ($P=0.01$).
CONCLUSION: Physicians need to give attentive care to detained drink-drivers, especially to those who refused or were unable to complete breath alcohol measurement. We were not able to identify singular medical characteristics in drug-drivers.

OP-092

RETROSPECTIVE PSYCHIATRIC AND NEUROLOGICAL EVALUATION OF LEGAL CASES ADMITTED TO EMERGENCY SERVICES

Gençer Genç[1], Kubilay Karabacak[2], Cemal Onur Noyan[3]
[1]Department of Neurology, Maresal Cakmak Military Hospital, Erzurum, Turkey
[2]Department of Cardiovascular Surgery, Maresal Cakmak Military Hospital, Erzurum, Turkey
[3]Department of Psychiatry, Gumussuyu Military Hospital, Istanbul, Turkey

INTRODUCTION: Emergency services are very critical in terms of facing with many forensic cases. Periodic evaluation of forensic cases in the emergency department contributes to the development of forensic medicine. In this study we aimed to determine the causes of forensic cases admitting to emergency service and to collect data for correcting the deficiencies in this area.
MATERIALS-METHODS: The patients with forensic report who were admitted to emergency service between March 2011 and March 2012 were analyzed in terms of cause and comorbid disease retrospectively.
RESULTS: The medical records of 288 cases were examined. The causes of admission were pounding in 83 %, fall from a height in 9 %, traffic accident in 3 %, alcohol intoxication in 3 %, drug-suicide in 1 %, substance abuse in 1 % of the cases. 65 % of the patients had a diagnosis of antisocial personality. Neurological examination was normal in patients with antisocial personality disorder.
CONCLUSION: Most of the patients were admitted because of pounding. Most of them had the diagnosis of antisocial personality. Antisocial people are defined as uncontrolled persons who are unable to continue the social relations and do not bow to authority. Because of tendency to crime, antisocial people are a major public health problem in our country as all over the world. Further studies and rehabilitative measures will contribute to solve this problem.

OP-093

EXTRA-SANITARY FACTORS THAT INFLUENCE THE CLINICAL EVOLUTION OF WHIPLASH: STUDY OF TWO ETIOLOGIES (TRAFFIC ACCIDENTS AND AGGRESSION)

Carmen Torres Sanchez, Faustina Sanchez Rodriguez, Juan Pedro Hernández Del Rincón, M. Dolores Pétez Carceles, Aurelio Luna
Department of Forensic Medicine

Whiplash is the result of a closed traumatism in the cervical spine with a lengthening of ligaments and muscles, usually due to back impacts in car accidents.

Whiplash is one of the most controversial pathologies and which most problems causes both in the medical and in the working and judicial environment. However, this lesion is not only related to car accidents, but also to certain sports, such as eurhythmics, judo and other fighting sports, skiing, horse riding, diving board jumping etc., as well as to other causes, such as assaults, casual falls, working accidents, abusive treatment etc.

When it comes to the evaluation of cervical sprain, either caused by a car accident or by any other means, it is very usual to find a notable difference between the evaluation made by the forensic doctor and that carried out by other experts who take part in the process. These differences are related to the number of days needed for healing, number of days off work, the kind of treatment that should be applied and the aftermaths that might follow. Also, in a high percentage of these examinations, the patients assert they suffer from cervical symptoms without objective lesions, showing subjective symptoms such as migraine, neck ache, vertigos, dizziness, instability, functional limitation etc.

Out of the 38400 injured examined in the IML of Murcia during the years 2009 and 2010, we have picked out 14230, with the only diagnosis of cervicalgia/sprain cervical/SLC or accompanied by others, the etiology (car accident, assault), applied treatment, prior pathology, and sequels. Later, 1905 cases were selected, with cervical pain as the sole diagnosis, etiology (car occupants and aggression), without prior pathology or sequels, also analyzing the duration of the healing and preventive, as well as non sanitary variables and complementary examinations.

Out of the 14230 injured, 7299 were males (51.29 %) with an average age of 33.64, and 6928 were women (48.70 %) with an average age of 34.28. Out of the selected 1905, 1085 were men (57 %) with an average age of 31.20 and 820 were women (43 %)

with an average age of 32.63. There is an observable difference in the assessment that is carried out concerning those who were injured in car accidents and those who were assaulted, regarding media diagnosis, as well as in complementary examinations, in treatment and in the duration of healing and preventive processes.

OP-094

TYPES OF VIOLENCE AGAINST WOMEN

Aykerim Meyramkahankyzy Ybrasheva
Department of Law, Kazakh National University named after Al-Farabi, Almaty, Kazakhstan

"The kingdom is the realm of female tenderness, subtlety and tolerance,"—said the French writer, philosopher and composer Jean Jacques Rousseau! Despite this, at the present time in the world, more and more violence against women takes place.

Violence against women is a technical term used to collectively refer to violent acts that are primarily or exclusively committed against women.

Worldwide governments and organizations actively work to combat violence against women through a variety of programs. A UN resolution designated November 25 as International Day for the Elimination of Violence against Women.

For example there are some kinds of violence, bride burning in Pakistan and in India.

Bride-burning is a form of domestic violence. In this case the bride is killed at home by her husband. Kerosene is used as the fuel. It has been a major problem since at least 1993.

Acid attack throwing is a form of violent assault. It is defined as the act of throwing acid onto the body of a person "with the intention of injuring or disfiguring her out of jealousy or revenge". Perpetrators of these attacks throw acid at their victims, usually at their faces, burning them, and damaging skin tissue, often exposing and sometimes dissolving the bones. The long term consequences of these attacks include blindness and permanent scarring of the face and body.

Foot binding was the custom of binding the feet of young girls painfully tight to prevent further growth. The practice likely originated among court dancers in the early Song dynasty, but spread to upper class families and eventually became common among all classes. Foot-binding resulted in lifelong disabilities for most of its subjects, and some elderly Chinese women still survive today with disabilities related to their bound feet.

Female Genital Mutilation is typically carried out on girls from a few days old to puberty. It may take place in a hospital, but is usually performed, without anaesthesia, by a traditional circumciser using a knife, razor, or scissors. According to the WHO, it is practiced in 28 countries in western, eastern, and north-eastern Africa, in parts of the Middle East. The WHO estimates that 100–140 million women and girls around the world have experienced the procedure, including 92 million in Africa.

Dear men and please let us take care of their mothers, daughters, wives and grandmothers. And more to hold the shares, meeting and important events of violence against women.

OP-095

THE ROLE OF ALCOHOL AND SUBSTANCE ABUSE IN INTIMATE PARTNER VIOLENCE

Demet Havaçeliği[1], Alev Aktaş[1], Dilek Gürbüz[1], Nevin Yıldırım Koyuncu[2], Hakan Coşkunol[1]
[1]Ege University, Institute on Drug Abuse, Toxicology and Pharmaceutical Sciences (BATI), Izmir, Turkey
[2]Ege University, Women Research and Implementation Center (EKAM), Izmir, Turkey

BACKGROUND: Violence against women in Turkey is a major public health problem and is considered a violation of women's human rights. This study aims to evaluate, through sheltered wives' perspective, the prevalence of alcohol and substance use among husbands who are perpetrators of violence. The study provides data on the prevalence of physical, verbal, sexual and economic violence against women in Turkey, who have been sheltered between November 2011 and March 2012.
METHOD: Participants (n=46) were women who received sheltering help by various municipality women's shelters in Izmir. Data was collected by face to face interviewing technique using a questionnaire. 36 women exposed to their husbands' violence were evaluated. Analysis was performed using SPSS 18.
RESULTS: 36 women (78.3 %) experienced intimate partner (husband) violence. Partners aged between 22 and 86. 26 of the partners were primary school graduates (72.2 %), 7 did not work at all (19.4 %), and 9 had no monthly income (26.5 %).

According to wives' reports, husbands used cigarette (86.1 %), alcohol (80.6 %), marijuana (44.4 %), ecstasy (22.2 %), cocaine (5.6 %), volatile (2,8 %), heroin (2.8 %), sedatives (8.3 %) at least once in their lifetime. Prevalence of substance or alcohol abuse of husbands during the act of violence was also significant: alcohol (47.1 %), marijuana (20.6 %), ecstasy (14.7 %), cocaine (2.9 %), volatile (3 %), heroin (2.9 %).

In terms of frequency of alcohol and substance use, perpetrators could be classified as follows: 20 % of men use alcohol every day, 28.6 % use 3–4 times per week, 20.5 % use marijuana every day, 5.9 % use ecstasy every day, 5.9 % use 2–3 times a month.

The percentage of husbands neglecting their duties due to alcohol and substance use or both are as follows: negligence of occupational responsibilities due to use of alcohol using 41.2 %, substance using 5.9 %, and both alcohol and substance using 23.5 %; negligence of family responsibilities because of alcohol using 26.9 %, substance using 7.7 % and both alcohol and substance using 30.8 %; negligence of social responsibilities because of alcohol using 53.8 %, substance using 7.7 % and both alcohol and substance using 23.1 %.
CONCLUSION: Alcohol and substance use is the one of the important risk factors for intimate partner violence. Consequently, the relationship between alcohol-substance use and violence must be considered.

OP-096

EXAMINING THE VALIDITY OF USING POSTCRANIAL RADIOGRAPHIC COMPARISONS IN POSITIVE IDENTIFICATIONS

Ann H. Ross[1], Sam Simmons[2]
[1]North Carolina State University
[2]North Carolina Office of the Chief Medical Examiner

Positive identification is of primary importance for case resolution and bringing closure to the victim's families. Difficulties surrounding the identification process can result from taphonomic processes that result in incomplete recovery of skeletal materials and/or from inadequate antemortem records. Therefore, a variety of identification methods that utilize various anatomical structures is essential for timely and accurate identification. While there are a number of methods used to make positive identifications through radiographic comparison, many lack the scientific rigor necessary to make them admissible in court. The utility of radiographs for positive identification was examined in accordance with the United States Federal Court ruling (Daubert vs. Merrell Dow Pharmaceuticals, 509 US.579, 1993) and National Academy of Sciences 2009 report- Strengthening Forensic Science in the United States: A Path Forward, which calls for more testable and reliable scientific

research. To date, there has been quite a bit of research exploring morphological variation in the frontal sinus, chest, and vertebrae for positive identifications. The utility of radiographs for medicolegal purposes is shown by the uniqueness of certain features of the skeleton in previous research; however, there is a need to quantify their uniqueness. In this presentation we will explore and present preliminary findings on the unique identifiable features from a sample of antemortem and postmortem chest radiographs from North Carolina Office of the Chief Medical Examiners. This project was sponsored by the National Institute of Justice (2010-DN-BX-K214).

OP-097

THE STUDY OF OSSIFICATION OF THE CLAVICLE TO TEST CHRONOLOGICAL AGE OF OVER 18-YEAR-OLD LIVING SUBJECTS

Roberto Cameriere[1], Stefano Deluca[2], Mariano Cingolani[4], Danilo Deangelis[3], Luigi Ferrante[5]
[1]AgEstimation Project, Institute of Legal Medicine, University of Macerata, Macerata, Italy
[2]Department of Legal Medicine, Toxicology and Physical Anthropology, Faculty of Medicine, University of Granada, Granada, Spain
[3]Laboratorio di Antropologia e Odontologia forense (LABANOF), Institute of Legal Medicine, University of Milan, Milan, Italy
[4]Institute of Legal Medicine, University of Macerata, Macerata, Italy
[5]Department of Biomedical Sciences and Public Health, Faculty of Medicine, Polytechnic University of Marche, Ancona, Italy

Nowadays, due to the global increase in migration movements, forensic age estimation of living young adults has become an increasing focus of interest. Many of them came from countries where official documents with exact birth dates are rarely issued. Under these circumstances, establishing the possible minimum age of responsibility is fundamental in order to determine whether juvenile penal systems or penal systems in force for adults are to be applied. The radiological examination of the clavicles is one of the recommended methods by the Study Group on Forensic Age Diagnostics. In this retrospective study, a sample of chest radiographs of 274 subjects, aged between 10 and 25 years, was studied according to Schmeling's method in order to determine the ossification of the medial clavicular epiphyses. All stage classifications were evaluated by five examiners. The intra- and inter-observer reliability was analysed by Cohen's K statistics and ROC analysis was carried out to determine the accuracy of the examiner's ability to correctly estimate age as younger or older than 18 years. The inter-observer reproducibility was not good with K statistic (95 % confidence interval) at K=0.364 (0.314, 0.415). When stage 3 were chosen as cut-off, the ROC curves showed their points nearest the position (1.0) of the graph, pointing out that the test with cut-off stage 3 yield both a high sensitivity and specificity. If a late stage 3 is found, it is therefore possible to substantiate that an individual has already reached the legally important age threshold of 18 years.

OP-098

PREDICTION OF FACIAL SOFT TISSUE DEPTHS FROM CRANIOMETRIC DIMENSIONS FOR FORENSIC CRANIOFACIAL IDENTIFICATION

Sónia Codinha
CENCIFOR- Forensic Sciences Centre, South Delegation of the National Legal Institute, Lisbon, Portugal; Foundation for Science and Technology (SFRH/BPD/78406/2011), Portugal

One of the main problems concerning forensic craniofacial identification methods relies on the use of average soft tissue depths as control in three-dimensional and two-dimensional facial reconstructions and/or craniofacial image superimposition techniques. Taking into account that each face has its own particularities, the use of average soft tissue depths contributes with error for the establishment of the proper outline of the face, compromising the success of the achievement of the likeness of unidentified deceased individuals. In order to circumvent this problem, in the present research the analysis of the relationship of facial soft tissues with craniometric dimensions was conducted with the aim to develop a method for predicting facial soft tissue depths having into account the craniometric specificities of the individuals. This analyses was performed in a Portuguese cadaver sample of 148 individuals (103 males and 45 females), autopsied at the South Branch of the National Institute of Legal Medicine. All cadavers were measured using published needle punctured methods at 20 anatomical points and 11 craniometric dimensions were also registered. All cadavers' stature and weight was determined and their body mass index (BMI) calculated. From these data, regression equations were developed to predict individualized facial soft tissue depths using craniometric dimensions as independent variables, accounting with the BMI and sex of the subjects. The effect of sexual dimorphism and BMI in the relationship of craniometric dimensions with facial soft tissues is analysed and discussed as well as the accuracy of the predicted soft tissues in comparison to the average data set of facial soft tissue depths for the Portuguese population and the real values of the subjects. The potential of the application of the produced regression equations to non Portuguese populations was also assessed in a sample of 10 males and 6 females of African origin. Through the analysis of the complex relationship between the craniofacial skeleton and the facial soft tissues, the present research pretends to contribute with a new approach for the estimation of facial soft tissue depths considering not only the BMI and the sex of the subjects but particularly their individual craniometric characteristics and thus improve the accuracy of craniofacial identification techniques.

OP-099

EXPERIMENTAL ANALYSIS OF EFFECTS OF DIFFERENT TYPES OF SOIL ON DECOMPOSITION

Ali Rıza Tümer[1], Emre Karacaoğlu[1], Ayten Karaca[3], Ramazan Akçan[1], Alper Keten[2], Shima Farasat[3], Osman Sert[4], Aysun Balseven Odabaşı[1]
[1]Department of Forensic Medicine, Hacettepe University Faculty of Medicine, Ankara, Turkey
[2]Ankara Atatürk Trainin and Research Hospital
[3]Department of Soil Science and Crop Nutrition, Ankara University Faculty of Agriculture, Ankara, Turkey
[4]Department of Biology, Applied Biology Section, Hacettepe University Faculty of Science, Ankara, Turkey

BACKGROUND: Decomposition, a postmortem process including autolysis and putrefaction, is affected by many factors (e.g., humidity, microbial activity, soil properties). The effects of factors such as body size, humidity, temperature, microbiological activity, conditions where carcass discovered, soil pH and moisture on decomposition have widely been studied, until today. However, the effects of soil textures on decomposition have not been investigated yet. The present study aimed to find out the effects

of different soil types on decomposition and to determine the importance of soil type in this process.

METHOD: Thirty-six graves (4 blank controls and 32 specimens) that were 50 cm long, 40 cm wide and 50 cm deep were prepared. Extremities, 32 in number, derived from domestic pigs were randomly divided into four groups and buried in four different soil types; L-Loamy (n=8), C-Clayey (n=8), O-Organic (n=8), S-Sandy (n=8). At the end of first 3 months, four graves of each group and controls were excavated. Surrounding soil samples were obtained appropriately; afterwards, extremities were exhumed and all postmortem changes were recorded. Six months later the same steps were conducted repeatedly for the remaining 16 extremities and controls. Changes occurred in two intervals (as 3 and 6 months) and soil biophysicochemical properties were evaluated.

RESULTS: Interval I (3 months later); In all soils, mass was significantly lost at the end of first interval with 65.1 % of loss in the Loamy soil, 70.6 % in the Clayey soil, 67.2 % in the Organic soil and 50.1 % in the Sandy soil, which indicated a considerably lower level of decomposition in the Sandy soil.

Interval II (6 months later); Substantial mass loss was noticed at the second interval (85 % in the Loamy soil, 55.8 % in the Clayey soil, 82 % in the Organic soil, 53.4 % in the Sandy soil), in all soils. There was a significant difference between the percentages of mass loss for all four soils in the second interval ($p<0.05$).

Obtained findings of soils' biophysicochemical properties through soil analyses and mass loss were compatible.

CONCLUSION: In conclusion, the present study revealed that soil properties and textures should be taken into account in evaluation of decomposition and estimating postmortem interval in crime scene investigation.

OP-100

THE IMPORTANCE OF HEAD RECONSTRUCTION AFTER MULTIPLE HIGH-VELOCITY GUNSHOT INJURIES: A CASE STUDY

Tania Delabarde, Jean Sébastien Raul, Annie Géraut, Antoine Tracqui, Bertrand Ludes
Institute of Legal Medicine, Faculty of Medicine, Strasbourg, France

High-velocity gunshot injuries to the head pose a significant challenge in a post mortem examination as they often result in massive soft tissue defects, closed and open comminuted fractures and sometimes exenteration of the brain. Depending on the severity of the injury it may hinder the ability to conduct a thorough assessment, analysis and interpretation of trauma. The injury may also prevent direct visual identification of the victim.

The authors present the autopsy results of a victim who sustained devastating head injuries following multiple high-velocity gunshot wounds. The initial assessment was limited by the destruction of the skull with complete exenteration of brain hemispheres. A three-dimensional skull reconstruction CT image was ineffective because of extreme bone comminution. A step-by-step physical reconstruction of the head and cervical spine was then performed, combining reconstruction of fragmented bones and soft tissue suture. This reconstruction allowed for the analysis of wound characteristics to be determined, particularly the entrance and exit defects, and the apposition of soft tissue wound margins. This case study illustrates the importance of bone reconstruction and soft tissue suture in severe head trauma. Despite that this approach is time consuming, the reconstruction procedure is the only possibility to perform an accurate evaluation of injuries and reconstruction of death circumstances.

OP-101

EXPERIENCE OF SEVEN EXHUMATIONS WITH THE INTENTION OF DETERMINING FORENSIC IDENTIFICATION

Eyyüp Yılmaz[1], A. Sadi Çağdır[2], Ömer Müslümanoğlu[2], C. Haluk İnce[2]
[1]Directorship of Forensic Medicine Branch, Diyarbakir, Turkey
[2]Ministry of Justice, The Council of Forensic Medicine, Istanbul, Turkey

INTRODUCTION: In some forensic cases, the court may demand a re-investigation of corpses or corpse remnants by digging the graves. Upon the court decision, the remnants of the dead such as bones and muscles are investigated by re-opening the grave. This process is called "exhumation".

In most cases, the decision of exhumation may be taken when the bodies lack an autopsy, the autopsy report is inadequate or when the identification, the paternity test and the correction of age are needed.

In our study, a series of processes of exhumation in order to find remnants of a father and his son who have been lost since 1997, are presented to be discussed.

MATERIAL AND METHOD: In this study, seven different graves of some unidentified people were exhumed in order to find the remnants that belong to the missing father and his son. The graveyard of the municipality, in which the exhumation was carried out, is 200 years old and includes 145.000 registered graves. With the testimony of the graveyard personnel who worked between 1995 and 2000, 7 graves were designated and investigated. Every grave were numbered with the numeration system. All of the steps of the exhumation process were photographed and recorded by a camera crew.

FINDINGS: In some exhumed graves, advanced mummified forms were found. In one grave, bone remnants and alveolar teeth structure, which are compatible with our missing case's skeletal remains, were found. Findings gave hope to our investigation team. However, DNA profile comparisons which were practiced on the retrieved bone samples, presented negative results.

CONCLUSION: Finding missing people is one of the most important subjects of forensic sciences. Missing people is a social problem across the World. In order to find the missing, a plenty of methods can be applied. Autopsy, anthropological studies, DNA analysis are adjuvant in finding the missing. But the most important point is that the missing people notices should be received properly and in detail, furthermore, while the identification of the unidentified corpse remnants, anthropological methods are required to be followed closely and carefully. Forming up a Nation-wide and World-wide organization in order to compare the

unidentified and unregistered corpses, moreover, forming up a databank and maintaining the update of the datum regularly would increase the rate of reaching successful results in finding missing people.

OP-102

COMPARISON OF BLAST, COMPRESSION AND BLUNT BONE TRAUMA: MACROSCOPIC AND MICROSCOPIC ANALYSIS OF FRACTURE PROFILE

Markéta Pechníková[1], Debora Mazzarelli[2], Pasquale Poppa[2], Davide Porta[2], Daniele Gibelli[2], Emilio Scossa Baggi[3], Cristina Cattaneo[2]

[1]Laboratory of Biological and Molecular Anthropology, Institute of Experimental Biology, Faculty of Science, Masaryk University, Czech Republic

[2]LABANOF—Laboratorio di Antropologia ed Odontologia Forense, Sezione di Medicina Legale, Dipartimento di Morfologia Umana e Scienze Biomediche, Università degli Studi di Milano, Italy

[3]Polizia Scientifica Canton Ticino, Switzerland

BACKGROUND: The description of specific characteristics of bone injuries caused by various forces is very useful for the differential diagnosis of unknown trauma. However, a detailed description of macroscopic and microscopic presentations of such fractures is still lacking. The aim of this study is to compare the patterns of bone lesions caused by 3 different modalities of bone fracture (blast, blunt force and compression) in order to verify the presence of specific macroscopic and microscopic markers useful for the differential diagnosis of trauma.

METHOD: Corpses of five adult pigs which had died from causes independent of this study (euthanized after experimental biomedical surgical procedures), with a weight between 60 and 80 kg, were used to simulate human bodies. Two pigs were exposed to high energy explosion, the other two were run over by a car and the limbs of the fifth pig were fractured by compression in a metallic grip. A total of 40 fractures of long bones (the margins particularly) were studied macroscopically according to Wieberg's and Wescott's classification. Then small fragments of each fracture border were sampled and thin undecalcified sections were prepared. The fracture pattern of 163 osteons along the fracture line was then examined by transmission light microscopy.

RESULTS: We found that macroscopic observation of fracture morphology did not bring about sufficient information for a differential diagnosis between bone traumas, predominantly due to the extreme variability of the fracture pattern, especially in exploded samples. The results of the microscopic analysis indicated that the fracture line propagates differentially through the osteons at high compared to slow strain rates. At slow rates, the crack propagated through or around the osteon with similar frequencies (45 %: 55 %, with the same pattern in both compressed and run over bones), while in exploded samples the cracks passed predominantly (74 %: 26 %) through the osteon structure.

CONCLUSION: Macroscopic observation of fracture morphology does not seem to be sufficient for a diagnosis of type of energy and applied strain whereas microscopic analysis of the course of the fracture line may give important information about the type of trauma, and especially its energy.

OP-103

AN OSTEOLOGICAL REVISITATION OF AUTOPSIES: COMPARING ANTHROPOLOGICAL FINDINGS ON EXHUMED SKELETONS TO THEIR RESPECTIVE AUTOPSY REPORTS

Annalisa Cappella, Daniele Gibelli, Francesca Magli, Debora Mazzarelli, Davide Porta, Alberto Amadasi, Cristina Cattaneo

LABANOF, Laboratorio di Antropologia e Odontologia Forense - Sezione di Medicina Legale, Dipartimento di Morfologia e Scienze Biomediche, Università degli Studi, Milano, Italy

BACKGROUND: When anthropologists study skeletons they also try to reconstruct trauma and cause of death, a challenging task since it is difficult to envisage from the skeleton how the entire cadaver, with its soft tissues, appeared: where the skin lesions were in cases of trauma, how the organs were affected, how the skeleton relates to all these variables, how taphonomy influences bone lesions. Certainly, the opportunity to examine the skeletal remains of individuals of whom detailed autopsy reports are available can be of extreme interest for the forensic anthropologist. For this reason the authors set out to perform a study on a known modern skeletal population, in observance of Police Mortuary Regulations: for many of these skeletons autopsy reports were available

METHODS: Twenty skeletons were selected for examination after exhumation which had not been claimed by relatives. These skeletons belong to individuals who died of various causes between 1990 and 1991, were buried, exhumed and moved to the ossuary after 15 years. All these individuals had undergone autopsy and detailed autopsy reports were available. Among the 20 subjects, three had died in a car accident, two by gunshot wounds and one by sharp force injuries. All the skeletons underwent macroscopic and microscopic analyses in order to detect possible bone lesions and indications of cause and manner of death. Osteological findings of the anthropological analysis were then compared with osteological findings of the autopsy report as well as with soft tissue information.

RESULTS: Anthropological analysis showed in all cases a high number of additional postmortem fractures; in some cases original bone lesions visible at autopsy were more difficult to distinguish in the skeletal remains because of taphonomical modifications of the margins of the lesion. However, in several cases, anthropological analysis detected perimortem fractures which the pathologist did not detect at autopsy or upon radiological investigation. Finally, this exercise proved to be a valuable aid in helping the anthropologist envisage what the original complex of soft tissue and bone lesions may look like after complete skeletonisation and taphonomic events.

CONCLUSION: The preliminary results of this pilot study prove how forensic pathology and anthropology must go hand in hand and are complementary disciplines even in the case of well preserved bodies. Studies of this type may help find parameters by which to differentiate perimortem from taphonomic lesions and help anthropologists in the reconstruction of mode and manner of death.

OP-104

GEOMETRIC MORPHOMETRIC ANALYSIS OF SEXUAL DIMORPHISM IN THE MANDIBLE FROM PANORAMIC SCANNING X-RAY IMAGES

Patrick Randolph Quinney[1], Emilio Nuzzolese[2], Giancarlo Di Vella[3]
[1]Forensic Anthropologist, Dundee, UK
[2]Forensic Odontologist, Bari, Italy
[3]Sezione di Medicina Legale, Università degli Studi di Bari, Italy

The human mandible is routinely utilised as part of sex assessment in forensic odontological and anthropological practice. We present the results of a novel morphometric study using clinical panoramic scanning x-radiography, the aim of which was to develop a methodologically and statistically robust means of investigating biological variation in lower jaw morphology from a commonly acquired clinical data source. As part of proof-of-concept, clinical digital orthopantogram images (OPGs) were acquired from 50 male and 50 female adults participants from a modern Italian sample population. Three fixed landmarks were applied to the symphysis and condyle, and 50 semi-landmarks resampled along the inferior corpus and the posterior ramus. Symmetrical reflection was applied yielding 200 configurations of k 53 landmarks. Shape analyses were undertaken via: Procrustes superimposition; principal components analysis to investigate patterns of variation; classification using linear discriminant analysis with leave-one-out cross validation. Using all 53 landmarks the resulting shape variables successfully classified 88.0 % of individuals by biological sex. A partial least squares (2-block PLS) method was further applied, in order to examine patterns of covariation between shape variables and the exploration of patterns of functional modularity. In this case functional modules are assumed to be units within which there is a high degree of integration from many and/or strong interactions, but which are relatively independent of other such units. The nature of the interactions can be, for instance, developmental, functional, or genetic, depending on the context. partial least squares (PLS) to test for structural modularity. We conducted a 2-block PLS between two sets of landmarks within the same configuration. Landmarks were sub-divided into a corpus block (k 31) and a ramus block (k 22). This produced an RV coefficient (the measure of covariance) of 0.74. This indicates a strong association between blocks (implying one set of variables can be obtained from the other set by rigid rotation and/or reflection), and indicates a high degree of modularity in anatomical structure. To confirm this we performed a series of stepwise exclusion tests removing 50 % of landmarks at each stage. Iterative re-sampling and re-analysis following PLS allowed us to optimise shape classification criteria. Stepwise resampling of landmarks reached an optimum cross-validated classification of 94.0 % based on k 25 landmarks, with lower rates for smaller k values; the results are strongly significant and suggest that the shape relationship between the mandibular corpus and ramus offers significant potential for forensic identification purposes using this method.

OP-105

ACCURACY OF DENTAL AGE ESTIMATION USING TOOTH RADIOGRAPHS OF CHILDREN FROM THE MIDDLE EAST

Ghada Ali Omran[1], Mohammad Elyamani[2]
[1]Department of forensic medicine and clinical toxicology, Assiut university, Assiut, Egypt
[2]Deparment of dentistry, Alemadi hospital, Doha, Qatar

BACKGROUND: Age estimation in children is an important question in forensic medicine as well as clinical dentistry. Developing teeth are thought to be useful means to assess maturation and hence biological age estimation in children. Several methods have been adopted to examine developing teeth especially those dedicated to measure stages of teeth formation rather than its eruption. The purpose of the present work was to evaluate the suitability of using Willems and Cameriere methods for dental age estimation among children from the Middle East region.
METHODS: Retrospective study of orthopantomographs of 345 healthy children representing a sample from Arab countries of the Middle East that were collected during the period from 2008 to 2010 were examined. Willems and Cameriere methods were implemented for dental age estimation from left mandibular teeth.
RESULTS: Preliminary results for boys from Egypt and Qatar state (60 and 50 respectively) using Willems method indicated significant correlation with chronological age with average overestimation of age by 0.44+/−0.05 years for Egyptian children and for Qatari boys by 0.64+/−0.08.
CONCLUSIONS: Initial conclusion showed that Willems method can be a suitable method for both forensic and dental application for Egyptian and Qatari boys.

OP-106

RI.SC.- ITALY'S DATABASE OF UNKNOWN DECEDENTS AND MISSING PERSONS: TOWARDS A SOLUTION FOR UNIDENTIFIED CADAVERS

Cristina Cattaneo[1], Davide Porta[1], Annalisa Cappella[1], Francesca Magli[1], Debora Mazzarelli[1], Daniele Gibelli[1], Danilo De Angelis[1], Pasquale Poppa[1], Marco Grandi[1], Michele Penta[2]
[1]LABANOF, Laboratorio di Antropologia e Odontologia Forense - Sezione di Medicina Legale, Dipartimento di Morfologia e Scienze Biomediche, Università degli Studi, Milano, Italy
[2]Ministero dell'Interno - Ufficio del Commissario Straordinario del Governo per le Persone Scomparse, Roma, Italy

BACKGROUND: The identification of unknown decedents is a key issue in forensic pathology, for ethical, criminal and civil reasons. Nowadays with looser family ties, immigration and countries in political turmoil, the issue of missing persons and, consequently, unidentified cadavers is inevitably destined to increase. Surprisingly, in the 21st century very few countries have a database for matching on a national basis data concerning missing persons with unidentified cadavers. The present communication aims at illustrating the numbers and problems behind unidentified bodies and missing persons and how the Italian Government is trying to solve them with a new national database.
METHODS: in 2007, after a decade of pressures from politically influent associations for Missing Persons on the one hand who advertised the enormous number of missing persons every year (24,000), and University forensic pathologists on the other, who lamented the growing number of unidentified bodies (a census was taken of at least 1000), Italian Parliament approached the issue by hearing experts and then proposing a law for the institution of a national database for missing persons and unidentified cadavers.
RESULTS: the law proposal has been severely changed due to the political situation and financial crisis, but it still stands and should shortly be definitely approved by Senate. In practice, the RiSc (Ricerca Persone Scomparse) database was created in 2010 with computerised forms for collecting "antemortem" data on behalf of Police and

Carabinieri for missing persons and "post-mortem" data from pathologists on human remains. Both forms contain data concerning sex, age, clothing, personal descriptors, clinical and dental status and eventually DNA. The system at the moment is undergoing trial runs.

CONCLUSIONS: Regardless of its political vicissitudes, Italy seems to have been one of the first European countries to set up a database allowing for a quick automatic match between missing persons and unidentified decedents. If it manages to overcome several bureaucratic obstacles (who has access to the system, harmonisation of procedures among forensic pathologists, software updates, etc.) it may be a first step towards identifying unknown decedents, in a period of increasing numbers of immigrants and refugees present on the territory which may unfortunately die during their travels with no ID. This program may also be applied across countries. Coupled with public websites which publish biological profiles of unidentified cadavers like Doenetwork and Labanof, such initiatives may help solve the problem even for those who have not been legally reported missing.

OP-107

AN OVERVIEW OF THE EFFICACY OF TECHNIQUES DEPLOYED IN DISASTER VICTIM IDENTIFICATION IN REGARD TO THE INTERNATIONAL GUIDELINES

Saravanan Kanniappan
William Harvey Research Institute, Queen Mary University of London

This library based study has been done as a review of the efficacy of techniques deployed in Disaster Victim Identification in regards to the international and UK guidelines. The objective of this study was to elucidate different methods used in human identification during crisis scenarios and to review the factors that contribute to the efficacy of identification process. It is also the intention of this study to examine the usage of standard operation procedures according to the international and national agencies. The management and guidelines set in dealing with the identification of mass disaster victims have been extensively discussed as it commensurate the importance of ensuring the standard operation procedures that need to be followed during catastrophe. Identification process began with recovery, laboratory analysis and analytical findings and which results in positive identification, which includes single death case to mass fatality scene. There are many techniques and equipment or tools that have been developed over the years to accommodate and facilitate in human identification process. Even though there are many techniques and equipment that exists, not all gives accurate and precise results in human identification. Efficacy of the techniques and equipment should be analysed accordingly. The efficacies of techniques discussed mainly are on Anthropology, Odontology and Forensic DNA. Even though, DNA based identification is known as 'gold standard' in human identification, it does not necessarily reflect the reality as there are several situations when DNA techniques do not produce positive identification. Based on past studies, WTC terrorist attack and the Asian Tsunami have proven that not all the bodies have been identified by DNA technique alone. Forensic science has always been a multivariate field and various techniques have been adapted to achieve the notion of human identification. In conclusion, it was clearly experienced by the global forensic community that by marrying a few methods will produce reliable evidence and anticipate further for positive identification as a result.

OP-226

PITFALLS IN BIOLOGICAL PROFILE ASSESSMENT: IMPACT OF BONE SHAPE VARIABILITY, SECULAR TRENDS, AND POPULATION SPECIFICITY ON SKELETAL SEX DETERMINATION

Pierre Guyomarch[1], Maguelone Demotte[2], Miluse Dobisikova[3], Kathia Chaumoitre[4], Jaroslav Bruzek[2]
[1]Jpac, Central Identification Laboratory, Joint Base Pearl Harbor-Hickam, USA
[2]Université de Bordeaux, Umr 5199 Pacea, Anthropologie des Populations Passées et Présentes, Talence, France
[3]National Museum, Department of Anthropology, Prague, Czech Republic
[4]Medical Imaging Service, Chu Hôpital Nord, Marseille, France

Identification of skeletal remains in forensic anthropology relies heavily on morphological evaluation and measurements. It is admitted that most methods of biological profile assessment present an important population specificity, which challenge their application on subjects from unknown provenience (ancestry). The shape variation of the human body is not only geographical, but also diachronic, implying changes in bone measurements within a few decades for the same population. In practice, a sex determination method based on a French sample is supposed to perform well on French individuals, and it would give poor results on Czech subjects. This paper illustrates such applications with examples of cranial and femoral measurements used in discriminant function analysis to determine the sex of an individual.

Craniometric data from three different collections (known age and sex) were used: dry skulls from the French Olivier collection (n=50, MNHN, Paris, mid-20th century); anonymised brain CT examinations of living French individuals (n=50, Hôpital Nord); and dry skulls from the Chiang-Mai University forensic collection (n=91, Thai individuals, late 20th century). Femoral measurements from two Czech skeletal samples are also investigated: the Pachner collection (n=159, Charles University, Prague, early 20th century); and the Dobisiková collection (n=102, National Museum, Prague, late 20th century). Published discriminant functions for both types of data, along with new discriminant function analyses were performed to discuss the applicability of identification methods.

Discrepancies in accuracy and reliability between populations are important. Cranial data can be manipulated such as discriminant functions are accurate, but hardly reliable, from one sample to another (whether similar in population or timeframe). Femoral data show a lower reliability within the same population than Croatian functions applied to Czech individuals. Strong sample specificity is observed, which integrates specificities due to population, generation, but also measurement technique.

Most reference osseous collections consist of individuals deceased during the 19th or 20th century, and significant secular trends can occur between two consecutive generations. This partly explains the poor reliability of some methods. Chronological and geographical specificity of the bony sexual dimorphism must be further investigated. The multiple factors that shape the bones of an individual should indeed be explored together for a more complete understanding of the biological phenomenon. For application in a forensic context, methods must be based on actual data, and medical imaging techniques offer a large amount of such material. Continuous reassessment of existing methods is thus advised, even for supposedly non-specific methods.

OP-227

CRASH OF THE AIR FRANCE FLIGHT AIRBUS AF 447 RIO DE JANEIRO - PARIS (1ST OF JUNE 2009) RECOVERY PROCESS IN THE ATLANTIC OCEAN TAPHONOMICAL AND MEDICO-LEGAL CONSIDERATIONS

Yves Schuliar, Pierre Perich, Jean Michel Corvisier, Jean Marc Paris, Jean Richebe
Disaster Victim Identification Team, Forensic Sciences Institute of the French Gendarmerie, Rosny-sous-Bous, France

The first of June 2009, the Air France Airbus flight AF447 disappeared in the Atlantic Ocean between Rio de Janeiro and Paris with 228 persons on board. After a few weeks 50 bodies and 10 % of the pieces of the airplane were recovered from the sea by the Brazilian and the French navy. The bodies were identified at the medico-legal institute of Recife.

The FDR and CVR black boxes were not found and the circumstances of the crash remained uncertain.

Between June 2009 and March 2011, international search operations were conducted to find the wreck without success. A new phase is decided in March 2011 with new means and a new strategy. Finally the wreck of the airplane is localized 03°N and 33°W, 3900 m deep in the Atlantic Ocean. The pictures allow to observe that many scattered bodies are visible among pieces of the airplane. Under the authority of the French Government a new mission is organized with two

OBJECTIVES:

– To search and find black boxes and elements for the technical and judicial investigation.
– To recover the bodies.

The Ile de Sein ship is chartered by the Analysis and Investigation Bureau (technical investigator in France for airplane crashes)

The recovery process takes place from the 5th of May to the 3rd of June 2011 thanks to a multidisciplinary team (French Gendarmerie DVI team, Ile de Sein team, and US Phoenix team). On board of the cable ship, the Phoenix robot ROV (Remotly Operating Vehicle) allows to visualize and to collect the bodies.

After the building of baskets and special wood stretchers, a special area is created on the ship to deal with the bodies. 19 turnovers of the baskets with many incidents and breakdowns are necessary to remove approximately 100 bodies. After a protocol of examination, the bodies are refrigerated inside a container.

In this presentation, all the aspects of the recovery process and examination of the bodies will be described. Details will also be given as to the conditions of stay and taphonomical modifications of the bodies in the deep ocean. Considerations will also be given regarding the process of post mortem decay in such extreme conditions.

This presentation will highlight the technical possibilities nowadays offered to work in the deep sea after an airplane accident and the necessity to have a very strict procedure to achieve identifications in such extreme conditions.

OP-108

NASOPHARYNGEAL TEMPERATURE AS A METHOD FOR THE ESTIMATION OF THE TIME OF DEATH: A PRELIMINARY STUDY

Alessio Battistini, Michelangelo Casali, Francesca Mobilia, Antonella Rendinelli, Cristina Cattaneo, Riccardo Zoja
Sezione di Medicina Legale, Dipartimento di Morfologia Umana, Università degli Studi di Milano, Italy

BACKGROUND: It is known that nasopharyngeal temperature is correlated with intracranial temperature. The reliability of the correlation between nasopharyngeal and intracranial temperature however may be equal to or perhaps greater than tympanic temperature, due to the anatomical location of the nasopharynx, close to the cavernous sinus and the carotid arteries. To date, only one forensic study of nasopharyngeal temperature application to the time of death exists (Nokes et al. 1992). We attempted to record the variations of nasopharyngeal temperature compared to the post mortem interval.

METHOD: This preliminary study was carried out on corpses transported at the Civic Morgue in Milan when the precise time of death was known: in particular, victims of traffic accidents or other violent deaths, witnessed sudden deaths or falls from height. For each body circumstantial and personal data were collected, and recordings of room temperature, rectal, tympanic and nasopharyngeal temperature were continuously taken during the first 24 h after death, with a metal probe "Escort Data Logger iMiniPlus" thermometer.

RESULTS: Currently, 13 cases were enrolled in the study, died of multiple injuries from car accidents or falls from a height. All corpses reached the Milan Civic Morgue between the 4th and the 6th hour after death. Each case showed a regular and similar nasopharyngeal thermal decrease with an inverted peak during the first hours and a subsequent tendency to a plateau phase. Comparing the curves with those related to the rectal temperature, a similar descending trend was observed, always with a delta of 2–9 Celsius degrees, being the rectal temperature always greater. The comparison with tympanic temperatures shows different curves with a tendency to overlap, though not always following the same decreasing rate.

CONCLUSION: In our experience, nasopharyngeal temperature has proved to be easily accessible by inserting the thermometer probe through the nostrils along a transverse anterior-posterior line. This can be taken into account in order to positively reassess a method that is simple to use in consideration of its practical application during forensic inspection of a corpse; moreover, it can help to preserve any findings in the perianal area. The number of surveys so far is still too small to create a precise descending temperature curve, but we hope that our encouraging results will lead to more research in order to create yet another valid alternative in a the complex problem of PMI estimation.

OP-109

THE IMPORTANCE OF A CAREFUL EXTERNAL EXAMINATION IN A BURN VICTIM - A CASE REPORT

Nair Rosas Pinto[1], Patrícia Jardim[1], Patrícia Jardim[2], Patrícia Jardim[3], Katerina Puentes[1], Katerina Puentes[3], Agostinho Santos[1], Agostinho Santos[2], Agostinho Santos[3], Agostinho Santos[4]
[1]National Institute of Legal Medicine and Forensic Sciences - North Branch, Porto, Portugal
[2]Faculty of Medicine of Porto University, Porto, Portugal
[3]Forensic Science Center - CENCIFOR, Portugal
[4]School of Health Sciences, Minho University, Portugal

INTRODUCTION: In forensic autopsies, external examination is of paramount importance and assumes particular interest when death results from trauma: a great deal of information is obtained through a careful evaluation of the body surface, and the wounds interpretation. The amount and quality of clinical information can be far from ideal to the forensic pathologists if the victim survived in the hospital for a long period. However, in an emergency room setting and posterior inpatient care, as the forensic

competences of health professionals are missing, lesions with crucial medico-legal value can go unnoticed.

OBJECTIVES: To highlight the importance of a careful external examination in a case of violent death, even after a long stay in the hospital, and to emphasize the importance of health professionals acquisition of forensic competences concerning correct interpretation of wounds.

CASE: The subject, a 77-year-old female, with a history of Parkinson disease and obesity, was admitted at the hospital with 3rd degree burns in about 30 % of body surface. According to hospital records, these had originated in a fire at the victim's home. The victim was treated at the hospital's burns unit, dying after 2 weeks.

External findings revealed at forensic autopsy included diffuse oedema, 3rd degree burns in the face, neck, thorax, abdomen, mostly on the right side, right upper limb and on the fingertips of both hands; and, on the lateral aspect of the right foot, over the calcaneus, a raised, firm and pale blister, measuring 1,2×1 cm, compatible with an electrically caused lesion. Internal findings included bilateral pleural effusion, opaque blood-tinged mucus in the airway and heavy consolidated lungs.

The cause of death was bilateral pneumonia, appearing as a complication of the 3rd degree burns already described. Besides this diagnosis, histopathological examination also confirmed the electrical aetiology of the lesion on the foot.

DISCUSSION AND CONCLUSIONS: Although the endpoint (death caused by bilateral pneumonia in a hospital burns unit) was the same, the external examination allowed the autopsy team to better understand the context of death. What seemed to be the result of a domestic fire had a most likely start in an electric injury of the victim and subsequent fire. This case reminds us of the importance of a complete thorough external examination, even when the circumstances of death seem quite clear, and the need of health professionals to acquire forensic competences.

OP-110

TRAUMATIC RUPTURE OF THE THORACIC AORTA AND DROWNING IN CAR OCCUPANTS AFTER FALLING IN A CANYON – THE VOLUME OF POSTMORTEM BLEEDING

Nemanja Radojevic, Ivana Curovic, Miodrag Soc
Department of Forensic Medicine, Clinical Centre of Montenegro

INTRODUCTION: The postmortem bleeding of an amount of blood is already proven phenomenon. Recent studies showed that 1500 mL of blood found in intrapleural space should be considered as postmortem in the cases of almost immediate deaths cause by pontomedullar laceration. The aim of the study presented here was to determine the postmortem volume of blood in the cases of car occupants who fell in the river canyons and died from drowning accompanied with traumatic rupture of aorta. Considering that drowning last for 2 to 12 min (or 3 to 5, by some authors), the question is about if that time period had an influence to the amount of antemortem exsanguinated blood.

METHODS: Using the autopsy data, two groups were determined. The first one (14 subjects, mean age 44±15.5, min 18, max 68) was created by car occupants who fell in the river canyon and died from drowning accompanied by traumatic aortic rupture (and other organs' and vessels' ruptures). The second one (24 subjects, mean age 41± 15.3, min 17, max 73) was created by car occupants injured out of canyon who died from bleeding from aortic rupture (and other organs' and vessels' ruptures).

RESULTS: In submersed subjects, the amount of exsanguinated blood from aortic rupture was 1235 mL average (SD=267, SE=71), from other organs and vessels 136 mL average (SD=118, SE=32), and totally 1371 mL average (SD=268, SE=72). In second group the amount from aorta was 1502 mL average (SD=393, SE=80), from other organs and vessels 390 mL average (SD=305, SE=62), and totally 1892 mL average (SD=290, SE=59). *T*-test shows significant differences between groups: for aortic bleeding ($t=-2.131$, df=29, $p<0.041$), other organs and vessels ($t=-2.407$, df=29, $p<0.022$), and totally ($t=-4.656$, df=29, $p<0.000$). For both groups there are significant correlation for the aortic bleeding and the amount of total bleeding (the first group: Pearson correlation 0.902, $p<0.000$; the second group: Pearson correlation 0.639, $p<0.001$), but there is not a significant difference between these two correlations (Mann–Whitney *U*-test $z=-0.64$, $p<0.558$). The ROC curves are used to evaluate the amounts of postmortem bleeding originated from aortic rupture and total exsanguinated blood.

CONCLUSION: The amount of aortic bleeding reliably reflects the total amount of bleeding in both groups. The study showed that the time passed during the drowning (2–12 min) did not significantly influence the amounts of antemortem and postmortem bleedings.

OP-111

DIFFERENTIATION BETWEEN ANTEMORTEM BRUISES AND POSTMORTEM DISCOLORATION "THE EFFECTIVENESS OF MACROSCOPIC EXAMINATION COMPARED TO PHOTOGRAPHIC, SPECTROPHOTOMETRIC, MICROSCOPIC, AND IMMUNOHISTOCHEMICAL STUDIES"

Mamdouh Kamal Zaki
Jeddah Forensic Medicine Administration - Kingdom of Saudi Arabia

BACKGROUND: In dead bodies with relatively short time of death, it is rarely a problem to distinguish postmortem hypostasis from bruises in discolored skin. When decomposition of dead bodies advanced, it may be difficult to differentiate between them due to discoloration of putrefaction.

METHODOLOGY: This current thesis aimed at differentiation between antemortem bruises and postmortem discoloration due to hypostasis and discoloration due to putrefactive changes, on the basis of macroscopic examination, including photography and computerized color image analysis, spectrophotometric analysis, microscopic examination using standard stains and immunohistochemical study using anti-Glycophorin A. Fifty cadavers from the Morgue of Zeinhom—Cairo, were studied taking into consideration the circumstances surrounding death and signs of putrefaction, type, site, color, depth of bruises in the skin and underlying tissues. The 50 cases were grouped according to gross examination of skin discoloration into five equals as follows: control group (I); hypostasis group (II); putrefaction group (III); bruising group (IV) and putrefaction with highly suspicion of bruising group (V).

RESULTS: Although there was a great difficulty in differentiating bruising in case of advanced putrefaction with gross examination alone, there was a significant decrease in all Red-Green-Blue color values between each of the studied groups when each specimen was compared with the adjacent specimens. Moreover, spectrophotometric evaluation of all skin specimens, according to CIE (Commission Internationale de l'Eclairage) L*a*b* color values, revealed variable results according to each color value.

As regards group V (putrefaction with high suspicion of bruising), RBCs' extravasation was found in 20 % of skin specimens and 30 % of muscle specimens by standard histopathological stains. While, by immunostaining, positive reaction products for GpA were observed in 70 % of skin specimens and 90 % of muscle specimens, with significant increase in the number of detected cases of bruising by immunostaining in group V when compared to the other staining technique.

CONCLUSION: The effectiveness of the studied techniques (gross examination, photography, histopathological study by standard stains and GpA immunostaining) to differentiate between bruising and either hypostasis or pure putrefaction was evident in the current study. In addition, spectrophotometric analysis was proved to be useful only in the differentiation between bruising and pure putrefaction. Although the studied techniques, except histopathological study by standard stains and GpA immunostaining, failed to distinguish between bruising in putrefied specimens with high suspicion of bruising, yet glycophorin A immunostaining was found to be the most useful and sensitive marker than standard histopathological staining.

OP-112

PATHOLOGICAL STUDY OF DIFFERENT BRAIN AREAS IN FATAL HEAD INJURIES

Mohamed Ghait[1], Aisha Maklad[2], Rabab El Kelany[2]
[1]Forensic Medicine Administration, Tanta, Egypt
[2]Faculty of Medicine, Tanta University, Egypt

Head injuries are not only the most common and most important in forensic practice, but also the commonest cause of death amongst young adults. This study was carried out on fatal head injury cases representing all selected cases of criminally suspected fatal head injuries referred to the Forensic Medicine Departments in Middle Delta, Ministry of Justice, during a period of 2 years. During the period of study, ninety-two cases were selected to be victims of direct impact loading to the head. Ten cases died from other medical or traumatic causes rather than head injury were taken as control cases. All selected cases were studied according to socio-demographic data, type, manner and location of injury, mechanical loading applied to the head, intracranial pathological findings, macroscopic and microscopic brain damage and their relations to the survival time. Standard forensic autopsy technique was performed and specimens from the brains were prepared for routine histopathological examination and were stained by H&E stain and silver impregnation technique. In this study, males were the most common victims (84.8 %) sustained fatal head trauma. The majority of the studied cases (60.9 %) came from rural areas. Farmers were the most common class (33.7 %) vulnerable to fatal head trauma, followed by manual workers (27.2 %), then intellectual workers (I 7.4 %). Homicide was found to be the main manner of death in the studied cases (96.7 %). In this study, subarachnoid haemorrhage (associated with other types of hemorrhages) was the most common frequent haemorrhage as reported in (93.5 %) of the cases. Brain contusions were found in most of the studied cases as only 6 cases (6.5 %) were recorded without brain contusions. Herniation contusion was the most frequent type as it was found in (59.8 %) of the cases. Brain damage secondary to raised intracranial pressure was found in (88.1 %) of the studied cases, whereas brain edema with internal herniation represented (60.9 %), while brain edema with internal herniation and added secondary brain-stem haemorrhage or infarction represented (27.2 %). Histopathological examination showed diffuse axonal injury in 23 cases (25 %) whereas 21 of those 23 cases died before 12 h and revealed swollen tortuous beaded axons, while the remaining 2 cases died 12 h after injury and displayed axonal bulbs. In this work, it was concluded that blunt head injuries appeared to be the leading cause of death, almost always due to their indirect effects on the brain.

OP-113

TIME-DEPENDENT FTIR SPECTRAL CHANGES OF MASSIVE HEMORRHAGE DEATH IN RATS DURING THE LATER POSTMORTEM PERIOD

Ping Huang[1], Shiying Li[2], Zhendong Li[1], Yu Shao[2], Ningguo Liu[1], Donghua Zou[1], Jianhua Zhang[1], Zhiqiang Qin[1], Yijiu Chen[1]
[1]Department of Forensic Pathology, Institute of Forensic Science, Ministry of Justice, Shanghai, China
[2]Department of Forensic Medicine, Shanghai Medical College, Fudan University, Shanghai, China

Massive hemorrhage death is one of the most common causes of death in forensic practice. Our previous study shows time-dependent FTIR spectral changes in rats of craniocerebral injury death during 7 days postmortem. The aims of the study were as follows: (1) to investigate the spectra in different organs in rats of massive hemorrhage death, (2) to explore the spectral changes in different organs 15 days postmortem and best mathematical model with different band absorption ratio changes to PMI, (3) to compare the spectral changes results of two causes of death. Ten male Sprague–Dawley rats were sacrificed by cutting abdominal aorta and cadavers were kept at 20±2 °C in a control chamber. 7 different organs were sub-sampled from same rat at intervals of 1 day until reaching 15 days postmortem and measured by FTIR spectrometer. Six mathematical model functions were explored. The absorbance of bands and band absorbance ratios showed increase or decrease with increasing time after rat death and most band absorbance ratios remained stable from 7 days to 15 days after death. The absorbance of bands assigned to C-H and=CH increased continuously; the absorbance of bands from PO2- stretching decreased continuously; the absorbance of bands from C-OH bending and CO-O-C antisymmetric stretching remained relatively stable. Cubic model functions of the various bands absorbance ratios against PMI showed a stronger related coefficient. The spectral changes of two causes of death and of different organs were similar. These spectral changes in rat are believed to reflect progressive postmortem chemical functional groups changes. Furthermore, FTIR spectroscopy reveals a time dependent metabolic process with potential for using as a method to estimate PMI during 7 days postmortem and further studies should be considered.

OP-114

FORENSIC MEDICAL ASSESSMENT OF LIVER INJURY IN BLUNT ABDOMINAL TRAUMA

Ivan Aleksandrovich Dubrovin[1], Irina Alekseevna Dubrovina[1], Yuri Ivanovich Pigolkin[1], Roman Nikolaevich Chirkov[2]
[1]The First Moscow State Medical University I.M. Sechenova, Russia
[2]Tver Medical Academy, Tver, Russia

When you hit in the stomach with handle bar gap was located at the site of force application on the visceral surface of the liver left lobe. The gap was wrong stellate shape, size 9×6 cm, depth 4 cm, smooth edges and rounded ends, multiple tissue bridges in the future. On the surface, the gap had extended alternating deep and wide cracks elevation located parallel to the surface of the liver.

When you hit in the stomach with foot gap was located at the site of force application on the lower edge, diaphragmatic and visceral liver surfaces. The was had a length of 11 cm and a depth of 3 cm, jagged edges, blunt ends, tissue bridge in the bottom. The surface rupture consisted of a deep arcuate body alternating extended deep cracks and elevations.

When you hit in the stomach with fist gap was located at the site of force application on the lower edge of the liver right lobe. The gap has a length of 5 cm and a depth of 3 cm, rough edges and rounded ends, small tissue bridge to the future. On the surface, the gap had alternating elevations, depressions and occasional shallow cracks.

Upon impact with the object of unbounded surface (autotrauma) were observed multiple breaks in the area of force application on the lower edge, diaphragmatic and visceral surfaces of the liver (local discontinuities) in the interior of the liver (central breaks), on the opposite site of the liver area of force application (shock-breaks) and away from it (peripheral).

The relief of liver local ruptures was the same as in case 1.

The central gap had a size of 4×5 cm surface rupture consisted of two zones: the first with a granular surface and the second was at the center of the first zone, had a rough terrain, formed by deep fissures and high ledges.

Shock break was located in the sagittal plane had a linear form coarse edges and rounded ends, big tissue bridges in the bottom. On the surface of the rupture deep cracks alternated with high ledges, which were situated at right angles to the liver surface.

Peripheral tears had a linear shape, finely toothed edges and rounded ends, big tissue bridges in the bottom. On the rupture surface there were alternating elevations and shallow cracks located at a right angle to the liver surface.

OP-115

RELATIONSHIP BETWEEN LANDING DISTANCE AND SERIOUS DEGREE OF CRANIOCEREBRAL INJURY FROM ACCIDENTAL FALLING

Ningguo Liu[1], Huilin Zhao[2], Jianrong Xu[2], Zhengdong Li[1], Jian Zheng[1], Yijiu Chen[1]
[1]Institute of Forensic Science, Ministry of Justice, China
[2]Department of Radiology, Renji Hospital Affiliated to Shanghai Jiaotong University, China

OBJECTIVE: To explore the degree of craniocerebral damage that influenced by the landing distance of tumble, intent to provide some help for the cause analysis of unwitnessed falling accidents.
METHODS: 34 clinical falling cases of craniocerebral injury were selected. The relationship between landing distance, impact position or direction and several biomechanical parameters, such as injury degree, fracture position and contrecoup cerebral contusion, were observed by epidemiological retrospective study. All the cases were scanned by multi-slice CT (MSCT) for virtual autopsy (virtopsy) analysis. Aided by ANASYS computer software, a digital model of three dimensional finite elements was used to analyze the distribution of stress and strain on the digital scalp, skull, and brain under different falling distance.
RESULTS: (1) Three height degrees, higher, high and low, were used to simulate falling from building, bicyclers and pedestrians, respectively. The maximum stress and strain on skull varied with changes of falling height. Those results were also confirmed by the statistical results from real cases. (2) Because there were different results between face and occipital side that touched ground, the injuries of tumble under the two conditions above showed different damage degree even in a same height.
CONCLUSIONS: It is feasible to estimate fallen distance according to the damage degree measured by virtopsy and computer simulation. This finite elements analysis (FEA) model may be helpful for establishing failure criteria for the craniocerebral injury in falling.

OP-116

TUNISIA BEFORE AND AFTER JANUARY 2011. A FORENSIC-BASED ANALYSIS OF THE 'JASMINE REVOLUTION' AND ITS AFTERMATH

Fatma Gloulou, Maha Shimi, Olfa Bekir, Mohamed Allouche, Mehdi Ben Khelil, Ahmed Banasr, Anis Benzarti, Mongi Zhioua, Moncef Hamdoun
Department of Forensic Medicine, Charles Nicolle University Hospital, Tunis, Tunisia

Tunisia has been through a worldwide-known revolution that gave birth to other revolutions and socio-political arousal in many other countries. It is the first popular revolution the Arab world has known. Besides, the so-called 'Jasmine Revolution' was acknowledged and supported throughout the world for its non-violent and dignity-seeking basis.

This revolution, which lasted for about 4 weeks (from December 17th till January 14th), has changed the political, economic and social scenes in the whole country.

If the number of deceased and injured persons during that 4-week period is now known, very little is known about the challenges Tunisians have to face since then and the impact of these challenges on their daily life.

How many people die, why they die, how they die and where they die can give a clue on their life conditions and potential internal and/or external stressing or precipitating factors.

In analyzing our forensic material at the Forensic Medicine Department in Tunis in the year preceding and that following this revolution, we aimed at depicting and highlighting the differences in terms of total number and proportions of causes and manners of deaths.

OP-117

"CAUSES" OF UNEXPLAINED DEATH (CAUSES OF THE UNDETERMINED CAUSES)": MULTIFACTORIAL PROCESS LEADING TO OBSCURE DEATH"

Dr. Othman El Shebani El Zentani
Center Of Judicial Expertise And Research- Forensic Medicine Department- Ministry Of Justice, Tripoli, Libya

Obscure death (OD) is a medico-legal dilemma, and it had not been well covered in the literature. It could be real OD if no cause was achieved after having all relevant data and conducting a complete standard autopsy followed by a series of complementary investigations. Or it could be relative OD if one or more of those important procedures or investigations were not performed, whatever were the circumstances.

OD is a multifactorial problem, so we had discussed most of the factors involved such as cadaveric factors, autopsy factors, laboratory factors, financial factors, legislation and local regulations, etc.…

In fact, obscurity of death includes undetermined mechanism, cause and mode of death. There are a lot of factors (problems) which could interact and lead to a situation of cul-de-sac, i.e., obscure death. However, our present discussion is a general one.

OP-118

STUDYING OF LEGAL SITUATION OF ERGONOMIC AGRICULTURAL MANUFACTURING IN LIGHT OF CONSERVATION OF WORKERS' HEALTH

Roya Hassankhani[1], Razieh Hassankhani[2]
[1]Tabriz University
[2]Bu-Ali Sina University

In the modern century for providing the need of increasing population as well as for decrease the hard works in farms the number of agricultural machinery and types of them are increased. In this situation the workers in farm must operate different agricultural machinery and often they must work in farms with these machines for the plenty of times. For this reason the manufactures must design the ergonomic and safe machinery which the health of farm workers can be secured. This is the duty and liability of manufacture and we can study this responsibility in the form of civil liability of manufactures relate to providing health of farm workers.

OP-119

COLOR AND AGING OF BRUISES IN CLINICAL FORENSIC MEDICINE—A SAMPLE FROM LISBON

Tiago Silva Costa[1], Bruno Miguel Santos[3], Jorge Costa Santos[2]
[1]South Branch of the National Institute of Legal Medicine and Forensic Sciences, Portugal
[2]Faculty of Medicine, Lisbon University - Portugal
[3]Cencifor – Forensic Sciences Centre - Portugal

BACKGROUND: Examinations of victims of bodily damage are a significant contributor to the workload of the Clinical Forensic Medicine services of the National Institute of Legal Medicine and Forensic Sciences (INMLCF). The resulting injuries are described in the medico-legal reports, including the color of bruises. As the time of the offence is usually known, we have the possibility to study the relation between the evolution of a bruise and the color it presents when the medical examination.
METHODS: Reports of forensic medical examinations (n=92) performed at the South Branch of the INMLCF, in Lisbon, during the year 2011, on alleged victims of bodily damage presenting injuries, were reviewed. The data include sociodemographic characteristics of the victims, aggression description and resulting injuries. Statistical analysis was done using Statistical Package for Social Sciences 12 for Windows.
RESULTS: Results showed that 63 % of the victims were female, with a median age of 33 years (minimum=4; maximum=79). Injuries resulted from blunt force trauma in 96.7 % of cases. The median number of lesions by victim was 3 (minimum=1; maximum=28), for a total of 392 individual injuries. There were 215 individual bruises classified for color (red, purple, blue, brown, green or yellow). The median age of the bruises (inferred from the slip of time between the dates of the offences and the examinations) was 3 days (minimum=1; maximum=8). A Kruskal-Wallis test was conducted to evaluate differences on the median age (number of days) of the bruises, among the six color classifications. The test was significant ($X2$ (5, N=215)=32.29, p<0.001). Follow-up tests (Mann–Whitney) were conducted to evaluate pairwise differences among the six color groups. These indicated a significant difference in the median age of the bruises (p<=0.001) when red, purple or blue bruises were compared to green or yellow bruises. No significance difference was found when green and yellow bruises were compared against each other, or when red, purple or blue bruises were compared amongst themselves. Brown bruises showed no significant difference with any of the other color classifications.
CONCLUSION: Inferences on age of bruises should not be done based solely on the presenting color, as our study sample shows that sequential color "aging" may not be accurate, and is certainly not clear cut. On the other hand, data suggests that the usual color stages for the evolution of bruises might be helpful in establishing, or indeed denying, the causal nexus in some cases.

OP-120

IN-VITRO METABOLISM AND ANALYSIS OF LEGAL HIGHS USING LC-MS

Majed Yasin Alshamaileh, Jose Gonzalez Rodriguez, Mark Baron, Ruth Croxton, Issam Hussain, Peter Rose
University of Lincoln

The cultural problem of drugs abuse is of critical importance for the public and the authorities. "Designer drugs" are those compounds produced by performing minor alterations to one or more functional groups of a known chemical with specific pharmacological activity, to avoid the legal regulations and to produce more effective substances. In the latest few decades a new class of "designer drugs" known as "legal highs" has emerged on the abuse drugs market, mostly through internet websites. As "legal highs" appear, usually, for a short while before they have been controlled, no much data could be known about their metabolic pattern. At the time they appear on the market the metabolism of these drugs is generally unknown, and therefore, it must be studied in order to obtain data necessary for analytical method development as well as toxicological risk assessment. In-vitro metabolic studies are well established in the pharmaceutical industry; however, no much work has been performed in the field of forensic toxicology. In-vitro metabolism studies of new designer drugs can be done for qualitative and quantitative assessment of new designer drug metabolites. In our research work, liver and lung microsomes and S9 fractions were prepared in our laboratories, and used to assess the metabolic pattern of 'legal highs'. The tested 'Legal highs' were bought form internet-based companies; and their identities were confirmed by mass spectral study. Evaluation of the metabolism of mephedrone, MDAI, methcathinone and methoxetamine were performed, and up to the point, the prepared microsomes and S9 fractions system proved to be functioning to metabolise some of the mentioned 'legal highs', where they and their metabolites were analysed using LC-MS/MS.

OP-121

STORAGE OF BLOOD AT VARYING FREEZING TEMPERATURES FOR METHEMOGLOBIN DETERMINATION: COMPARISON OF HUMAN BLOOD AND LIVESTOCK BLOOD

Susumu Nittono, Masahiro Kito, Masaya Fujishiro, Xiao-Pen Lee, Keizo Sato
Department of Legal Medicine, Showa University School of Medicine, Tokyo, Japan

Methemoglobin(Met-Hb) in blood is rapidly reduced to hemoglobin (Hb) by intraerythrocyte Met-Hb reductase when blood samples are stored as whole blood without freezing. Conversely, Met-Hb formation occurs by autoxidation when blood samples are stored for 1 week or longer at −20 °C or −30 °C without any addition of chemicals. Ishiwata et al. have reported previously that significant Met-Hb formation was

observed during storage of whole blood without any addition of chemicals even at −80 °C. In the present study, we examined in detail Met-Hb formation in human whole blood during storage at varying freezing temperatures for up to 30 days in the case of untreated, heated, or nitrite-treated human blood samples, as well as cows, horses, and sheep (two subjects each). To avoid the repeated freezing and thawing of human or the livestock blood samples, whole blood and blood-cryoprotectant mixtures were divided into three parts, frozen immediately on powdered dry ice, and stored at the appropriate temperature. Met-Hb concentrations were determined in blood samples at the time of storage and after 7, 14, and 30 days storage. For nitrite-treated blood stored at 4 °C, almost complete reduction of Met-Hb was observed after 7 days. For untreated and heated blood, rate of Met-Hb formation by autoxidation increased with increasing freezing temperatures. When human untreated blood was stored frozen for a week or longer, considerable formation of Met-Hb by autoxidation was observed even at −85 °C; very slight autoxidation at −196 °C. When the livestock untreated blood was stored frozen for a week or longer, slight autoxidation was observed at −55 °C, -65 °C, -75 °C and almost stable values were obtained at −85 °C as well as at −196 °C, though significant autoxidation was observed at −30 °C and at −45 °C. On the other hand, addition of an equal volume of the cryoprotectant solution of Rowe et al. to all blood samples inhibited this autoxidation during storage until at least 30 days even at −30 °C. From the results obtained, we suggest that the storage of human blood samples with the cryoprotectant should be used for forensic or clinical toxicology. In the veterinary field, the storage of whole blood at −85 °C or at −196 °C is also acceptable.

OP-122

A MATHEMATICAL DESCRIPTION OF THE WORK OF CONDUCTING POLYMER BIOSENSORS USED IN FORENSIC ANALYSIS

Volodymyr Valentynovych Tkach, Vasyl Vasylyovych Nechyporuk, Petro Ivanovych Yagodynets', Oxana Tarasivna Slipenyuk
Chernivtsi National University, Chernivtsi, Ukraine

Poisoning is one of the most widely used murder methods, because it does not leave traces on the victim's body and it doesn't spill the blood. Sometimes the poisons, used in such purposes are difficult to be detected, so it encourages the legal medicine and chemistry to search for novel analytic techniques, capable to detect those poisons more easily.

One of this techniques can be the use of electrochemical biosensors, based on specially modified conducting polymers. The mechanism of their sensor activity can be represented in next stages:

1. specific reaction of the specially modified conducting polymer with the poison
2. electrochemical oxidation of modified groups. The electrochemical signal detects the concentration of the present poison. One of the example of such sensor can be PQQ-modified polypyrrole electrode, the action of which can be represented in general as:

$$\begin{aligned}&\mathrm{Poison} + \mathrm{CP} - \mathrm{Enz(Ox)} - - > \mathrm{Poison(oxid.\ form)} \\ &\qquad + \mathrm{CP} - \mathrm{Enz(Red)(chemical\ stage)} \\ &\mathrm{CP} - \mathrm{Enz(Red)} - \mathrm{ne} - -- > \mathrm{CP} - \mathrm{Enz(Ox)} \\ &\qquad (\mathrm{electrochemical\ stage}).\end{aligned}$$

We describe the work of such sensor in potentiodynamic constant voltage mode by building the mathematical model of its work and analyzing it by using the linear stability theory and bifurcation analysis. The stability analysis can determine the region of the best sensor response. It is vast enough to use it in forensic analytics. The oscillatory response can be caused by changes in the double electric layer during the electrochemical oxidation of the modified conducting polymer and also by the cyclic change of its conductivity during the reaction.

OP-123

NEW APPROACH OF CARBON MONOXIDE (CO) DIAGNOSTIC IN HUMAN BLOOD: TOXICOLOGICAL INTERPRETATION BASED ON TOTAL CARBON MONOXIDE CONCENTRATIONS

Vincent Varlet[1], Joëlle Muller[1], Cristian Palmiere[2], Emma Lagroy De Croutte[1], Patrice Mangin[2], Marc Augsburger[1]
[1]Forensic Toxicology and Chemistry Unit, University Center of Legal Medicine Lausanne-Geneva, Lausanne, Switzerland
[2]Forensic Medicine Unit, University Center of Legal Medicine Lausanne-Geneva, Lausanne, Switzerland

BACKGROUND: Among the current methods for HbCO estimation in blood, spectrophotometric (including automated systems called CO-oximeters) are mainly used for clinical diagnosis. However, in forensic applications, spectrophotometric methods show several inconveniences. A loss of accuracy is noticeable when this method is applied to altered postmortem samples because of postmortem interferences such as thermo-coagulation, putrefaction or contamination leading to errors due to turbidity in blood samples containing lipids or microcoagulates. Therefore, we have developed an analytical method to quantify the total carbon monoxide in human blood and applied it to several CO and no CO-related cases.

MATERIAL AND METHODS: The total CO measurement was performed by Headspace-Gas chromatography–mass spectrometry equipped with a Molsieve 5 Å for permanent gas analysis. An in-situ generation of 13CO internal standard was carried out thanks to stoichiometric reaction between sulfuric acid and H13COOH. Calibration curves were done with HCOOH. In real samples, sulfuric acid allows the simultaneous generation of internal standard and release of CO from HbCO. HbCO saturations were estimated using CO concentrations (HbCOback calc) and compared with results obtained by spectrophotometry (HbCOspec).

RESULTS: 15 blood samples from living drivers and about 25 blood samples from postmortem cases related or not to CO were used to build cut-off values. Three main categories have been defined. For living cases (HbCOback calc and HbCOspec <15 %), CO concentration should not overcome 1 μmol/mL. For deaths without CO exposure (HbCOback calc and HbCOspec <20 %), CO concentration should not overcome 2 μmol/mL. For deaths with CO exposure (HbCOback calc >35 % and HbCOspec >35 %), CO concentration should be higher than 3 μmol/mL. For deaths with CO exposure (HbCOback calc >35 % and unexpected HbCOspec <20 %), several hypotheses as putrefaction and HbCO dissociation were presented.

CONCLUSION: Cut-off values have been determined to investigate the real role played by CO in CO-related intoxications. Moreover, as putrefaction and other phenomena can physically interfere in spectrophotometry, unexpected HbCOspec have been explained thanks to total CO measurement.

OP-124

STABILITY OF ZOPICLONE IN WHOLE BLOOD AND CORRESPONDING DRIED BLOOD SPOTS

Gisela Skopp, Ricarda Jantos
Institute of Legal Medicine and Forensic Medicine

OBJECTIVES: There is growing concern of increased use of zopiclone which is also reflected in forensic case work. Zopiclone is subject to degradation in blood specimens. Therefore, a stability study in blood was performed at different storage conditions (−20, 4, 20, 40 °C; up to 30 days) using both, spiked and authentic samples. Sampling and storage as dried blood spots (DBS) have been shown to stabilize labile compounds. Therefore, it was assessed whether determination of zopiclone from DBS is as reliable as from blood and whether DBS is able to prevent degradation of zopiclone.
MATERIALS-METHODS: Degradation kinetics from blood samples (spiked, 50 and 250 ng/mL; authentic, $n=10$) and corresponding DBS were determined using fully validated LC-MS/MS assays. The degradation product 2-amino-5-chloropyridine (ACP) of zopiclone was also covered by analysis.
RESULTS: Results showed that zopiclone was unstable in blood at all storage temperatures except 20 °C. There was agreement between the measurement of zopiclone from either blood or matching DBS in freshly prepared samples. Stability of zopiclone in spiked and authentic blood was increased in DBS compared to matching blood samples stored at the same condition. About 85 % of the initial concentration of zopiclone was still present in authentic DBS on day 8 at 20 °C whereas only 71 % could be recovered from authentic whole blood stored at 4 °C for the same period of time. It could be shown that ACP was formed from zopiclone in equimolar amounts in both media.
CONCLUSIONS: Pre-analytical conditions have a major impact on the recovery of zopiclone from blood. Measurement of both zopiclone and ACP may be helpful to estimate the initial concentration in both blood and DBS. With respect to its known advantages, DBS can be recommended as a valuable alternative for the determination of zopiclone from blood.

OP-125
DEGRADATION RATE OF FOUR MAJOR PHOSPHATIDYLETHANOL MOLECULAR SPECIES DURING ABSTINENCE

Rafael Boscolo Berto[1], Rafi El Mazloum[1], Marianna Russo[1], Giovanni Cecchetto[1], Gloria Pessa[2], Davide Mioni[2], Alessandro Nalesso[1], Guido Viel[1]
[1]Department of Molecular Medicine, Section of Legal Medicine and Forensic Toxicology, University of Padova, via Falloppio 50, 35100, Padova, Italy
[2]Parco dei Tigli Hospital, Via Monticello 1, 35033 Costigliola di Villa di Teolo, Padova, Italy

INTRODUCTION: The alcohol biomarker phosphatidylethanol (PEth), a group of phospholipids with a common polar phosphoethanol head group onto which two fatty acid moieties are attached at positions sn-1 and sn-2, is formed in cell membranes in the presence of ethanol by the catalytic action of the enzyme phospholipase D on phosphatidylcholine.

Previously published literature has demonstrated that the half-life of total PEth is about 4 days, whereas a recent paper has shown that PEth 16:0/18:1, the most abundant homologues, have a half-life of about 7–10 days in social drinkers who stop consuming alcohol.
AIMS: The study aimed at investigating the degradation rate of four major PEth homologues (PEth 16:0/18:1, PEth 16:0/18:2, PEth 18:1/18:1 and PEth 16:0/20:3) in five alcoholics following a detoxification program.
METHODS: Whole blood was collected in EDTA tubes at admission, after 15 days and 30 days of abstinence. Whole blood (0.3 mL) fortified with the internal standard (phosphatidylethanol, 0.5 μM) was diluted with water (0.3 mL) and briefly ultrasonicated; 2-propanol (0.8 mL) and hexane (1.2 mL) were added dropwise under vortex-mixed agitation. The organic layer once evaporated was redissolved with isopropanol (50 μL) and diluted with methanol (150 μL). Analysis was performed on a LTQ-Orbitrap mass spectrometer (Thermo, San Jose, CA, USA) equipped with an electrospray ionization (ESI) source operated in negative ion mode. The chromatography was performed at 55 °C on a Zorbax XDB C18 column (50×4.6 mm, 1.8 μm particle size; Agilent Technologies, Palo Alto, CA, USA) using acetonitrile (A), 10 mM ammonium acetate in water (B), and 2-propanol (C) as mobile phases with a flow rate of 200 μL/min.
RESULTS: The preliminary results on 5 subjects undergoing detoxification show that there are some differences in the normalization rate of the four investigated PEth species; PEth 16:0/18:1 and PEth 18:1/18:1 exhibit a half-life of about 7–10 days, whereas PEth 16:0/18:2 and 16:0/20:3 of about 15 days. If confirmed in further studies and on a wider number of subjects, these data could suggest the use of different molecular species as markers of relapse in alcoholics and heavy drinkers who claim abstinence.
CONCLUSION: The data suggest that different Peth homologues could be used for detecting relapse in alcoholics or heavy drinkers claiming abstinence.

OP-126
CHOKING BY NEUROVEGETATIVE SIDE EFFECTS AS CONSEQUENCE OF GHB AND ETHANOL INTERACTION IN AN ALCOHOL ABUSER

Riccardo Rossi[1], Maria Lodise[1], Sara Partemi[1], Paola Frati[2], Mauro Bacci[3], Antonio Oliva[1]
[1]Institute of Legal Medicine, Catholic University, Rome, Italy
[2]Institute of Medicine & Law Department of Anatomical, Histological, Forensic & Orthopaedic Sciences, Sapienza University of Rome, IRCSS Neuromed, Pozzilli
[3]Institute of Legal Medicine, University of Perugia, Italy

AIMS: Gamma-hydroxybutyrate (GHB) is a naturally occurring short-chained fatty acid produced endogenously within the mammalian brain. Its specific functions are not completely understood, but it has been hypothesized to act as a central neurotransmitter or neuromodulator, since high affinity cerebral receptors and mechanisms for its synthesis, uptake and release have been shown to exist. This drug has found legal uses as anesthetic agent and in the treatment of narcolepsy. In several countries GHB has been used for alcohol withdrawal syndrome (AWS) and long term treatment of alcohol addiction. Actually, in Italy this drug can be used for the treatment of alcoholism under the supervision of a physician. In detail the manner in which GHB interacts with EtOH is not well understood. Research into the nature of these interactions is incomplete and often contradictory. There is evidence that the mechanism in which the 2 drugs interact may be synergistic in nature, such that, when low doses of GHB and alcohol are combined, the resulting effects of the drug combination are markedly greater than the predicted effects based upon each drug administered alone.
SETTING AND PARTICIPANTS: We present the case of a patient under long-term treatment with GHB for alcohol addiction who was found dead for choking due to neurovegetative side effects (vomiting episode) possibly provoked by the co-ingestion of the two drugs.
CONCLUSIONS: We show autopsy and toxicological data and briefly discuss the possible pharmacokinetic and pharmacodynamic mechanisms underlying the interaction.

OP-127

EDUCATIONAL NEED ASSESSMENT FOR PREVENTION OF INDUCED ABORTION IN IRAN

Lida Jarahi[1], Alipasha Meysamie[2]
[1]Department of community medicine, Mashad Faculty of Medicine, University of Medical Sciences, Iran
[2]Department of community Medicine, Tehran Faculty of Medicine, University of Medical Sciences, Iran

BACKGROUND: Annually about 73,000 induced abortions are reported among Iranian married women. Educational need assessment is one of the important steps for decision makers to program preventive interventions. We assessed Women's knowledge and attitude about causes and complications of induced abortion for assessment of educational needs.
METHOD: We surveyed 480 new married women at couples' health counseling centers in Mashad, Iran. Their knowledge and attitude towards induced abortion accessed via a self rating questionnaire.
RESULTS: Adequate knowledge was evident only in 124 (25.8 %) of participants and 330 (68.8 %) of them had negative attitude toward induced abortion. There was a significant statistical relationship between lower women's knowledge and attitude and lower age, lower education and lower interest for using contraception ($P<0.05$). Although most of participants expressed their disapproval of induced abortion, they did not have the required knowledge which could reduce abortions and unwanted pregnancies.
CONCLUSION: Women's inadequate knowledge about consequences of induced abortion can lead to unwanted pregnancy and unsafe abortion, while informed women can take family planning issues more seriously. This study showed that new married women had inadequate knowledge and they need to specific educational program. It is better that consultation session before and during marriage merge with couples' health counseling centers programs.

OP-128

FREQUENCY OF 6-YEAR STUDY OF TRANSSEXUAL PATIENTS REFERRED TO FARS LEGAL MEDICINE CENTER (SOUTH IRAN)

Mohammad Zarenezhad[1], Arya Hedjazi[1], Razyeh Hassanzadeh[2]
[1]Iranian Legal Medicine Research Center
[2]Shiraz University of Medical Sciences

INTRODUCTION: Sexual identity disorders are a group of diseases with unknown epidemiology in which opposite sexuality is preferred and is accompanied with feelings of being born in wrong sex. Transsexuals demand biological treatments (surgery, hormonal) for changing their biological sex and also for acquiring anatomic sex characters of the opposite sex. According to scientific resources, the incidence rate of trans sexuality is one in 1000 males compared with one in 30000 females. In this study we review epidemiologic study of transsexual patients referred to Fars Legal Medicine Center during 2006 to 2011
METHODS: In an analytical cross sectional study, all transsexuals referred to Fars Medical Register office in the years 2006–2011 who requested consent for changing sexuality, and received at least 6 months of psychotherapy and passed all legal stages to receive the psychology committee approval before sex change, were studied. Some psychological tests used in the psychology committee interviews were MMPI, Rorschach test and TAT. Finally, the data of the project questionnaires were recorded by SPSS version 14. Descriptive statistics were used to reveal the results and statistical tests were used for analyzing the data. The PV measures less than 0.05 were considered to have significance.
RESULTS: In general, 56patients with the average age of 26/2 years with primary sexual dissociation of 18women and 26 men were entered in the study. From the population studied, 50patients were single and three were married. Out of the 32 patients, 24 persons did not have any job (equal to 41/7 %). Almost 13 persons had high school or lower certificates. 19 persons had junior college diploma, 14 had bachelor's degree and ten persons had the master or doctorate degree. 44 patients preferred to have the opposite sexuality and 12 persons had the sexual intercourse experience. Psychological tests of all patients revealed psychological disorders. Sexual identity was opposite to the current sex of the patients.
DISCUSSION: In total, psychological diseases, especially borderline personality or depressive disorders and also suicide are often seen in the transsexuals'. Furthermore; transsexuals commonly injure their genitalia in order to make surgeons perform transformation procedures. Considering high rates of joblessness in the population studied and also the high rates of sexual contacts among this group, it is important to pay more attention to psychotherapeutic programs. In addition, as female numbers are considerable in the study, it is necessary to do more comprehensive studies and educate their family members more than before.

OP-129

FREQUENCY OF CLINICAL ANGER SCALE AMONG CLIENTS REFERRED TO SHIRAZ (SOUTH IRAN) LEGAL MEDICINE CENTER DURING 2011–2010

Mohammad Zarenezhad[1], Arya Hedjazi[1], Najmeh Pakniyat[2], Raziyeh Hassanzadeh[2]
[1]iranian legal medicine research center
[2]shiraz university of medical sciences

BACKGROUND: Almost everyone at some time experiences anger in some forms. Most of us have played the role of an angry actor, been the target of someone else's anger, or witnessed expressions of anger between other individuals in real life, on stage, or in the media.
METHODS: the Clinical Anger Scale (CAS) [by Snell, W.E]: Twenty-one sets of statements were prepared for this purpose. In writing these groups of items, the format from one of Beck's early instruments was used to design the Clinical Anger Scale (Beck et al., 1961; Beck, 1963, 1967).
The following symptoms of anger were measured by the CAS items: anger now, anger about the future, anger about failure, anger about things, angry-hostile feelings, annoying others, angry about self, angry misery, wanting to hurt others, shouting at people, irritated now, social interference, decision interference, alienating others, work interference, sleep interference, fatigue, appetite interference, health interference, thinking interference, and sexual interference. Subjects were asked to read each of the 21 groups of statements (4 statements per group) and to select the single statement that best described how they felt. The four statements in each cluster varied in symptom intensity, with more intense clinical anger being associated with statement "D." Each cluster of statements was scored on a 4-point Likert scale. Subjects' responses on the CAS were summed so that higher scores corresponded to greater clinical anger.
RESULTS: 55 % of the clients have minimal anger scale, 16 % of them have mild anger scale, 16.7 % of them have moderate anger scale and 12.3 % of them have severe anger scale.

P-Value of The relation between CAS and income is 0.026 (Spearman Correlation Coefficient=−129, with) and so there is a meaningful relation

between anger and level of income. Higher the level of income is, lower the anger scale is.

P-Value of the relation between CAS and education level is 0.137 (Spearman Correlation Coefficient=−0.037) and so there isn't any meaningful relation between anger and education level.

P-Value of the relation between CAS and reason of referral to legal medicine centers is 0.203 (on the basis of Kruskal-Wallis test) and so there isn't any meaningful relation

CONCLUSIONS: CAS is higher among clients with lower income, women and idle ones. The relation between CAS and other variants (level of education, age, residence, marriage status and reason of referral to legal medicine centers) is not meaningful.

OP-130

STUDY OF GENETICS OPERATIONS IN LIGHT OF THE CONVENTION OF CHILDREN RIGHTS

Razieh Hassankhani[1], Hadi Hassankhani[2]
[1]Bu Ali Sina University
[2]Tabriz University

In step with progresses of human life, variant needs emerged. For obviating of human needs, modern developments in the field of technology helped them. One of the most useful achievements of biotechnology is modern product in the area of genetic. Genetics evolution occurred by discovering of DNA in first 1940s. Nowadays simulation is possible in genetics. Freedom in the domain of Genetic is mentioned in article 2 of Universal Declaration of Human Rights: "Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status." Beside declaration of human rights we referred to convention of children rights and resorting to these two international documents. At first sight, it may strike that selectively determining the characteristics of children by parents is their right to have children with desired characteristics, but this matter should be considered from the view point of the children themselves, which under the convention of children rights, the children must have desired personality growth and this processes begin from the early stages of life.

OP-131

STUDY OF ACCEPTANCE OR REJECTION OF HUMAN SIMULATION IN LINE WITH THE FREEDOM OF SIMULATED HUMANS (WITH EMPHASIS ON UNIVERSAL DECLARATION OF HUMAN RIGHTS)

Razieh Hassankhani, Bizhan Hajiazizi
Bu Ali Sina University

One of the most useful achievements of biotechnology is modern product in the area of genetics. In this sphere with studying gene features and their changes, desired amendments are going to be made. The genetic scientists make desired changes to creatures by this phenomenon. Biotechnology has made much development in the field of simulation. Biotechnology, despite fine and useful effects, such as relief and reformation of congenital abnormalities, improvement of some disease, e.g. rickets has many uncomplimentary effects in simulation sphere. If these detrimental and harmful effects come to existences, there would be wretched destiny for the next generation. Such as descending human dignity, smuggling of organs of new borne humans, generation without identity, second class citizens and …. Creation of Second Class Citizens has conflictions with articles 1 and 4 of Universal Declaration of Human Rights. Article 1: "All human beings are born free and equal in dignity and rights" Article4: "No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms." In this Article the issues of human simulating and its positive and negative effects in the light of Universal Declaration of Human Rights as a primeval document is studied.

OP-132

GENOCIDE, ONE OF THE RESULTS OF THE FREEDOM OF GENETICS OPERATIONS

Razieh Hassankhani, Sattar Azizi
Bu Ali Sina University

Genetic science is one of the branches of biology. By way of existing contacts and discussion in this field, we may discover similarity and dissimilarity of two living beings. In the field of genetic science we encounter concepts such as Gene and DNA. Here the main attention is on gene heredity and genetically information transfer from parents to children. It has advantages (infertility treatment, limb grafts and …) as well as disadvantages (generation without identity, marriage decrease, second class citizens and …). Freedom in the domain of Genetic is mentioned in article 2 of Universal Declaration of Human Rights: "Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status." As well as we can state the Genocide Convention that in this convention, Genocide is the intensive destruction of genetic characteristics of one group and implementing tools for preventing of that group generation production. The objective of this article is evaluation of acceptance or rejection of Genetic implementing in the line of Universal Declaration of Human Rights and Genocide Convention.

OP-133

FORENSIC EVIDENCE IN THE FIGHT AGAINST TORTURE—THE FEAT PROJECT

Hans Petter Hougen[1], Steen Holger Hansen[1], Gordon Jehu[1], Önder Özcalipci[2]
[1]Department of Forensic Medicine, Faculty of Health Sciences, University of Copenhagen, Denmark
[2]International Rehabilitation Council for Torture Victims, Copenhagen, Denmark

Forensic documentation has become an accepted tool in the fight against torture and other cruel, degrading and inhuman treatment. In the present project forensic documentation was performed in targeted geographic areas by internationally recognized experts.

A formalized collaboration was established between the International Rehabilitation Council for Torture Victims (IRCT) and the Department of Forensic Medicine, University of Copenhagen. A network of internationally recognized experts in the field was formed and two young doctors attached to the network for learning. Four areas in different continents were chosen as target areas based on the IRCT network. Ad hoc cases were also included. The documentation was based on fact finding missions with the participation of both somatic and mental specialists in the case of torture survivors, examination of immigrants and evaluation of medical records in ongoing court cases.

Statements and publications by the expert network and presentations of the project at international forensic conferences also formed parts of the project. Finally the project organized an international conference on forensic evidence in the fight against torture.

Fact finding missions were done to 14 different countries in four continents and a total of 64 torture victims were examined. Both a physical and a mental examination was done in all cases of torture survivors. The physical examinations were done by forensic pathologists or clinical forensic experts and the mental evaluations were made by psychiatrists and/or psychologists. One of the missions also served as training for a young forensic pathologist. Two case evaluations served as evidence in court cases where one played a major role in the outcome and one had a great political impact. The expert network has published an Istanbul protocol based field manual, and has published a statement that was a strong argument against hooding, which was shortly afterwards outlawed in Britain. Articles based on the experiences of the project have been published and several are in the pipeline. The project has been clearly visible at several international forensic conferences and an international conference was arranged by the project and the American University in Washington to conclude the project and launch ideas for the future.

The FEAT project has proved to be a positive experience for both project organizations. Large amounts of useful data have been collected and some human rights abuse cases have been brought to an end with positive results.

The outcome of the project and future activities will be discussed.

OP-134

THE INTERNATIONAL FORENSIC EXPERT GROUP, IFEG

Hans Petter Hougen[1], Steen Holger Hansen[1], Özcalipci Önder[2]
[1]Department of Forensic Medicine, Faculty of Health Sciences, University of Copenhagen, Denmark
[2]International Rehabilitation Council for Torture Victims, Copenhagen, Denmark

Many forensic experts working with human rights issues know each other. However, no organized network existed and the need for an active, quick responding group of well known forensic experts was the wish of many human rights organizations.

A network was formed based on the contacts of the creators of the network and extended to today's size, 32 members, based on input from other members—a network was formed based on "a controlled growth".

The network has proven to act fast and has had a considerable impact which makes it an efficient tool in human rights work.

The network has now been active for two and a half years and some of the activities and their outcome will be discussed.

OP-135

INVESTIGATING ALLEGATIONS OF ASSAULT BY POLICE: THE CONTRIBUTION OF FORENSIC MEDICINE

David Wells
Victorian Institute of Forensic Medicine, Department of Forensic Medicine, Monash University, Melbourne, Australia

Abuses of power by custodians of the law are not uncommon scenarios. Abuse in these settings can be variously labeled as torture, physical-sexual-psychological assault or deprivation of liberty. The outcomes include death, serious injury, psychological trauma and loss of confidence in the processes of law and criminal justice.

There is a community expectation that allegations of assault by police officers (or other custodial officers) should be addressed by an organisation independent of the alleged assailant and in a professional and timely fashion.

Forensic medicine can make a significant contribution to the investigation and prosecution of such offences through accurate documentation, objective interpretation and notification in either reports or oral evidence. It should be acknowledged that such cases can create a number of unique challenges including difficulties accessing information and complainants, proximity to the machinery of the state and strong influences from internal and external organisations and the media.

This presentation will explore the principles and model for the provision of forensic medical services in this field.

OP-136

DISTRIBUTION PATTERN OF TRAFFIC ACCIDENTS RESULTING IN INJURY AND DEATH IN MASHHAD

Lida Jarahi, Seyyed Mohsen Seyyed Nouzadi, Malihe Dadgar
Department of Community Medicine, Mashhad Faculty of Medicine, University of Medical Sciences, Iran

BACKGROUND: Traffic accidents have the first rank of burden of disease, death and the third major cause of death of young people in the world. In Iran, rate of accidents are 20 times higher than the global average and its mortality are in the highest ranks of the world. This study investigated the distribution pattern of traffic accidents resulting in injury and death in Mashhad, the third Metropolis in Iran.

METHOD: Data of accidents resulting in injuries and death from police department collected of Mashhad and data processing was done with software SPSS11.5.

RESULTS: Of 5636 crashes, 46 (8in1000) resulted to death and 22 (4in1000) resulted to death and injury and others were led to the injury. Most of accidents(40 %) had occurred in 12–18 afternoon, in summer (35 %) and in Central and East of Mashhad. The most of drivers were in age of 49–30 years (46 %), male (95.4 %) and less than 5 years driving experience (66 %). The most common type of accident (51 %) were Collision of vehicle with motor bikes and lowest (6 %) were Collision with pedestrian. Cause of crash In Most of the accidents (58.5 %) were ignored the rules especially (41 %) not following priority.

CONCLUSION: Drivers with less experience, disregard for rules, especially in the afternoon, the warm season of the year in crowded centers are associated with increased accidents. Traffic control regulations for the areas with concentration of population and tourists, the installation of warning boards and the police monitoring seem to be essential for better laws implementation.

OP-137

PERSONAL CHARACTERISTICS OF DRIVERS IN TRAFFIC ACCIDENTS RESULTING IN DEATH OR INJURY IN MASHHAD, IRAN

Maliheh Dadgar Moghadam, Seyyed Mohsen Seyyed Nouzadi, Lida Jarahi
Department of Community Medicine, Mashhad Faculty of Medicine, University of Medical Sciences, Iran

BACKGROUND: One of the main causes of burden of disease in 2030 in the world will be road traffic accidents (RTA). Iran is one of the countries that has high mortality rate from RTA. Annually, in Iran, about 20 to 30,000 people are killed in RTA. Considering that the major cause of accidents is human faults, this study investigated the several individual drivers' characteristics in RTC resulting in death or injury in Mashhad, the third metropolis in Iran.
METHOD: In this cross-sectional study, in collaboration with the Legal Medicine and traffic Department, a checklist according to the study model, designed and completed for the traffic accidents resulting in injury or death in 12 months. After reviewing the information and ensure data integrity, data analysis was done by using SPSS 11.5 software.
RESULTS: Of the 5636 accidents, 46 cases (%0/8) resulted to immediate death, 22 cases (%0/4) resulted in injury and death, and others have led to injury. The major cause of RTA was, disregard of rules (%58/4) and the driver's undue hurry (%19/5), but the majority of fatal accidents caused by driver fatigue and drowsiness. Most cases of accidents had been drivers aged 30–49 years (%46), male (%94) and with a history of driving less than 5 years based on the time of certification (%66/1).
CONCLUSION: Considering that most accidents are at ages 30–49 years with less than 5 years experience driving, disregard of rules or undue hurry and the driver's fatigue and drowsiness, it seems that public education about the correct form of driving to different segments of society and address the underlying causes, due to reducing the incidence of traffic accidents and burden of accident in the society.

OP-138

THE PATTERN OF INJURIES DUE TO ROAD TRAFFIC ACCIDENTS (RTA): A RETROSPECTIVE STUDY ON CASES REFERRED TO KASR AL-AINI HOSPITALS, CAIRO UNIVERSITY

Reham Nafad El Bendary, Dina Ali Shokry, Hala Saied Zaghloul, Hoda Abd El Mageed Al Ghamry
Cairo University

BACKGROUND: Worldwide road traffic injuries cause more than 1.2 million deaths every year, and are the leading cause of death among those aged 15–44 years. Unfortunately Egypt has got one of the highest world's road accidents rate and the problem is growing.
OBJECTIVES: This work aimed to determine different types of injuries and, the prognosis and outcome of the injured cases. In this way some progress towards objective medico-legal assessment and evaluation of road traffic accidents In Egypt might be achieved.
PATIENTS AND METHODS: It retrospectively overviewed 200 cases of road traffic accidents in Egypt examined at the Emergency Department, in Kasr Al-Aini Hospitals, through the year 2010regarding their demographic data, different injuries, outcome and recording different types of vehicles involved in the accidents where any injuries on the road without involvement of a vehicle were excluded from the study. All data were submitted to statistical analysis and compared to the results of other concerned study.
RESULTS: most of the Road Traffic Accidents (RTAs) occurred in Giza. The highest number of RTA victims were between >18 to 44 years old, which represent 45.5 % of cases and males represented (88 %) of the total cases. Most of road traffic accidents occurred during the morning and early afternoon (8 a.m. to 8 p.m.) which represented (48 %) of cases. Cars represented (71 %) of vehicles which were involved in the accidents, most cases of (RTAs) suffered from head and neck injuries (62.5 %) and the lowest number of RTA victims suffered from spinal injuries (2 cases) (1 %). The highest percent of cases were recovered (66 %), while the mortality percent was 17.5 % with 29 males and 6 females. The highest number of cases was not working (37.5 %) and the number of children were 18 cases (9 %) with the youngest one was 1.5 years and the oldest was 18 years old.
CONCLUSION: RTAs have constituted a major public health problem and it is considered the leading cause of accidental injury under the age of 40 which is the most active section in our country and in the whole world. The study recommended placing the burden and impact of road deaths and injuries on the Egyptian public health agenda

OP-139

ON RECONSTRUCTION OF A MOTORCYCLE–CAR ACCIDENT AND ANALYSIS OF INJURY MANNERS

Zou Donghua[1], Chen Yijiu[1], Huang Ping[1], Liu Ningguo[1], Li Zhengdong[1], Zhang Xiaoyun[2], Chen Jianguo[1]
[1]Shanghai Key Laboratory of Forensic Medicine, Institute of Forensic Science, Ministry of Justice, P.R. China, Shanghai 200063, China
[2]Department of Mechanical Engineering, Shanghai Jiaotong University, Shanghai 200030, China

OBJECTIVE: To identify motorist and motorcyclist based on the forensic investigation results of injury morphology, and to reconstruct the injury manners of motorcyclists through multi-body models. Methods: We inferred the injury manners of victims based on the accident scene traces, investigation records, vehicle and injury examination results, and reconstructed the motion process of motorcyclists and injury manners between car and motorcyclists. Results: A radial fracture found on the left rear window glass was 110 cm from the ground, with human hair, blood stains and soft tissues clinging around, which was corresponding to the bruised laceration on the parietal scalp, forehead and lower mandible skin of the wounded. The lower mandible injury was curved, corresponded to the rear window glass cracking features. The right hypothenar skin abrasions and left greater thenar skin bruise had the characteristics of motorist brake hand. The skin abrasions of anteromedial right upper thigh and anterior right leg was caused by the impact of motorcycle windshield. The right frontal-parietal scalp contusion and the right facial superficial bruised laceration of the deceased were formed by collision with the rear pillar. The vehicle inspection results showed that the motorcycle's driver seat was 80 cm from the ground, lower than that of 94 cm of rear seat. And the multi-body model had simulated the injury manners between motorist and motorcyclist visually. Conclusions: In the motorcycle-car accident, the wound is the motorist while the deceased motorcyclist.

OP-140

STUDY ON DIAGNOSTIC LIMITS, THANATOGENESIS AND TRAUMATIC MODELS IN TRAFFIC ACCIDENTS

Cristian Adrian Stan
National Institute of Legal Medicine Mina Minovici, Bucharest, Romania

INTRODUCTION: Deadly car accidents, apparently, present a great lesional polymorphism, but by quantifying the main lesional types we

could obtain several statistically significant traumatic models that cover over 98 % of the cases, whether pedestrians, motorcyclists, cyclists or car passengers were involved.
Material: 500 cases of car accident victims who underwent necropsies over a 3 year period (2007–2010) were analyzed.
METHOD: A cohort of 200 cases with a Glasgow Coma Scale >9 was statistically analyzed using SPSS. A second cohort was comprised of 300 cases with a Glasgow Coma Scale <9.
RESULTS: Statistical analysis of the first cohort indicated that the thanatogenesis was most frequently determined by the cerebral traumatic injuries (19 % exclusively cerebral death causes, while 28 % mixed thanatogenesis with a cerebral component), traumatic and/or hemorrhagic shock—15.2 % (out of which 5.1 % had real survival chances had they been treated correctly), septic respiratory complications—8.9 %, complex thanatogenesis—8.9 %. Out off all cases, 19 % had survival chances had they been correctly diagnosed and treated. The most frequent diagnosis deficiencies were: lack of a clear diagnosis for traumatic cerebral injuries—12.7 % (whilst 38 % of all cases had cranial fracture), under diagnosis of rip fractures—19 %, under diagnosis of visceral thorax-abdominal injuries—39.2 % or of limbs fractures—6.3 %.

Surgical interventions were performed: osteosynthesis (24.1 %), pleurostomy (24.1 %), splenectomy (10.1 %), laparotomy (other abdominal injuries—8.9 %), tracheotomy (6.3 %), limb amputations (3.8 %), fasciotomy (2.5 %).

The associations of vertebral and cerebral injuries: most patients only had the one (60.8 %, out of which 20.3 % only vertebral injuries and 40.5 % only cerebral injuries); associated cerebral and pelvis fractures (13.9 %); 10.1 % only pelvis fractures.
CONCLUSIONS: The comparative analysis of the two cohorts shows the existence of the same traumatic patterns, with predominant traumatic cerebral injuries in patients with GCS <9 at admission and a higher level of lesional severity. Also, the injuries models were similar regardless of the victim category (pedestrian, car occupant).

By comparing medical records of the victims of car accidents to a virtual pattern (elaborated on the statistical data above) the diagnosis and treatment be improved.

Correlating this virtual pattern with information from the prehospital phase allows the improvement of a car crash management and this model can be adapted and expanded to all the emergency situations, including catastrophes with a large number of victims.

OP-141

EVALUATION OF FORENSIC PERIPHERAL VASCULAR AND NERVE INJURIES

Kubilay Karabacak[1], Gencer Genc[2], Cemal Onur Noyan[3], Bilgehan Savas Oz[4]
[1]Department of Cardiovascular Surgery, Maresal Cakmak Military Hospital, Erzurum, Turkey
[2]Department of Neurology, Maresal Cakmak Military Hospital, Erzurum, Turkey
[3]Department of Psychiatry, Gumussuyu Military Hospital, Istanbul, Turkey
[4]Department of Cardiovascular Surgery, Gulhane Military Medical Academy, Ankara, Turkey

INTRODUCTION: Peripheral vascular and nerve injuries are often encountered in the emergency department usually accompanied by other tissue injuries with an increased risk of mortality and morbidity.

MATERIALS-METHODS: Patients with forensic peripheral vascular and nerve injuries who were admitted to emergency service between November 2009–March 2012 were analyzed in terms of etiologic anatomic location ve additional tissue damage retrospectively.
RESULTS: The etiologic causes of injuries were needlestick injury in 57,8 %, gunshot wounds in 5,2 %, traffic accident in 15,7 %, blunt trauma in 21,3 % of the patients. There was arterial injury in 73.7 % of the patients, vein injury in 15,8 % of the patients, both arterial and vein injury in 10,5 % of the patients. The anatomical localization of the peripheral vascular injuries was the upper extremity (63,1 %) and the lower extremity (36,9 %). The upper extremity injuries was associated with radial artery in 50 % of cases, brachial artery in 25 % of cases, ulnar artery and nerve in 17 % of cases, subclavian artery in 8 % of cases. The lower extremity injuries was associated with femoral artery in 43 % of cases, popliteal artery and vein in 29 % of cases, anterior tibial artery in 28 % of cases. 15,8 % of the peripheral vascular injuries were accompanied by peripheral nerve injury (mostly femoral, ulnar and sural nerve injury).
CONCLUSION: In the literature, the etiology of vascular injuries varies in each study. Vascular injuries are the most commonly seen in the upper extremity. Cases with vascular injuries are the most commonly seen in the upper extremity. The most common etiologies are stab wounds. As a result, regardless of the etiology of vascular injury it may be accompanied by additional tissue damage. Because of a high mortality and morbidity rates, forensic cases for each of these types of injuries should be approached cautiously.

OP-142

EMPLOYER'S CIVIL LIABILITY RELATED TO WOUNDED EMPLOYEE FROM ADVERSE MANAGEMENT OF AGRICULTURAL MACHINERY

Roya Hassankhani[1], Razieh Hassankhani[2]
[1]Tabriz University
[2]Bu-Ali Sina University

Today the increasing rate of population lead to the attempt of increase the crop production and consequently the need for larger fields and performing more machinery is intensified. The employees must correctly have been trained to work with each machine properly. If in performing the farm works the workers miscarried the civil liability of employer is discussed. In this article the civil liability of employer relate to harming act and cause and delinquency is discussed. In this domain the scientists have four theories which are: delinquency, danger, right security and combination of them. Studying of these theories is the main objective of this article.

OP-143

DEFENSIVE MEDICINE IN TURKEY ACCORDING TO MEDICAL ETHICS AND LAW

Elif Vatanoglu Lutz[1], İnci Hot[2]
[1]Yeditepe University Medical Faculty
[2]İstanbul University Cerrahpaşa Medical Faculty

As we know defensive medicine is one of the biggest problems in the countries like USA and some European countries which have malpractice laws in their legal system. Defensive medicine can be described shortly as any medical intervention, the practice of

diagnostic or therapeutic measures, conducted primarily not to ensure the health of the patient, but as a safeguard against possible malpractice liability. In Turkey, we see an increase in the malpractice cases through retrospective studies but we do not have specific legal regulations on the liability of healthcare personnel about the mistakes related with medical interventions. In this study, we aim to discuss the concrete and possible effects defensive medicine, which is a very well-known concept in USA and European countries, in relation to our new Turkish Criminal Law (TCL) which came into force on the 1'st of June, 2005 including some very important articles related with medicine. For this purpose, we want to collect the data of the effects of the new TCL, the data of the obligatory professional liability insurance system and the data of defensive medicine before the coming, potential malpractice law in Turkey. After our first general research, it was interesting to see that there is no reference literature available in Turkey with the headline of defensive medicine explaining the issue according to Turkish legal system when a physician applies defensive medicine.

OP-144
JUDGING MORALITY—PRACTICAL ETHICS IN FORENSIC SCIENCE

Jc Upshaw Downs[1], Anjali Swienton[2]
[1]forensX, LLC, Savannah, Georgia
[2]SciLaw Forensics, State College, Pennsylvania

BACKGROUND: Ethics is a vital part of forensic practice. The very ubiquity of the necessity of high standards has perversely led to an assumed adherence to ethical dogma. As the NAS report indicated, the need for not only establishment of ethical procedures but also ongoing application and continuing education is necessary to have the justice system operate at an optimal level.
METHODS: Using the framework presented within the NAS as a clarion call for improving applied ethics in day-to-day forensic operations, the authors sought out a diversified multidisciplinary cadre of experienced practitioners and educators to analyze various aspects of ethical practice in forensics, including general dilemmas, organizational codes, enforcement, practitioners (law enforcement, crime scene personnel, lab analysts, attorneys, judges, etc.), testimony, and whistleblowers. The result is the most comprehensive real-world analysis to date of ethics in the forensic sciences, including status quo, identified needs, and potential dangers.
RESULTS: The project represents an overview of present status and identified needs within the various forensics fields regarding establishing and assuring ethical parameters are met. While ethics remains an identified foundation of forensic practice, no single code of conduct covers all the many aspects of the practice—despite many similarities between the various specialties. Although isolated, occasional significant lapses have too often resulted in extensive media coverage and have sullied the entire field. The painful lessons have history demonstrate repeatedly the potential dangers when the slippery slope of ethical lapses is allowed to fester and become inculcated within the individual, group, or agency. Several models for potential facilitators of ethics protocols and training are considered. All have in common the need for codifying the established mantra of adherence to ethics above all else in daily practice.
CONCLUSION: The recognition for ethics in all aspects of the forensic disciplines is fundamental and well-recognized. In the final analysis, only assuring front end acceptance by the individual practitioner and the organizations will result in the required sense of ownership and value to help promote the highest level of performance. While essential, such buy-in is, in itself, insufficient to assure continued relevance and growth. Continued training and ongoing efforts to promote a healthy culture of reliance on morality are vital to maintaining a thriving culture of honesty and openness.

OP-145
"THE PROCESS OF DELIBERATION IN ETHICAL CONFLICTS"

Isabel Maria De Sousa Lourenço
Instituto Politécnico de Castelo, Branco Escola Superior de Saúde Drº Lopes Dias, Portugal

In practice many ethical conflicts arise daily clinic to health-care professionals, and decision-making, sometimes urgent, if you do not have a resolution reflected and considered, it may not be the most appropriate.

The decision in an ethical conflict has to be prudent, the various health professionals involved in dilemma, may have different points of view and all are correct, make the right decision must be discussed and analysed point by point, excluding parts until you reach a consensus, because the "function of ethics does not seek a consensus. Is to prevent decisions to be reckless" (Gracia, 2010).

First we analyze the clinical case from the point of view of ethics and professional ethics, examining each of the problems individually, and which the decision we take for each one. At the end we evaluate the legal issue, and considering whether the decision we have taken is in accordance with the law in force in the country, and so we have the process of deliberation.

It is important to prepare for the future health care professional for ethical decision-making. Ethics/Bioethics learning methodologies, are divergent in various courses in Health Education, whether in the evaluation and even in the training of teachers who teach the Curriculum Units, making the discussion in practice clinic.

The deliberation process training on ethical conflicts in decision-making, is essential in the teaching of ethics and bioethics, particularly in medical and nursing courses, and also courses in Pharmacy and health Technologies.

Teaching methodologies in several courses of Ethics/Bioethics unanimous in the area of health is fundamental to the process of deliberation in ethical decision-making, so that young people and future health professionals change their attitudes and have a great respect for the dignity of the ill person, greater capacity for reflection, for proper decision-making in daily practice of health care, extolling the human being in their dignity as persons.

OP-146
PREVALENCE AND CHARACTERISTICS OF PHYSICALLY ABUSED CHILDREN

Isam Ahmed Ali Elhassan[1], Dina Ali Shokry[2]
[1]Ministry of Health, Khartoum, Sudan
[2]Department of Forensic Medicine and Clinical Toxicology, Cairo University, Cairo, Egypt

BACKGROUND: Child physical abuse represents a serious threat to the health and well-being of the pediatric population. This study aims at investigating child physical abuse in Greater Cairo area (Egypt) during 2008–2009. The study focuses on prevalence of child physical abuse (CPA) committed by any perpetrators and aims at analyzing the perpetrator relation to the victim and the characteristics of the injuries and their fates—if they lead to death or not—and the geographical distributions.

METHOD: All medicolegal reports of physical child abuse (0–17 years old) in the Greater Cairo Area from January 2008 to December 2009 were examined.
RESULTS: Our research yielded that, there was 193 cases of CPA in the study period and the prevalence of physical child abuse in 2008 was 12/1,000,000 and in 2009 it was 14/1,000,000. The majority of the abused children were in primary school age (n=71) 36.8 %. In infancy age group, fatal CPA is at the highest level (n=21) 95.5 %. Also it was found that the number of male victims (n=119) 61.7 % was higher than female victims (n=74) 38.3 %. Most of the cases of CPA are of low SES (n=141) 73.1 %. And the majority of the cases of CPA were injured severely (n=89) 46.1 %. Only about (n=27) 14 % of the studied cases suffered from injuries more than one time. This study showed that (n=95) 49.2 % of the victims presented more than one type of injury. It was also found that the unknowns were the prime perpetrators (n=101) 52 %. The results showed that (n=17) 77.3 % of the studied children in infancy age group are abused by their mothers, and there was strong association between the age group of the victims of CPA and the perpetrator (P -<.001). The most common manifestation of physical abuse was bruises (n=84) 43.5 % and the most affected site was the head/face and neck. The studied cases showed that there was cerebral injuries in (n=42) 21.8 %, visceral injuries in (n=16) 8.3 % and fractures in (n=31) 16.1 %. As regards, the commonest cause of death among the child homicide was head injury/cerebral hemorrhage (n=42) 53 %.
CONCLUSIONS: The numbers of physically abused children that have been reported by the Medicolegal Authority have been increased during the investigated period. The commonest non-accidental injury to the soft tissues was bruising, which considered as warning sign for CPA.

OP-147
"THE SLEEP OF REASON PRODUCES MONSTERS"—PSYCHIATRIC, MEDICO-LEGAL AND PSYCHOSOCIAL ASPECTS OF CHILD ABUSE

Bogdan Malinescu[1], Gabriela Costea[2], Valentin Gheorghiu[3], Laura Ghebaur[2]
[1]Ilfov Medico-Legal Service, Romania
[2]"Mina Minovici" National Medico-Legal Institute, Bucharest, Romania
[3]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

The authors are initiating the study based on the principle that the whole spectrum of emotional and physical child abuse represents a predictive factor regarding the social adaptability of the future generations.

The paper presents a correlation between a domestic violence factorial study, and a case study of child abuse.

The authors are analyzing, through an extensive review of trauma and psychiatric medico-legal evaluations, the aggressors and the victims-the abused children.

The factorial analysis of the exogenous dominant variables identifies, by reporting to stress, two major components implicated in domestic violence: one component consisting of transcultural particularities, relationships within the domestic group, and the ways the abuse was committed, and another component consisting of the type of domestic group, its quality and types of violence.

The case presented confirms the findings in the factorial study, approaching both the psychological and psychopathological coordinates of the aggressors, and also the modalities used in committing the physical and emotional abuse upon the victims. There were different predictions regarding evolution in time of the social adaptability of the abused children.

Considerations are being made regarding the micro and macro social context of the acts in the sense of signaling deficiencies within the system, and the current norms. This may lead to unimaginable consequences (such as the ones in the presented case).

OP-148
CHILD ABUSE REPORTS IN FAMILIES WITH SUDDEN INFANT DEATH SYNDROME

El Akri Abdelhafid, Chagnon Françoise, Sestier François
Program in Insurance Medicine and Medicolegal Expertise, Montreal University, Canada

This study investigates the relation between sudden infant death syndrome (SIDS) cases and reports to public child protection service (CPS) agencies of suspected child abuse or neglect prior to the sudden deaths. SIDS data were collected from the Ventura County Medical Examiner's death investigation records of 2000 through 2010. Names of deceased infants, their parents, and any other caretakers who might have been with the infant near the time of death were submitted to the county CPS, where they were referenced for reports of abuse or neglect. A control population of non-SIDS infants and their caretakers were checked in a similar manner. The 150 infants from the control group were compared with 727 SIDS infants; no significant statistical difference was found between groups in the incidence or type of CPS referrals. These findings suggest that screening CPS records for previous referrals is an ineffective method by which to detect infanticides misdiagnosed as SIDS and may cast unwarranted suspicion on otherwise typical SIDS cases.

OP-149
BIOPSYCHOSOCIAL FEATURES OF PEDIATRIC SEXUAL ABUSE VICTIMS IN TURKEY

Mahmut Demir[1], Suna Taneli[1], Cagatay Buyukuysal[2], Yesim Taneli[1]
[1]Department of Child and Adolescent Psychiatry, Uludag University, Bursa, Turkey
[2]Department of Biostatistics, Uludag University, Bursa, Turkey

AIM: Posttraumatic Stress Disorder along with anxiety, depression, self image and some biopsychosocial features were assessed in sexually abused children and adolescents.
METHOD: Thirty consecutive cases (mean age 13.9 + 2.2 years) were included prospectively after IRB approval and informed consent: 6 males (20 %) and 24 females (80 %). Child Posttraumatic Stress Reaction Index CPTS-RI, Children's Depression Inventory CDI, STAI, Offer Self Image Questionnaire OSIQ, and a Sexual Abuse Interview Form designed for this study were applied face to face. SPSS-13.0 was used.
RESULTS: Mean age did not differ by gender (M: 13.3+2.8 years vs. F: 14.1+2.1 years; p>0.05). Distribution of children (9–13 years; 46.7 %) versus adolescents (14–18 years; 53.3 %) did not differ (p>0.05). Parental educational level was up to 5 years for 76.7 % fathers and 86.7 % mothers, as compared to >5 years (p<0.01).

Prior to being abused, most victims had not been informed about sexuality (90 %; n=27), sexual abuse (93.3 %; n=28) or prevention of sexual abuse (96.7 %; n=29). The offender was acquainted in 90.1 % of cases and a stranger in 9.9 % of cases (p<0.001). All of the 4 incest cases shared their bedroom with a sibling (offender: 3 fathers, 1 brother). Only 15 (50 %) of victims talked about the abuse within 1 week; of those who did not: 53.4 % were afraid of their family; 26.8 % were afraid of the

offender; 19.8 % had not understood the nature of the act (retrospective self-report).

Self-reports showed biopsychosocial changes after the abuse: A) Academic achievement fell in 56.7 %, rose in 3.3 % and did not change in 40 %; B) Relationship with parents (17.5 %), siblings (26.4 %) friends (36.3 %), and others (42.9 %) worsened; C) Toilet behavior changed (13.3 %; onset of 3 enuresis nocturna, 1 constipation); D) Somatic complaints worsened or started in 56.7 % of victims.

Mean test scores did not differ by gender ($p>0.05$). High rates of pathological depression (50 %), state anxiety (53.3 %) and trait anxiety (73.3 %) as well as negative self image (30 %) were detected. PTS symptoms were present in 90 % ($n=27$) of pediatric sexual abuse victims, being severe to very severe in 70 % ($n=19$) of cases. In those with severe/very severe CPTS-RI; depression ($p<0.05$) and trait anxiety ($p<0.05$) scores were higher.

DISCUSSION: Preventive efforts should inform children about sexual abuse. Changes in academic achievement, social relationship or onset/worsening of somatic complaints may point to sexual abuse. Rates of severe PTSD and trait anxiety are high. Depression and trait anxiety are more severe in severe PTSD cases.

OP-150

FETAL DEATH FOLLOWING MATERNAL TRAUMA: A CASE OF A FETUS WITH CONGENITAL COMPLETE ATRIOVENTRICULAR BLOCK

George Adrian Patru, Marie Decourcelle, Olivier Jardé, Cécile Manaouil
University Hospital Amiens, Department of Forensic Medicine

The death of a fetus in a context of domestic violence questions about whether the fetal death was linked to the maternal injury. If the fetus suffers from a congenital and potentially fatal disorder, the mission becomes even more difficult. In France, if the fetus dies in utero, the aggressor cannot be charged with homicide.

We present the case of a 35-week fetus diagnosed with a Congenital Complete Atrioventricular Block in a context of lupus with presence of maternal SSA antibodies, under specialized medical surveillance, which died little time after the physical aggression of the mother. At the autopsy of the fetus, there were no external or internal injuries or congenital abnormalities that would explain the death. We wondered about the effect that the acute stress of the mother would have on the fetal heart rate.

The literature supports three risk factors for fetal demise in the context of maternal injury. These are third trimester gestation, blunt trauma to the abdomen and setting of domestic violence. Fear of the mother in the absence of physical violence was not associated with an elevated risk of adverse pregnancy outcomes.

The literature shows the maternal cortisol crossing the placenta to the fetus which may cause a fetal heart rate response, sometimes experiencing a bradycardia, with no obstetrical complications in normal pregnancy, but we didn't find any study involving subjects with congenital cardiac disorders.

We did not find any case report of a fetus with Congenital Complete Atrioventricular Block that died after his mother suffered trauma. Not being able to demonstrate clearly how a mechanism resulted in the death of the fetus, we did not retain any association between the physical and psychological trauma and the fetal death.

OP-151

VIOLENCE AGAINST WOMEN

Zauresh Abylgozhanovna Umirbayeva, Yerbol Zhanatayevich Umirbayev
Central Asian University, Ministry Of Education and Science Of Kazakhstan, Almaty, Republic Of Kazakhstan

Violence against women is a universal phenomenon found all around the world, in different nations and different cultures, taking many forms, including domestic violence; rape; trafficking in women and girls; forced prostitution; violence in armed conflicts, such as murder, systematic rape, sexual slavery and forced pregnancy; ritual killings; violence related to dowry; female infanticide and prenatal sex selection with preference for boys; female genital mutilation, other dangerous practices and traditions.

Whether physical, psychological or sexual, it is a consequence of traditional patriarchal views on women's place in the society and family.

Findings of the Monitoring of implementation of the Law of the Republic of Kazakhstan of December 4, 2012 "On the Prevention of Domestic Violence" in Kazakhstan were used as a basis for preparation of the "Report on Human Rights 2011", which incorporated the conclusions and suggestions on improvement of legal and regulatory acts, work of the Government of RK, local and executive authorities, healthcare and education system, and law-enforcement agencies.

Experience of Crisis Centers in Kazakhstan shows that the police are informed only of the most severe cases of violence, by about 10 % of affected women, and almost every other case of violence ends in a bodily injury for the woman; in most cases, the perpetrators go unpunished. In the mass consciousness, the issue of "violence against women" has not yet been realized as a particular social problem, the question of engaging public expertise is raised now. Analyzing the applications of victims, we noted rare application of victims to police for the following reasons: distrust to the policemen; disbelief in punishment for the perpetrator of domestic violence; fear of revenge, fear of public knowledge and of damage to their reputation. There still remain a lot of questions and disputes that require analysis and synthesis, developing interprofessional relationship between law and medicine. In this regard, we propose to develop training programs for healthcare and law enforcement workers, which would increase their level of cooperation in the investigation of episodes of violence against women, which would improve the quality of forensic medicine, forensic psychology, complex psychological and psychiatric examinations to determine the severity of physical and moral harm inflicted.

The abilities of medicolegal professionals as the experts are not fully utilized in the investigation of crimes against life and health of women. We must consider a wide range of issues addressed by the medical experts, requiring full mastery of modern methods of investigation.

OP-152

FORENSIC EVALUATION AND AGGRESSION RISK ASSESSMENT IN VIOLENCE AGAINST WOMEN TO PREVENT NEW AGGRESSIONS TROUGH GPS DEVICES

Miguel Lorente[1], Elena Martinez[2]
[1]University of Granada, ILM, Spain
[2]General Hospital, SAS, Jaen, Spain

VAW is known by its recidivism and by the difficulties to brake with it and, in consequence, to protect women. Forensic risk assessment allows to know the specific circumstances of the cases and to get conclusions about the future possibilities of new aggressions. Under this assessment new measure can be taken to protect victims of this violence, one of this measures is to know the relative positions between the aggressor and the woman through a GPS device that alerts if there is an approach between them. This way police can reacts and arrest the perpetrator.

If the forensic evaluation establishes an objective risk for new aggressions in the context of a relationship where men use violence against women, the measures to protect and prevent these women must be adapted to the circumstances. In Spain we have developed a system with a GPS device carried by the perpetrator in a permanent way (bracelet) that allow to locate his position and the victim's location. This system and that can be used under a judicial order if the risk for new aggressions is high. The correct forensic risk assessment guarantees the protection of women and the prevention of new aggressions and reduce the number of serious aggressions.

The aggressor in the context of a VAW relationship develop a strategy that try to isolate the woman victim from her sources of support, usually family, friends and work mates. He considers her as a property and he use violence to keep the relationship under these references. Under these circumstances violence follow an evolution with increasing intensity.

When the victim reports the case to the police or the court he considers it as an offense and, in consequence, the possibility for new and more serious aggressions increases.

Spain has developed a system that allows to locate the position of the perpetrator and victim through a GPS device. After the first year there were 1987 alarms that allowed to arrest the aggressors when they were approaching the victims. At the end of the year the number of homicides decreased 27.6 %.

Forensic risk evaluation is the procedure used to take the decision to use this protection instrument. The presentation will explain the procedure, features of the system and results after its implementation.

OP-153

FATAL SEXUAL VIOLENCE AGAINST WOMEN: NORMATIVE, BASELINE STUDIES OF POSTMORTEM GENITAL ANATOMY—WHAT CAN WE SAY ABOUT NORMAL?

Sharon Rose Crowley
Center for Child Protection, Valley Medical Center, San Jose, CA, USA

TEXT/BACKGROUND: Until recently, a paucity of data existed on the "normal" appearance of the genital anatomy during the postmortem interval. We lack data from scrutiny and photo-documentation of the postmortem anogenital tissues. The use of colposcopy is well established for both adult and child living victims.

The purpose of this presentation is to describe findings from ongoing research on female postmortem genital anatomy during the postmortem interval. The sample population consists of 2 groups. These cases constitute the first normative, baseline data of the postmortem anogenital tissues.

Group I consists of 43 female cases drawn from the Body Donation Program, at the University of California, Davis, California. These subjects were 60–99 years old, with a mean age of 83.1 years. Group II consists of 18 Coroners' cases, (2000–2002). The age range was 32 months to 89 years; mean age was 47.87. The cases in Group II were pivotal in the prototype design and method for methodology of examination with mobile colposcopy (Crowley (JFS: 2004)).

MATERIALS AND METHODS: This research project is an observational study, with a cross-sectional design. The examination methodology employs photo-colposcopy at 7.5X, 15X magnification, or both, plus 35 mm photography. In most cases, additional photographs were taken with a 35 mm single lens reflex (SLR) camera, (manual or digital camera), for comparison to colposcopy.

To evaluate reliability for postmortem examinations, 1 % toluidine blue dye was concomitantly applied to 30 body donor subjects. The same 12 anogenital anatomic sites were visualized, inspected, and photographed in both controls and sexual homicide cases: Labia majora, periclitoral area, peri-urethral area, labia minora, hymen, vagina, cervix, perineum, fossa navicularis, posterior fourchette, anus, and rectum.

Some core data elements are germane to both control and sexual homicide groups, such as ethnicity and race distribution, postmortem interval, postmortem artifact, age, and genital examination techniques.

DISCUSSION: The postmortem arena superimposes a unique set of factors. Many were not previously studied or documented in the literature. A relational database was previously described (Crowley, AAFS: 2010). Taxonomy germane to the postmortem arena should incorporate salient terms that will be consistent and universally applicable and acceptable within the forensic community (Crowley & Peterson: AAFS, 2004). It is important to distinguish genital trauma from postmortem artifact and other presenting gynecological conditions.

OP-154

TURKISH UNIVERSITY STUDENTS' ATTITUDE TOWARD SEXUAL ASSAULT AGAINST WOMEN AND PERCEPTION OF HONOUR

Merve Apaydın, Prof. Dr. Sermet Koç
Institute of Legal Medicine and Forensic Sciences, Istanbul University, Istanbul, Turkey

Women face humiliation, domestic violence physical aggression, sexual or emotional abuse, controlling or domineering; intimidation, stalking, passive/covert abuse, economic deprivation or forced to sexual intercourse in almost all around the world. Among these all violence types against women may be the most cruel one is sexual violence as known as "rape".

Attitudes supported by patriarchal and traditional believe systems prepare the base for formation of accusatory, negative and biased viewpoint against victims of sexual violence. This existing biased viewpoint has been revealed with the term of "rape myths" by many researchers. Researchers have described rape myths as "prejudicial, stereotyped, or false beliefs about rape, rape victims, and rapists" and they suggested these serve to create a climate "hostile to rape victims"

Rape myths which are accepted by all parts of society according to researches, reflects social acceptance encountered by the victims of rape. Studies in Turkish literature are extremely poor in areas such as causes of rape, perception of society about rape, responsibility of victim, characteristics of perpetrator. Patriarchal and traditional societies like Turkey sexual harassment or rapes can also seen as "honour problem". In Turkey the term "honour" means systematic control mechanism of women and young girls by society especially male family members. According to traditional honour concept young girls must prevent their virginity from all men before marriage and also after marriage women must prevent their sexual purity from all other men but her husband. Describing "the honour" over women body and sexuality can also make the rape honour issue and that shows us rape phenomenon couldn't be thought independent from the perception of honour in traditional and patriarchal countries such as Turkey.

The goal of this study to research relationship between attitudes towards rape myths and perception of traditional honour among over 300 university students in Istanbul via Illinois Rape Myth Acceptance Scale (Payne, Lonsway & Fitzgerald) and Attitudes Toward Honor Scale (Işık & Sakallı-Uğurlu). In this case relationship between acceptance of rape myths and perception of honour will be revealed.

OP-155

SEXUAL DIMORPHISM USING ODONTOMETRIC PARAMETERS

Prateek Rastogi, Ankita Jain
Kasturba Medical College, Mangalore

BACKGROUND: Teeth being hardest and chemically the most stable tissue in the body provide one of the best records for forensic investigation. Tooth morphology is said to be influenced by cultural, environmental and racial factors. In present study an attempt is made to establish the applicability of human dentition in sexual dimorphism in Indian population. It focuses to measure the odontometric parameters (i.e. mandibular canine width, mandibular intercanine distance, mandibular premolar and molar arch width), calculate dental indices (i.e. mandibular canine index, mandibular premolar and molar indices) and thereby prove their efficacy in determining the sex of an individual. It also aims to ascertain the reliability of Pont's index on mandibular parameters.
METHODOLOGY: This cross sectional prospective study was carried out on 200 MBBS students of Kasturba Medical College, Mangalore. After taking written informed consent the intraoral odontometric parameters were measured using divider with a fixing device and were subsequently read on the measuring scale. Statistical analysis was done using SPSS (Statistical Package for Social Sciences) version, 11.5 to evaluate the data using-Student's unpaired *t*-test and regression analysis
RESULTS: Results showed that mandibular canine width, mandibular canine index, mandibular premolar arch width, mandibular incisors width, premolar index and molar index shows significant difference (p value$<$0.001) between males and females. Maximum sexual dimorphism exists in mandibular canine width (12.678) and mandibular canine index (12.639), while mandibular molar arch width and intercanine distance have no applicability in sex identification. Maximum correlation is shown by mandibular canine width (0.657) and least by molar index (0.393). The predictive value of sexing a person is highest by using mandibular canine width alone (43.2 %). Predictive value is maximum when all the parameters are combined together.
CONCLUSION: Teeth can be useful in identifying sex of an individual in situations where bodies are mutilated or burnt, it is one part of the body that resists all environmental insults for maximum time and thus can be a valuable tool in identification. The usefulness of human teeth as an aid in gender determination by odontometric analysis is well supported. Mandibular teeth despite of having a significant 'sex factor' disapprove the applicability of Pont's index. Mandibular teeth and in particular the mandibular canine can form the key in gender differentiation.

OP-156

AN UNIDENTIFIED SKELETAL ASSEMBLAGE FROM A POST-1755 MASS GRAVE OF LISBON—DENTAL MORPHOLOGY

Cristiana Palmela Pereira[1], Miguel Telles Antunes[2], Dinis Pestana[3], Maria Cristina De Mendonça[1], Jorge Costa Santos[1]
[1]South Delegation, Portuguese Institute of Legal Medicine and Forensic Sciences
[2]Sciences Academy of Lisbon
[3]Center of Statistics and Applications at the University of Lisbon, CEAUL

Dental morphology means different things to different people. Some authors consider tooth size one aspect of morphology, whereas others include shape under this rubric. I distinguish size from morphology because the methods of study and general underlying principles for each are distinct. Although morphology and shape have more in common than morphology and size, shape also shows noteworthy differences. Methods developed for ascertaining "tooth shape" for dental anthropological and forensic purposes have not been adopted widely, partly because they are difficult to replicate, diminishing their utility in comparative studies. In this investigation report, I focus on what most forensic experts refer to as dental morphology; that is, distinct features or traits of the crowns and roots that are present or absent and, when present, exhibit variable degrees of expression. Common examples include shovel-shaped incisors, upper and lower molar cusp number, Carabelli's cusp, three-rooted lower first molars, and more. In this study 1210 disarticulated teeth, 179 jaws, and 65 skulls from a skeletal assemblage of commingled remains belonging to the 1755 Lisbon earthquake victims, excavated in 2004 at the Lisbon Academy of Sciences were analysed.

The main goal of this study was to contribute to the paleodemographic and paleopathological characterization of one of the world's biggest catastrophic population by forensics' dental and osteological, qualitative and quantitative methods. Morphological and anthropometric parameters from teeth and cranial bones have been considered. To attain our purpose, the isolate's teeth and jaws' teeth were studied for dental morphology, according to the Museum's protocol, defined by us according to Arizona State University Dental Anthropology System or ASUDAS. During the project laboratory investigation some problems were addressed. Such as: How many traits? Casts or Skulls? Permanent or deciduous?—and those were the background to improve the protocol of dental morphology from our Museum and provided additional guidelines for future projects of human dental morphology, more than primary results from the original project, paelodemographic characterization of a mass disaster population from 1755.

This project is currently inserted in a wider project for research and technological development entitled "Percurso Cientifico do Património Museológico da Academia de Ciências de Lisboa", with reference HC/0074/2009, supported by a National Project 3599, task 1: "Human Dental and Physical Anthropology". Since 2009 until 2011.

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OP-157

AGE ESTIMATION OF IRANIAN ADULTS BY PULP/TOOTH AREA RATIOS OF CANINE TEETH ON PERIAPICAL RADIOGRAPHS

Arash Ghodousi[1], Roshanak Ghafari[2], Masoud Khabiri[3], Majid Abolhasani[4], Elham Zamani Pozveh[4]
[1]Department of Nursing and Midwifery, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN.
[2]Department of Oral and Maxillofacial Radiology, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN.
[3]Department of Endodontoc, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN
[4]General Dentist, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN

AIM: Age estimation has special importance in medical sciences and anthropology; several techniques have been presented for this issue. One

of these methods is the use of physiologic or pathologic processes of teeth such as pulp size changes. The aim of this study was to investigate the relationship between age and pulp/tooth area by excluding or including enamel area in radiographs of canine teeth in Iranian peoples.

MATERIALS AND METHODS: In this analytical study 334 radiographs of canine teeth (80 mandibular, 267 maxillary) from 227 women and 117 men were analyzed. For each tooth one or two ratios (Rd and/or Rt) were calculated after image editions and measurements were done by lightzone and universal desktop ruler soft wares. The relationship between age and these independent variables was assessed by regression analysis and the regression formulae were calculated.

RESULTS: The relationship between age and Rd, Rt was significant and negative. ANOVA test showed significant differences between two genders and canine types; the stronger correlation resulted for upper canine of men and the weakest resulted for lower canine of men. Mean Error of Estimation for age relationship to both Rd and Rt was the same (6–9,6 years).

CONCLUSION: On the basis of the results of this study it could be concluded that the use of pulp/tooth area could results in rather accurate age estimation. Canine type and gender have impacts on age estimation equations, accuracy of age estimation will not differ by including or excluding enamel. This method is a simple, non- destructive and fast method for age estimation.

OP-158

GENDER SPECIFICATION BY PANORAMIC RADIOGRAPHY IN AN EDENTULOUS IRANIAN POPULATION

Arash Ghodousi[1], Mahnaz Sheikhi[2], Elham Zamani Pozveh[3], Shirin Gale Bakhtiari[3]

[1]Department of Nursing and Midwifery, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN

[2]Department of Oral and Maxillofacial Radiology, Esfahan University, IRAN

[3]School of Dentistry, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, IRAN

OBJECTIVE: Gender specification in forensic dentistry and human anthropology are mainly based on anatomic variations. Due to racial differences, studies should be applied for each specific race. The purpose of present study is to analyze different specified interspaces within the edentulous mandible in order to determine gender.

METHODS: Panoramic radiographs of a randomized population of 45 men and 45 women aged 51 to 79 were assessed. The distance between the inferior border of mandible and the inferior border of mental foramen (R1, L1), inferior border of mental foramen to the alveolar ridge (R2, L2), height of mandibular body (R3, L3), the inferior border of mandible and the alveolar ridge (R4, L4), and the two mental foramens (d) were measured recorded and analyzed amongst a population of Iranian men and women. Eventually the SPSS software version 11 was used to analyze the data by means of statistical functions. Three specific functions were produced for each three different situation. These situations included having the right side of edentulous mandible values, the left side values or both sides. The accuracy of gender specification was measured in each one of the 3 functions.

RESULT: The data analysis indicated that the average of measured distances in male were significantly higher than female ones except for the distance between the two mental foramens which showed no significant difference between male and female. The accuracy of gender specification with this method was ranged 78 to 84.5 % in female and 80 to 89 % in male.

CONCLUSION: Method of this study can be used as a quantitative technique along with other methods of gender specification. Also this study is an approval for the existence of sexual dimorphism in several parts of human skeletal structure in different races.

OP-159

DENTAL AUTOPSY OF UNIDENTIFIED CORPSES FOR THE IDENTIFICATION OF MISSING PERSONS

Emilio Nuzzolese, Ciro Di Nunzio, Isabella Aquila, Pietrantonio Ricci Magna Graecia University of Catanzaro, Department of Medical and Surgical Sciences, Institute of Legal Medicine

Unidentified human remains require a complete collection of information during the autopsy stage in order to achieve, even belatedly, correct identification. The very large number of people reported as missing and/or dispersed may represent an obstacle in the investigative process leading to the potential identity of the corpse, considering the need to compare ante-mortem data with post mortem findings. Add to this the high number of 'unidentified corpses' yet to be identified, 832 units in the Office of the Government commissar for missing persons, as of December 31, 2011. However, forensic odontologists can intervene in order to support the medical examiner, by narrowing down the field of investigation, even in the absence of ante-mortem data, identifying gender, race, age and socio-economic class as well as the nationality of the victim (so called generic or reconstructive identification). This will allow for the investigating authorities to narrow down the list of subjects to be included in the comparative process and to extend the investigation by gathering further information, which may not necessarily be dental data.

A single case of a skeletonized corpse, listed in the aforementioned list of nameless bodies is presented, with particular attention paid to the odontology assessment. INTERPOL forms were employed during the dental autopsy. A portable X-ray unit with a digital sensor connected to a laptop was used. The oral inspection was assisted by a specific source of UV light in order to enhance the visibility of any composite resin restorations which are often not perceptible to the human eye due to a high degree of dental mimicry. Finally, the enamel specimens were subjected to geological analysis of the strontium, composite resin and metal found in the mouth to SEM-EDS SEM-EDX.

The use of all these forensic tools and analysis allow for a broader definition of dental autopsy, which can no longer remain a simple dental assessment carried out with merely one odontogram.

In the author's opinion all human remains of uncertain nationality should receive a complete dental autopsy applying DVI standards and INTERPOL forms.

Forensic odontologists should be considered in the missing and unidentified investigations as indispensable resources in the process of identification of 'unidentified corpses'.

The failure to routinely employ forensic odontologists may result in a reduction of additional findings which together with other circumstantial evidence and DNA profiles, could lead to a delay in positive identification.

OP-160

DENTAL CALCIFICATION OR WRIST-HAND BONES MATURATION: WHICH METHOD IS MORE RELIABLE AND ACCURATE?

Vilma Pinchi[1], Martina Focardi[1], Francesco Pradella[1], Giulia Vitale[1], Fabio Corradi[2], Gian Aristide Norelli[1]

[1]Dept. Sec. Legal-Medicine, University of Florence

[2]Dept. Statistics, University of Florence

BACKGROUND: The demand of age estimations due to irregular immigration, asylum seekers, and adoptions has been dramatically

increasing in the last decades and the researchers are even more committed in searching reliable and accurate methods to assess chronological age of the child/adolescent. Tooth mineralization detected by OPG and wrist-hand bone maturation evaluated by direct X-rays have been demonstrated the most effective methods. They are largely experimented and widely use for forensic purposes but, to our knowledge, there is very little experience in comparing dental age and skeletal age on the sample of children.

AIM: Our research aims to compare the reliability and the accuracy of skeletal and dental age obtained for the same sample of subjects. A possible combination of dental and skeletal evidence to improve the estimation of chronological age, will be pursued.

MATERIAL: We examined 279 X-rays of left wrist-hand and 279 OPGs of Italian children aged between 2530 and 5973 Days (6,93 year and 16,36 year). The sample is composed of 138 males and 141 females.

METHODS: The OPGs and the wrist X-rays were taken in the same day. Two trained forensic odontologists scored independently the OPGs and estimated ages according to: Demirjian's original method (seven teeth), Demirjian's eight teeth method, Willems' method. One forensic pathologist trained in age assessment provided the skeletal age estimations applying three methods: Greulich and Pyle(GP) atlas-method and the Tanner-Whitehouse scoring-system, Tw2 and TW3 version. Non other information but the sex was available to the operators at the moment of age estimations. In order to test the intra-observer variability the operator repeated the estimations on 30 X-rays randomly selected from the entire sample after 3 weeks.

RESULTS: The inter and intra observer variability is assessed. The correlation index between chronological age and estimated age is high both for dental methods than for skeletal methods. On the base of preliminary results, skeletal methods tend to overestimate age more than dental methods.

CONCLUSION: The combination of skeletal and dental evidence improves the prediction of age.

OP-161

COMPARISON OF THE RELIABILITY OF FOUR METHODS FOR ODONTOLOGICAL AGE ESTIMATION IN A SAMPLE OF ITALIAN ADOLESCENTS

Francesco Pradella[1], Michele Nieri[2], Giulia Vitale[1], Dario Rugo[3], Vilma Pinchi[1]
[1]Dept. Sec. Legal-Medicine, University of Florence, Italy
[2]Faculty of Dentistry, University of Florence, Italy
[3]Private practice, general dentistry, Perugia, Italy

BACKGROUND: The methods relying on dental calcification of the teeth up to the second molar result very reliable for the evaluation of age in childhood. The methods available nowadays are sensible to the genetic of the populations and therefore are ethnic-specific. It is therefore necessary to compare the reliability and accuracy of the methods in every different ethnic community. AIMS: The research compares the reliability of four common methods for the dental age estimation (Demirijan-D-, Willems –W-, Cameriere- C-, Haavikko-H-) in a sample of Italian adolescents aged between 11 and 16. A possible combination of methods will be proposed as an aid to improve age prediction. Materials: The sample is composed of 501 digital OPGs, of Italian children (257 females and 244 males), aged from 11 year 0 days to 15 year and 364 days.

METHODS: The maturation stage of the teeth has been evaluated according to D, W, H and C methods by three independent examiners. Multilevel statistical models have been applied to compare the accuracy of each method. The two levels of the models were the OPG and the operator. The inter-rater agreement has also been assessed.

RESULTS: The results, whose statistical analysis is close to completion, will report the intra-class coefficients of correlation, the difference of accuracy provided by the four methods examined (p-value, confidence interval), the differences in sensitivity and specificity, the positive and negative predictive values, focusing the attention especially on the 14 years threshold. Preliminary results show that the methods H and C have a general tendency to underestimate the age in the considered sample and the methods D and W tend to overestimate the child's age. Given the special relevance of false attribution in age assessment in criminal cases, we have focused our attention on the problem of overestimation. Finally, a non-negligible variability among the estimations produced by the different operators was observed.

CONCLUSIONS: The choice of the method is to be considered according to the field of interest (civil or criminal law), regarding the possibility to adopt two different methods in the age evaluation of the same case in the aim to obtain a higher accuracy and provide a stronger evidence.

OP-162

ACCURACY OF AGE ESTIMATION OF RADIOGRAPHIC METHODS IN AN ITALIAN SAMPLE POPULATION

Valeria Santoro[1], Roberta Roca[1], Antonio De Donno[1], Chiara Fiandaca[1], Giorgia Pinto[1], Silvio Tafuri[2], Francesco Introna[1]
[1]Section of Legal Medicine – DIM - University of Bari – Italy
[2]Department of biomedical sciences – HYGS - University of Bari – Italy

Age diagnostics of living individuals has become an essential part of forensic practice. In spite of the importance of age verification, no standardized procedures for such evaluations exist in Italy at present. Criteria for age estimation in the living individuals have recently been put forth by The Study Group on Forensic Age Diagnostics. The group has proposed guidelines with a three-step procedure: a physical examination and anthropometrical analysis; dental analysis by orthopantomogram (OPG); and X-ray study of the left hand and wrist. The board of FASE highlighted advantages and limits of each method, and suggested practical solutions concerning the age estimation process for adults and subadults.

The aim of our study was to verify the applicability of the Greulich and Pyle and Demirjian techniques on a large sample group of Italians, whose ages were known, in determining the skeletal and dental age, in addition to evaluating the reliability of these techniques. 535 subjects between the age of 7 and 15 years were examined, each one undergoing both an orthopantomography (OPG) and radiography of the left wrist and hand. The data obtained underwent statistical analysis. The analysis has shown that a correlation exists between skeletal age, dental age and real age. Age estimation carried out using the Greulich and Pyle method has shown itself to be especially accurate on the Italian sample, particularly in the age ranges of 7–9 years and 10.4–11.5 years. The Greulich and Pyle method has shown itself to be reliable for the sample analyzed notwithstanding the ethnic differences between the original sample of reference and those analyzed in this study. Application of the Demirjian technique resulted in an overestimation of dental age. This difference is shown to be more highly significant in the higher age ranges (from 11.5 to 15 years). The combination of the Greulich and Pyle and Demirjian methods has shown a difference with regard to real age, which is more significant in older subjects (10.5 years to 15 years of age) than in younger ones (from 7 to 10.5 years). In an attempt to improve the accuracy of age estimation methods, the authors emphasize the need to broaden studies that include

other world populations with the aim of establishing the existence of inter-ethnic variations. Moreover, it would be desirable to apply simultaneously more indicators in order to improve accuracy of results.

OP-163
DETERMINATION OF TUNISIAN ADOLESCENT AGES BY RADIOLOGICAL EXAMINATION OF PERMANENT MANDIBULAR SECOND MOLARS: A PRELIMINARY STUDY

Abir Aissaoui[1], Meriam Belhaj[1], Nidhal Haj Salem[1], Meriam Mougou[2], Mohamed Amin Mosrati[1], Fethi Maatouk[2], Ali Chadly[1]
[1]Department of Forensic Medicine University Hospital Fattouma Bourguiba of Monastir- Faculty of Medicine- University of Monastir
[2]Department of pediatric dentistry- Dental Faculty of Monastir

BACKGROUND: Accurate determination of age of a person is important in matters concerning medicine and law. There are a number of reliable parameters to estimate age up to 12 years.

This study was conducted to determine the adolescent ages from 12 to 16 years, from dental radiographic study of the closure of apical foramen of permanent second molars.

POPULATION AND METHODS: Our study is prospective. Panoramic radiographs of 50 Tunisian healthy adolescents (age-range 12–16 years) were examined. The criteria for assessment of complete root formation and apical closure were adopted from the description of dental formation stages by Demirjian et al.

MAIN RESULTS: The exact age at which the maximum number of apical foraminal closure and the degree of accuracy are reported in the table below for males and females.

CONCLUSION: Age estimation using apical foraminal closure of permanent second molars is easy for application after a short training. Permanent mandibular second molars erupt between 12 and 14 years and complete their root development by 14–16 years. This makes it suitably chosen as "key teeth" in age estimation among adolescents.

OP-164
CLINICAL FORENSIC EXAMINATION OF SURVIVORS OF TORTURE AND ILL-TREATMENT DURING THE KHMER ROUGE REGIME. IS IT POSSIBLE TO DOCUMENT THE ALLEGATIONS 30 YEARS LATER?

Steen Holger Hansen
Department of Forensic Medicine, Faculty of Health Sciences, University of Copenhagen, Denmark

Democratic Kampuchea was the name of the state controlled by the government of the Khmer Rouge from 1975 to 1979. During the regime cities were emptied, religion was abolished, and private property, money and markets were eliminated. During the 4 years of the regime about 1/3 of the population of 7.100.000 died. Most of them were killed and many starved to death.

In order to convict the leaders and regain redress for the victims the Extraordinary Chambers in the Courts of Cambodia (ECCC) has been build in Phnom Penh, Cambodia.

As a part of the collaboration between the IRCT and the Department of Forensic Medicine a fact finding mission to Cambodia was performed in June 2011. The purpose of the mission was to provide evidence for an upcoming trial at the ECCC against former Khmer Rouge leaders.

Eleven survivors were examined by a forensic pathologist and a psychiatrist. The examinations were performed according to the recommendations in the Istanbul Protocol.

All of the survivors explained that they were forced to do physical hard work and that they often starved because of insufficient food supplies. Several of the survivors reported that they were beaten, shackled up on one or both of the legs and had their arms tied on the back. One reported that he survived his own execution.

Several of the survivors presented scars consistent with the information of being beaten. Most of the survivors reporting having their legs shackled presented they scars highly consistent with the allegations. The survivors who reported having their arms tied on the back presented with discrete transverse scars above the elbows. The survivors all reported that the robe had been placed above the elbows when their arms were tied on their back.

When performing a clinical forensic examination of survivors of torture and ill-treatment it is important to obtain valid information of the ill-treatment from the survivor. This is done not only by letting the survivor explain but also by asking questions about possible methods of torture and ill-treatment, which the survivor might have been exposed to. In these cases only one of the survivors spontaneously explained that he had his arms tied on the back.

CONCLUSION: Even after more than 30 years after being exposed to torture and ill-treatment it is possible to document some of the allegations when performing a clinical forensic examination.

OP-165
TORTURE AND "LESSER OF TWO EVILS" ETHICAL VIEW CONCERNING THE NECESSITY AND CHOICE OF EVILS

Ibrahim Sadik Elgendy
Forensic Medicine and Toxicology Department, Faculty of Medicine Benha University, Egypt

BACKGROUND: torture has often been used as a method of political re-education, interrogation, punishment, and coercion. It is considered to be a violation of human rights, and is declared to be unacceptable by Article 5 of the United Nation Universal Declaration of Human Rights. Torture has been criticized on humanitarian and moral grounds, on the grounds that evidence extracted by torture is unreliable, and because torture corrupts institutions that tolerate it. But since shortly after the September 11, 2001 attacks there has been a debate in the United States about whether torture is justified in some circumstances. Some people have argued the need for information outweighs the moral and ethical arguments against torture. Those favoring torture have however pointed to some specific cases where torture has elicited true information.

AIM: The aim of this article is to determine the reactions, opinion or attitudes towards application of the "Lesser of two evils" to support the use of some degree of torture in some circumstances or to encourage debate and raise questions to deduce strong rules against any use of torture.

DISCUSSION: We often try to choose the "better of two goods" or the "lesser of two evils". Unfortunately, the pressing decision is often not between the good acts with a bad side effect, but between two acts neither of which is good. Thus, the choice of institutions that tolerate torture has to be made between the "lesser of two evils" in some circumstances. Ethical rules accepted the necessity (necessities permit forbidden actions) and favored some degree of torture; however, the

great problem is that after a time, familiarity leads to the lesser of two evils no longer being regarded as evil but as a good (slippery slope or hill). Thus, if we are forced to choose between two things neither of which is good it would be ethically permissible to apply this ethical principle as in a case of a captured terrorist who has placed a nuclear time bomb in a populated area. If the terrorist is tortured, he may explain how to defuse the bomb. There are two evils: many deaths of innocent lives from explosion, and torture of the terrorist to gain information that saves innocent lives.

CONCLUSION: The principle appears useful in Terrorism; in a just terrorism, it may be morally acceptable to allow using some degree of torture if it may gain information that saves innocent lives.

OP-166

HUMAN RIGHTS FOR PERSONS WITH DISABILITIES IN HEALTHCARE— THE CASE IN MACEDONIA

Robert Velichkovski[1], Fimka Tozija[2]
[1]Ministry of health - Skopje, Republic of Macedonia
[2]Institute for public health - Skopje, Republic of Macedonia

INTRODUCTION: Legally people with disabilities (PD) have the same rights as other citizens for health and social care, but this in practice was hardly ever realized. Nevertheless, nowadays there are some positive changes as countries become more aware and started increasingly to address the rights on PD in health care as well, and its key elements as a basic and enforceable right into their constitutions and thus become integral part of their domestic laws.

MATERIALS & METHODS: This study is desk-review on national health legislation for PD, as well as various international and regional legal framework that are legally binding for the Republic of Macedonia. The main purpose is to analyze and highlight the existence of available legal instruments for the right of PD to health care, as a specific and sensitive aspect of human rights, emphasizing how much has been done and how much still needs to be done. The proposed arguments are developed starting from the generally accepted definition of disability and proceeding with the analysis of regulations and rules for the protection of people with disabilities, such as the UN Convention for the rights of people with disabilities.

RESULTS: The national legal framework consists of horizontal legislation that covers whole population, including PD. Differ than this, the study finds out that vertical legal framework for protecting and providing equal rights for PD is incomplete as a number of legal acts have yet to be adopted. The legal framework for the categorization of PD has been widely criticized as impeding the possibilities for the full realization of its rights.

Insufficient progress has been made in the process of decentralization of services related to PD. Despite the adoption of various laws related to the rights of PD, the determination to fulfill these rights appears to be mainly declarative.

CONCLUSIONS AND RECOMMENDATIONS: The systemic monitoring and evidence of law practice for patient's rights is necessary in order to improve the legislation and its implementation in the field. Cooperation between governmental organizations and NGOs should be intensified including a multi-sector approach in order to address the complex requirements of the practical realization of the right to health for PD. Additional investment, increased advocacy and awareness-raising activities are needed to ensure comprehensive implementation of legislation related to PD.

OP-167

THE MEDICOLEGAL PROFESSION AS GUARANTOR OF PATIENT HUMAN RIGHTS

Guido Berro

Faculty of Medicine, Latin-American Center of Human Economy (CLAEH)

Recent prosecution of nurses for killing patients in public hospital in Montevideo and neurosurgical unit caring society caused great commotion.

From the medical examiner perspective, and bioethics, in defense of human rights, the medical examiner collaborates in the test, which condemns guilty, and checks must be made to prevent events, restoring confidence in the functioning of the system.

Shortcomings were revealed to be addressed by patient safety.

The medical examiner in defense of human rights promoted audits of deaths, and autopsies on unexplained or unexpected deaths.

Audits allow detection of unexplained deaths, analyze what happened, possible causes and display an abrupt increase in the mortality rate. In Uruguay are made of stillbirths, infant and maternal. Create "Death Committees" in hospitals. The College of American Pathologists raises importance of conducting in "unexpected or unexplained deaths"

Many held on to the thesis of "serial murderers" and their pathological behavior as prevention and control are not the responsibility or role of the health system. There is no possible link between these behaviors and performance of the health system and its actors. It is the thesis of deviant behavior. There should be corrective for that, but are outside of medical science. They depend on the Justice and here is where the medical examiner's role takes place.

Others appeal to more controls, as an option. They are critical of the system, attitudes of some medical and of the overload requirements they suffer. There is self-criticism in this perception. Require more controls. In this approach enters the medical examiner role in the Committees of death.

Finally a self-critical stance towards the regime of roles in the health system. Doctors and assistants with "Burnout".

This position could signal dysfunctions, which corrected would help prevent and alert. The medical examiner has to offer, mainly in patient safety committees.

Entering the "lex artis and palliative care." Palliative Medicine is not intended to hasten death. Adjusted dosing to pharmacological properties of the agent is required, appropriate to the patient and his response.

Record the answer, and monitoring. Nursing must be informed and coordinated with the medical team and family. With good medical practice and bioethics basis. Clinical assessment. If minimum to doubt, obtain a second opinion. That should not be denied even if there is no doubt. Registration in the medical record.

Consult colleague training in palliative care.

OP-168

INCIDENCE OF SUICIDE IN GREEK CORRECTIONAL FACILITIES

Asimina Logiopoulou[1], Pinelopi Panousi[1], Emmanouil Sakelliadis[1], Dimitrios Vlachodimitropoulos[1], Nikolaos Goutas[1], Nikolaos Karakoukis[2], Theophillos Rosenberg[3], Chara Spiliopoulou[1]
[1]Department of Forensic Medicine & Toxicology, Faculty of Medicine, National & Kapodistrian University of Athens, Athens, Greece
[2]Piraeus Forensic Service, Ministry of Justice, Hellenic Republic, Athens, Greece
[3]1st Surgical Clinic, Faculty of Medicine, National & Kapodistrian University of Athens, Athens, Greece

BACKGROUND: The incidence of self-injurious behavior inside correctional facilities has already been documented by literature. The

purpose of this study is to measure the incidence of suicide cases inside major Greek prisons and propose possible measures to be taken under consideration by the Hellenic Ministry of Justice.
METHODS: A retrospective study was performed, after obtaining special permission from the Hellenic Ministry of Justice, that granted access to the records of major Greek correctional facilities. Data was also collected from the Piraeus Forensic Service and the Department of Forensic Medicine & Toxicology of the Medical Faculty of the University of Athens. Full statistical analysis was performed.
RESULTS: Prisoner population is in a quite sensitive position with regard to it's mental condition. The confinement within a correctional facility has a devastating effect on inmate psychology. The exact place of where the corpse was discovered was noted. The time and the day of the week were also noted in an effort to detect any pattern. Data showed that incidence of suicide mainly affects younger inmates. Visits to psychiatrist or known psychiatric conditions with or without medication was also noted.
CONCLUSIONS: Preventive measures need to be adopted, allowing access of inmates to mental health care professionals who can more easily evaluate the situation and provide assistance if needed.

OP-169

CLINICAL FORENSIC PATHOLOGISTS AND THE ASSESSMENT OF REFUGEES FOR SIGNS OF MALTREATMENT AND TORTURE: ITALIAN FIRST STEPS

Cristina Cattaneo, Daniele Gibelli, Danilo De Angelis, Marco Grandi
LABANOF, Laboratorio di Antropologia e Odontologia Forense—Sezione di Medicina Legale, Dipartimento di Morfologia e Scienze Biomediche, Università degli Studi, Milan, Italy

BACKGROUND: Italy receives a large part of European immigration and Milano gives hospitality to many immigrant refugees which request political asylum so much so that it has developed one of the most important Commissions for the evaluation of refugees at a national level (Commissione Territoriale per il riconoscimento della Protezione Internazionale di Milano, Ministero dell'Interno). Up to now forensic pathologists have rarely been called upon. Recently the Commission dealing with such requests for the City of Milano has recruited forensic pathologists in order to complete a working group already composed of internal affairs officers, psychologists, psychiatrists and social workers. This presentation wishes to share the first experiences in this sense, including the obstacles encountered in establishing a fruitful cooperation between forensic pathologists, government officials, psychologists and social workers as well as the pitfalls and difficulties in producing objective, clear and unambiguous reports for such purposes, and in living up to the expectations of politicians which expect pathologists to easily pick out non-torture related injuries and self-inflicted ones.
METHODS: Two years of activity are described: each alleged victim was interviewed, examined and photographed. In several cases radiological, ophthalmological, dermatological and odontological tests were necessary in order to assess dynamics and impairment due to trauma. In some cases genital and anal examination concerning sexual assault or violence were also necessary. The final report concerning the consistency between lesions and the given history was prepared according to the indications of the International Rehabilitation Council for Torture Victims. Aging the victims was sometimes also requested.
RESULTS: In most of the cases the subjects came from African countries. Sometimes the history revealed torture/maltreatment (at times in custody) for political reasons, in other cases persecution was related to social and cultural conflicts. Blunt trauma was the most frequent manner of reported lesions, followed by sharp force and thermal injuries and sexual abuse. Technical evaluation of scars and dermatological findings, as well as ano-genital ones, proved extremely difficult; bone fractures and dental avulsions were at times useful for aging lesions but certifying degrees of support proved challenging even for the forensic pathologist.
CONCLUSION: Assessment of torture and maltreatment has much to gain from the modus pensandi of the forensic pathologist and remains a challenging issue. This presentation highlights the difficulty and subtlety of cases reaching our attention and the importance of a close cooperation with government authorities and the formation of multidisciplinary groups of experts.

OP-170

FORENSIC EVIDENCE IN DNA DATABASE SEARCHES FOR SUSPECTS IN MIXTURE CASES

Wing K. Fung, Yuk Ka Chung
Department of Statistics and Actuarial Science, University of Hong Kong

BACKGROUND: Along with the amassing of large databases of DNA profiles from previously convicted offenders or unsolved criminal cases, DNA database search has played an important role in suspect identification for solving crimes. In practical crime cases, the biological traces collected from the crime scene are often obtained as mixed stains. With the aim of bridging the gap between DNA mixture analysis and DNA database search, we propose a novel approach for evaluating the evidentiary values of "cold hits" in a database search based on DNA mixtures, and explore the potential use of familial database search on mixture cases when no perfect match is found in the search.
METHOD: General formulae are developed for the calculation of the likelihood ratio for a two-person mixture under general situations. For familial search, a simple strategy is developed to determine the least number of individuals who should be included in the crime investigation, according to the desired hit rate required by the police force.
RESULTS: As demonstrated by numerical examples on constructed murder cases, the general formulae allow for the use of non-uniform priors and provide a handy way of assessing the weight of evidence for a two-person mixture under general situations including multiple matches and presence of missing data. The effectiveness of the search is evaluated by the calculation of the probability of erroneous attribution. Illustrated by an example using simulated data, the performance of familial search in mixture cases is analyzed, and shown to be as effective as in single-source cases. The proposed strategy is also shown to be capable of suggesting an appropriate scale of investigation, with an empirical hit rate no smaller than the required hit rate.
CONCLUSION: The forensic evidence of DNA mixtures from database search can be presented in a comprehensive way using our general formulae. In cases when no perfect match is found in the search, familial search can be applied and can perform as good as in single-source cases. A novel method was established to predict the outcome of familial search, from which a simple strategy for determining an appropriate scale of investigation by the police force is developed. It can provide useful information aiding the police force to achieve desirable crime-solving rate with reasonable cost.

OP-171

RECOVERY OF MISSING PERSONS IN CYPRUS: METHODS AND TECHNIQUES OF COMPLEX WELL EXCAVATIONS

Deren Ceker
Committee on Missing Persons in Cyprus, Nicosia-Cyprus

BACKGROUND: The Bi-communal Forensic Team (BCFT) of the CMP, has been conducting excavations since 2005 to find persons reported as missing from the inter-communal fighting between the years 1963–1974. As a result of the violence generated during those times, a total of 494 Turkish Cypriots and 1493 Greek Cypriots were officially reported as missing by both communities to the CMP. From our experience over the past 6 years, 157 individuals have been recovered from 82 deep-well excavations.
METHODS: CMP excavation methods vary according to the type, the depth, and the type of soil surrounding the well. The excavation process begins by gathering historical and circumstantial data related to the missing person(s), and dominant landforms, land use, and geomorphology of the excavation area. So, the BCFT establish an excavation plan, which includes decisions about what type of heavy machinery will best serve the excavation process. The depth of the wells excavated thus far by the CMP, varies from 5 m to 31 m (Iskele/Trikomo Village 2010).

Due to the abundance of well excavation sites, the CMP forensic archaeologists developed a system of access ramps for heavy machinery and pockets and pools, which are dug next to the mouth of the well to manage excess ground water. Initially, a located well feature is opened on three sides by an excavator, not only for safety and timeliness but also to allow access for the team to recover remains and additional evidence in situ. The excavator does not disturb the sediment inside the well; rather it makes a ramp with the assistance of a wheel loader, which transports large amounts of loose soil out of the excavation area.
RESULTS: The methods innovated by the BCFT of CMP, enable archaeologists to excavate the deepest wells safely and successfully by maintaining the provenance of recovered evidence while reducing excavation times and keeping costs low. In doing so, the CMP forensic archaeologists overcome archaeological, logistical and physical difficulties to reach human remains.
CONCLUSION: After attending this presentation, attendees will learn the methods and techniques developed by the bi-communal forensic teams of the CMP that are used to recover the remains of missing persons. This presentation will impact the forensic community by sharing best practices of the CMP forensic archaeologists to overcome the difficulties and safety risks associated with excavating human remains from deep wells.

OP-172

BURIAL PATTERNS DURING TIMES OF ARMED CONFLICT IN CYPRUS IN THE 1960S AND 1970S

Maria Mikellide
Committee on Missing Persons in Cyprus, Nicosia, Cyprus

BACKGROUND: From 2005 to the present, the remains of a minimum number of 808 individuals, killed during the two periods of armed conflict in Cyprus, were exhumed through the Project on the Exhumation, Identification and Return of Remains of Missing Persons of the Committee on Missing Persons in Cyprus (CMP). The remains were exhumed from both sides of the Cyprus divide from 195 discreet burial locations.

The purpose of this paper is to introduce the mission of the CMP, the CMP Bi-Communal Forensic Team's (BCFT) archaeology program, and the observations and patterns of clandestine burial practices during armed conflict that occurred in Cyprus.

METHOD: The BCFT has excavated multiple burial sites across Cyprus, where specific patterns of clandestine burial during armed conflict have emerged. Thus far, BCFT excavations can be consolidated to six main types based on similarities in archaeological context, which include: (1) in situ, primary burials in open fields and house yards, (2) secondary burials in open fields and house yards, (3) burial in wells, (4) deposition in stream beds, (5) surface deposition on mountain tops, and (6) burials in symbolic locations.
RESULTS: The prevailing method of burial across the island is that of in situ primary burial. Secondary burials where human remains have been transferred away from their original deposited position and surface deposits, which result from unburied bodies are the second and third most frequent modes of burials encountered by the BCFT.
Burials in wells are also commonly encountered by the BCFT and constitute the fourth most frequent mode of burial. Deposition in stream beds comes fifth and burials in symbolic locations being the least frequent mode are sixth.
CONCLUSION: In excavating the island's past the forensic archaeologist becomes aware of the various clandestine burial practices that prevailed during armed conflict, which become informative in identifying future burial sites. The six main categories of CMP recovery sites are reflective of the character and atmosphere of conflict but also of the environmental and cultural parameters that characterized Cyprus during the 1960s and 1970s. Today, in conducting excavations for the CMP, the forensic archaeologists from the two Cypriot communities contribute to the overall mission for the recovery and identification of missing persons but also to the development of a reconciled future.

OP-173

THE PROFESSIONAL ETHICAL PRINCIPLE OF CRIME SCENE INVESTIGATION

Mohammad Kazemian, Jahanbakhsh Sanjabi, Alireza Kahani, Saaid Hashemi
Department of Research & Scientific Publication in Legal Medicine Organization of I.R. IRAN

INTRODUCTION: Directors, experts and those involved in C.S.I should try hard to realize their public mission and perform their duties and put accreditation, establishing and supporting the legal and legitimate rights of persons, active participation in managing the relations between members of the crime scene investigation team and providing service to the public, and protecting people's dignity in investigating the crime scene, on top of the list of their activities.
MATERIAL AND METHODS: The ethical charter of crime scene investigation was edited in the context of congress of C.S.I which was hold in 2008. The preliminary draft was suggested by the scientific committees and the final draft was approved in the common meetings of the scientific committees.
RESULTS: The final draft which was confirmed by the scientific committee of the congress and the attendees of the congress address the following issues:
1. Active and timely presence in the scene, observing order and discipline, responsibility and politeness, …
2. Adherence to professional and scientific standards, giving precedence to quality over quantity, …
3. Respecting justice, equality and equity, …. in doing one's job and responding to people;
4. Adherence to religious rules as well as ethical and cultural principles in dealing with people and victims, …
5. Adherence to the principle of sincerity and providing un-biased, systematic opinion, ….

6. Proper use of resources and avoiding wasteful methods of service provision …
7. keeping the secrets of victims and survivors and trying to preserve the documents, information and records as a chain of trust for people's secrets …
8. Strengthening the spirit of clear cooperation and team work and doing things based on mutual trust, …
9. Respecting citizens rights and the principle of guiltlessness …
10. Endeavor for continuous improvement and updating service providing methods through self-education …
11. Observing the principles of bioethics and crime scene health and preservation of environmental health …
12. Observing the principle of impartiality and emotional control in dealing with crime scenes, victims, suspects and survivors.

DISCUSSION: Team members of C.S.I at the beginning of their activities should respect ethical rules and principles and should commit to moral, social and cultural values and make their knowledge and skills in order to attain higher level of justice; they should, also, consider their colleagues as the most important elements and avoid of non-professional and immoral behavior and protecting human dignity at their first priorities.

OP-174

ARTIFICIAL NUTRITION AND HYDRATION IN GERIATRIC PATIENTS

Hanzade Dogan[1], Gizem Kızılırmak[2]
[1]İstanbul University, Cerrahpaşa Medical School
[2]İstanbul University, Cerrhapaşa Medical School

Are there any court decisions or legislations or any ethical consensus that view artificial nutrition and hydration in geriatric patients as medical treatment that could be refused like other treatments in Turkish Health Care System?

Geriatric patients might lack decisional capacity or there might be questions or confusions about their diagnostics. Social values, religious teachings or approach of patient relatives might bring more stringent standards for ANH refusal. Another important issue to consider for the calculation of risk/benefit ratio would be to foresee if death would result from "dehydration" or "starvation".

The use of artificial nutrition and hydration at the end of life and considering it as part of medical treatment is a serious ethical obstacle to be resolved. Ethics advisory committees and subcommittees are inevitable to evaluate the situation in the clinics and institutions and to reach a consensus of both "medical" and "ethical".

In terms of jurisdiction, there is not an exact law directly pointing the issue as a medical treatment that could be withheld or withdrawn.

Under those circumstances, what should be the best medical approach to ANH for geriatric patients or patients at the end of life?

OP-175

ETHICAL ISSUES ABOUT A STUDY PROTOCOL COMPARING TWO STRATEGIES FOR MANAGEMENT OF BODY PACKERS CARRYING INGESTED DRUG PACKETS

Zakia Médiouni, Bertrand Bécour, Wali Abi Ayad, Florence Dumas, Jean Louis Pourriat
Assistance Publique - Hôpitaux de Paris

In Paris, about one hundred individuals are apprehended for transporting internally concealed narcotic substances or body packing. Given the medical implications of this practice, body packers are monitored in a secure medical unit where they benefit from hospital-based medical management under police control until the complete evacuation of the ingested foreign bodies.

We are about to conduct a monocentric randomized controlled trial comparing two treatment strategies on October 2012. This trial aims to improve the medical management of drug-packet carriers.

One of the specificities of this study is that our subjects are, perforce, detainees; most often asymptomatic, these persons can neither be considered, nor consider themselves, as presenting with a disease. They are, however, at risk of life-threatening complications, notably in case of packet rupture, which raises the issue of whether they should benefit from plain ambulatory monitoring or be admitted to hospital.

The fact that these individuals are held in custody has several consequences which lead one to query the validity of their consent to be treated and participate to the study. It also enhances the asymmetry of the patient/physician relationship inherent to the discrepancy in medical knowledge, further disrupted by the inability of these patients to choose their physician. The validity of the patient's consent becomes even more ethically questionable when one considers the frequently encountered language barriers and the fact that the physician is answerable to the requesting authorities.

In France, the fact that a study subject is held in custody makes it necessary to obtain the agreement of several authorities.

In secure medical units, ethical considerations play a major part in medical practice. The basic principle "Primum non nocere" forbids putting patients at inconsiderate risks. A fine benefit/risk analysis is required in any cases. For instance, digital examination of the rectum is contraindicated because of a bad benefit/risk balance. The latter procedure could be construed as detrimental to the person's physical integrity.

The incident pathologies, or incidentalomas, revealed by the imaging studies trigger further ethical considerations, notably concerning the communication of the diagnosis, the explanation of the issue and the initiation of medical and/or surgical care, particularly in the case of these patients who generally have no health insurance and frequently come from emerging countries.

If we are to harmonise practices and management of body packers so as to ensure consistent medical decisions and provide quality care, standards need to be drawn up, and respected.

OP-176

ETHICAL ISSUES IN RESEARCH WITH CORPSES

Beatrice Gabriela Ioan
Department of Legal Medicine, Medical Deontology and Bioethics, "Gr. T. Popa" University of Medicine and Pharmacy, Iasi, Romania

BACKGROUND: Research with corpses has decisively contributed to the progress of anatomy and medical sciences. The etiology, causality, physiopathology and morphopathology of various diseases and the mechanism of action of various drugs have been established through research with corpses.
METHOD: In this paper the authors analyze the ethical issues in research with corpses starting from the potential benefits of research to science and society versus the moral obligation to the deceased.
RESULTS: The respect to corpses is imposed by several aspects such as the continuity between the living and the corpse, the respect to relatives and the fact that the corpses are "precious natural symbol of humanity". The adequate informed consent for conducting research with corpses, the confidentiality, the limitation of the number of studies conducted with one corpse and the early stopping rules are important ethical issues which

have to be followed during the research with corpses. Ideally, all research with corpses should undergo ethical evaluation as this type of research raises particular ethical issues. However, in some countries there is no stipulation about the obligation for a research protocol on dead people to be reviewed by a research ethics committee.

CONCLUSIONS: In research with corpses the interest of science and society must be put in balance with the respect for the dead persons. The access to corpses and cadaverous organs for research should be allowed in an adequate ethical and legal context, based on the informed and responsible choice of the citizens. The transparency on the forensic and the pathological practice is important for adequate information of the public regarding the importance for science and humanity of carrying out studies on corpses.

OP-177

THE DEVELOPMENT OF A REGIONAL NETWORK OF FORENSIC INSTITUTIONS: THE EXAMPLE OF THE IBERO-AMERICAN NETWORK OF MEDICO-LEGAL AND FORENSIC SERVICES

Morris Tidball Binz[1], Duarte Nuno Vieira[2]
[1]Forensic Unit, International Committee of the Red Cross, Geneva, Switzerland
[2]National Institute of Legal Medicine, Coimbra, Portugal

National medico-legal and forensic services typically operate within the boundaries of their own countries, often with little or no working relationships with similar institutions in neighbouring or other countries. Their relative isolation undermines the potential for beneficial cross-border cooperation in forensic activities, including in responding to mass fatalities.

This paper describes the experience of developing a regional network of national medico-legal and forensic services in Latin America, Portugal and Spain, for improving communication, coordination and cooperation between these institutions.

In 2007 the International Committee of the Red Cross (ICRC) convened a meeting in Buenos Aires, Argentina, of representatives from medico-legal and forensic services from countries in Latin America, Portugal and Spain, to explore improved cooperation between these institutions for the management and identification of mass fatalities from armed conflicts and catastrophes affecting the region.

That meeting confirmed that most national medico-legal and forensic services in the region had never communicated previously between themselves and knew little or nothing about each other.

The Ibero-American Network of Medico-Legal and Forensic Services was formally established in Lima, Peru, in 2008, during a follow-up meeting of representatives from those institutions, convened again by the International Committee of the Red Cross (ICRC) and hosted by the Peruvian Medico-Legal Institute.

The main purpose of the Network is to improve communication, coordination and cooperation between member institutions in areas of shared interest, including research, training and forensic operations, including disaster response.

The Network has since held a yearly meeting in a member country. These meetings provide a unique opportunity for exchange, communication and planning between participating medico-legal and forensic services. As importantly, the Network has also served to coordinate responses and cooperation in mass fatalities in the region.

The biggest challenge presently faced by the Network is related to its sustainability. So far it has depended heavily on the support from the ICRC for carrying out many of its activities, including holding its annual meetings. Its biggest challenge is therefore to further develop its full financial autonomy, including for holding its annual meetings and carrying out agreed activities.

The experience from the Ibero-American Network of Medico-Legal and Forensic Services is also helping inform similar developments in the Asia-Pacific and Africa regions for establishing networks of forensic institutions towards improved trans-border forensic cooperation, including in disaster response.

OP-178

MALPRACTICE CLAIMS IN DAKAHLIA AND DAMIETTA GOVERNORATES: A 10-YEAR EVALUATION STUDY

Fatma A Kamel[1], Amal A El Bakary[1], Sohayla Mohamed Elsherbiny Attalla[1], Somia M El Azab[1], Basem S Eldeek[2], Mahmood A Ali[3]
[1]forensic medicine and clinical toxicology department - faculty of medicine - mansoura university
[2]Public Health & Community Medicine Department - faculty of medicine - mansoura university
[3]Ministry of Justice - Egypt

The practice of medicine is becoming increasingly more complex. Physicians and other healthcare providers face increasing administrative and legal challenges. Malpractice Claim puts physician's finances, reputation, professional advancement, personal relationships and health at risk. In Egypt, medical malpractice problem has been magnified during the last few years. The aim of this study was to through light on medical malpractice claims in Dakahlia and Damietta regions. Results of the present study showed that there is annual increment in the number of claims. According to specialty, anesthesia was the highest percentage followed by surgery and gynecology/obstetrics. By locality, most claims were against central hospitals followed by private, general and least was university hospitals. However, claims were proved positive mostly in private hospitals followed by central, general and lastly university hospitals. For private hospitals, the most proven claims were for gynecology/obstetrics, then anesthesia but for central hospitals, anesthesia represented the most proven claims followed by surgery. Good medical practice and a good medical-patient relationship are still the best ways to minimize lawsuits and their repercussions.

OP-179

THE STUDY OF KNOWLEDGE LEVEL OF GYNECOLOGISTS AND MIDWIVES IN KERMAN CONCERNING ABORTION RULES AND REGULATIONS

Masoud Ghadipasha[1], Horieh Najibzadeh[1], Fatemeh Shamsadini[2]
[1]Legal Medicine organization, Tehran, Iran
[2]Medical System, Kerman, Iran

BACKGROUND & AIM: Abortion has always been a controversial issue and all the religions and humanistic and medical communities have been apposed to it. The effect of illegal abortion is one of the most common of admitting to bed in developing countries. W.H.O estimates that the one eight of pregnancy death is just because of illegal abortion effects. Lack of knowledge of the medical team about the abortion regulations and rules can endanger the pregnant mothers life and also make some problems for medical communities.

MATERIALS & METHODS: This study is as cross sectional study. all 143 Gynecologists and midwives of Kerman have been evaluated by considering the knowledge level of rules and regulation of abortion.

The questionnaire has been used in order to collect all data. After completion, the SPSS software has been used for analyzing data and the K & T has been used for assumptions test.

FINDINGS: Form the total number of 143, %14 were Gynecologists and %80 were midwives the average age of 33/5±6/4, %44 employed in the universities and %56 employed in other places %15/4 of them had an average level of knowledge and %84/6 had an acceptable level of knowledge. There is meaningful relationship between the academic study and level of knowledge and also between the job status and the level of knowledge.

CONCLUSION: According to the research, it has been distinguished that the level of knowledge increases as the level of education increases, so it is very necessary to pay a special attention to the education of the midwives group and also to have more of the authorities in private centers. Having retraining and education workshops concerning the issue, increase the level of knowledge as well as the healthiness of pregnant woman communities.

OP-180

PATIENT RESPONSIBILITY AND FORENSIC EVIDENCES IN MALPRACTICE ACCUSATIONS

Cristian Adrian Stan[1], Carmen Ioana Stan[2]
[1]National Institute of Legal Medicine Mina Minovici, Bucharest, Romania
[2]Ilfov County Hospital

The juridical area of medical malpractice has known an accelerated development over the last 20 years, determining heterogeneous legislative adjustments at European level, which in the future will have to be modified as to become compatible due to unification of civil practice and penal cooperation within the European Union according to the Treaty on the Functioning of the European Union.

Therefore the expert truth becomes sometimes the result of the interaction between evidence coming from different cultural and medical environments (surgical interventions taking place in different countries, histopathological examinations, telepathology, different access to oncology medication, etc.). The direct contribution of the patient to the therapeutical failure must not be undervalued (case reports—not following medical recommendations, offering an incomplete or even false medical history to the doctor in charge, deforming symptomatology presentation, ignoring important signs, not asking for an alternative medical check). Most of these are determined by the level of education and by the personality type of the patient, but also by the quality of the patient-doctor relationship. At the same time as jurisprudence progressively evolves towards giving auto determination rights for human beings from the fetal stage (case Perruche, 2000, France) to precursor cells from human embryonic stem cells (Oliver Brüstle vs. Greenpeace eV, CJEU, 2011).

On the other hand, there is a tendency for using foreign expertise (Case Šilih v. Slovenia, ECHR, 2009) while the judicial experts tend to be recognized such at European level (Case Josep Peñarroja Fa, CJEU, 2011).

Doctors migration within and outside the European Union (out of which some return to the countries of origin after years of medical practice abroad) determines a multiculturalism of the professional medical environment that tends to go beyond national borders.

CONCLUSIONS: The role and position of the medico-legal expert in the medical malpractice cases becomes more complex at the same time with overcoming the national barriers, situation which imposes the adjustment of the juridical environment to such extremely multifaceted situations.

In the modern era, along with development of individual rights, it becomes more and more obvious that the responsibility level of the patient should not be under valued in connection with the failure of the therapeutical act (which most of the times is impossible to prove).

Therefore medico-legal expertise involving technical difficulties must be standardized according to the last generation or even to experimental surgical techniques cases.

OP-181

EFFECTS OF THE NEW REGULATIONS ABOUT EXPERTISE ON THE EVALUATION OF CASES WITH MALPRACTICE CLAIM

Ömür Şanyüz[1], Abdullah Coşkun Yorulmaz[2], Ayfer Altınok[1], Nur Birgen[3], Kubilay Kinoğlu[1], Zeynep Orhan[1], Timur Kaan Gündüz[1], Özlem Saniye İçmeli[4]
[1]Council of Forensic Medicine, Istanbul, Turkey
[2]Departman of Forensic Medicine, Istanbul University Cerrahpasa Medical Faculty, Istanbul, Turkey
[3]Acibadem Hospital, Istanbul, Turkey
[4]Sureyyapasa Chest Diseases and Thoracic Surgery Hospital, Istanbul, Turkey

INTRODUCTION: It is not easy to examine whether or not the injury occurred as a result of medical negligence. Final decisions regarding medical malpractice in Turkey are made by courts. But, the courts depend on expert opinion to help them to understand and decide complex cases. To protect the rights of injured patients and innocent physicians, and to uphold legitimate standards of medical care, it is morally and legally appropriate for physicians with sufficient expertise to testify in medical malpractice cases. In the year 2005, the Turkish Criminal Procedure Law has changed. Besides the High Council of Health and the Council of Forensic Medicine, which can only prepare expert witness opinions for the courts or prosecutors' offices, all parties were granted the right to get "scientific opinion" reports. Thus, more than one forensic expert reports began to attract attention in forensic cases. Aim of this study is determining the effects of different experts' views on Council of Forensic Medicine 3rd Specialty Board's decision making process.

MATERIAL AND METHODS: Between the years 2008 and 2010, the malpractice claim files that were sent to the Council of Forensic Medicine 3rd Specialty Board by the courts were evaluated. Expertise available on files from other official agencies, medical associations, preliminary examiners determined by the governorships and private experts were included in the study. Expert opinions and Board reports were compared.

FINDINGS: In a 3 years time, Council of Forensic Medicine 3rd Specialty Board documented 3624 cases with malpractice claims. 240 of these reports also had expert opinions. 23 % of these cases (56) with an expert opinion had results opposed to the Board. Also 2 % of these cases (5) had expert reports from different institutions.

DISCUSSION: One final responsibility of the expert testimony is to differentiate for the court member between malpractice and complication. Presentation of different opinions in a scientific frame could help the ruling judges to better understand the subject. Increased number of these reports and even cross-interrogation of the experts is a chance to find the truth which should not be omitted. However, medical malpractice expert witness testimony can mean the difference between winning or losing a case. Therefore this medical consultant or expert has to provide unbiased testimony regarding if any negligence occurred. These individuals must be able to effectively communicate in a manner that is easy for the judges to understand.

OP-182

EPIDEMIOLOGY OF MEDICAL MALPRACTICE IN GREECE IN THE LAST FIVE YEARS (2006–2010)

Grigorios Leon[1], Angela Papetta[2], Ourania Boziki[3]
[1]Medicolegal Office, Athens, Greece
[2]First Department of Pathology, Medical School, The Athens National and Kapodistrian University, Athens, Greece
[3]Universita degli Studi di Camerino, Istituto di medicina legale e delle assicurazioni, Camerino, Italy

BACKGROUND: Medical errors seem to be an important problem in Greece that is growing every day. The absence of specific and valuable statistical documents coming from the Greek health care system does not help us, currently, to have a real view of the problem in the country. However, it is really important that we try to analyze the extent of the problem. Through this study we attempted to evaluate the extent of the problem by the last 5 years.
METHOD: All the court decisions found concerning the years 2006–2010 were analyzed. The data of the decisions were taken through 3 sources: The official webpage of the supreme court of Greece, the official webpage of Athens Lawyers Association and the electronic law database called "Nomos" which means "law". From these cases the following parameters were studied: year, court type, medical specialties concerned, accusation and court decision. Also a comparison of the results was attempted with similar results from other countries.
RESULTS: First of all, we realized the in comparison with 2006, the number of medical errors has significantly increased in the following years. In 56 % of the cases the accusation was negligent homicide (manslaughter), 37 % was the cause of bodily harm and in smaller percentages other accusations. We identified that specialized doctors most frequently accused are within the following categories: surgeons, obstetrics-gynecologists, internists, anesthesiologists and neurosurgeons. Also important are the records of legal proceedings against trainee doctors. Patients were accusing mainly the physician and rarely the whole medical team. An interesting fact is that in 82 % of the cases the court decided on sentences against the doctors.
CONCLUSION: It was concluded that after 2006 there was a great increase in the cases of medical malpractice brought forward to the Greek justice system. The allocation of cases according to the medical specialties seems to be similar with respective studies from other countries. Most cases that went to the Court they concluded with positive rulings in favor to the victims. It is necessary, in Greece, to establish an official recording of all the cases of medical malpractice and further studies to be done. In this way, on the one hand the records will show the extend of the problem, and on the other it will be possible to find possible ways of intervening in medical training, in the legal field and in the health care and social systems.

OP-183

MEDICO-LEGAL ASPECTS IN A CASE OF LAPAROSCOPIC CHOLECYSTECTOMY WITH CONCOMITANT BILIARY, VENOUS AND ARTERIAL IATROGENIC LESIONS

Vito Cirielli[1], Oriella Montagna[1], Andrea Galassi[2], Stefania Turrina[1], Domenico De Leo[1]
[1]Department of Public Health and Community Medicine, Institute of Legal Medicine, University of Verona
[2]Unite of Legal medicine, "S. Bortolo" Hospital, Vicenza

A 74 years-old woman with symptomatic cholelithiasis was admitted to the hospital and underwent radiological diagnostics (Tomography computed and ultrasound examination) with findings of gallstones. The patient was submitted laparoscopic cholecystectomy. Intraoperatively, the surgeon described omental adhesions, severe inflammation, a cystic artery with anatomical variant (multiple collateral branches) and a short cystic duct. The surgical procedure was complicated by profuse bleeding, therefore the surgeon decided for hemostatic suture to stop the bleeding.

Postoperatively, the woman showed immediately right upper quadrant abdominal pain and significant deterioration of the liver function tests. The CT evidenced right hepatic ischemia.

The patient was transferred to a third level hospital, and underwent laparotomic surgery with right hemihepatectomy and a Roux-en-Y hepaticojejunostomy 8 days after from first laparoscopic surgery.

The operative note described "completely dissected distal common bile duct, unrecognizable proximal common bile duct and the biliary confluence, sutured to the portal branch for the segments 8 and 5, clips on the right hepatic artery."
Afterwards onset of fever with progressive deterioration of her general condition and she died 2 months after the first operation due to sepsis.

The autopsy showed ascites, adhesions between the diaphragm, liver and intestinal structures, outcomes of right hepatectomy with suture between the biliary ducts and the jejunal loops; integrity of the surgical anastomosis; lesion of the right hepatic artery.

The histological examination showed: ischemic and gangrenous hepatic necrosis indicative of a septic complication, diffuse intrahepatic cholestasis and acute respiratory distress syndrome.

The case is very interesting for various medico-legal aspects: informed consent about conversion to laparotomy, the experience of operator in different surgical techniques, the pre-operatively possibility of anatomical variations exploration, the evidence of the causal chain. Review of the literature revealed that bile duct injury is a frequent operative complication of laparoscopic cholecystectomy, but also indicated the rarity of concomitant arterial and venous lesions. The lesion of the portal vein system appears to be associated with rapid hepatic necrosis and with an increase of the morbidity and the mortality. However in this case exitus occurred approximately 2 months after laparoscopic surgery secondary to complications. The evaluation of medical malpractice aspects is complex and requires adequate attention to the presence of an anatomic variant, and eventually to the prompt conversion from laparoscopic cholecystectomy to a laparotomic approach and to anatomo-pathological finds. The necessity of a good autoptic technique in evaluating post-surgical deaths will be discussed.

OP-184

CLAIMS OF MALPRACTICE INVESTIGATED BY COMMITTEE OF MEDICAL ETHICS, EGYPTIAN MEDICAL SYNDICATE, CAIRO

Sonya Ms Azab
Department of Forensic medicine & Toxicology, Faculty of Medicine, ain Shams University

Medical malpractice claims files present a potentially valuable source of information as they represent a powerful catchment point for information on errors; A greater understanding of the claims may highlight their causes and thus help to prevent them.

This study aimed to investigate the closed claims of malpractice investigated by The Committee of Medical Ethics in the Egyptian Medical Syndicate in the years 2008 and 2009.
METHODS: This study included 91 claims which represented the closed claims which had been received and investigated by The Committee of Medical Ethics in the Egyptian Medical Syndicate in 2 years (2008 and 2009). The claim files were investigated for the causes, the harm and litigation outcome.

RESULTS: 74 % of the claims were for events occurred in outpatient settings. 38 % of the claims were defensible. Improper performance of the procedure was the most frequent cause (29 %), also this cause was found to be associated with the worst outcome of the cases both in frequency and severity. Obstetrics and gynecology followed by surgery were found to be the most frequent specialties of the defendants of the claims.
CONCLUSION: While the majority of the claims resulted in severe damage, their causes are preventable. This reflects the great need for more efforts to increase the patient safety.

OP-185

MEDICO-LEGAL PROBLEMS WITH NON-DIAGNOSED PRENATAL MALFORMATION—ACRANIA AND DEATH OF THE SECOND TWIN IN UTERO

Rossen Trendafilov Hadjiev[1], Marya Mladenova Grozeva[1], Antonina Tododrova Gegova[1], Boryana Vladimirovna Zaharova[2], Lubomir Asenov Damyanov[3]
[1]Department of Anatomy, Pathology and Forensic medicine, Government University, Sofia, Bulgaria "St. Kliment Ohridsky"
[2]Private Laboratory of DNA Analysis
[3]Medical Center of Human Reproduction

It concerns to a woman giving birth for the first time, conceived "in vitro"—biparous, bichorial, biamniotic gravidity which has been regularly observed by specialist in Obstetrics and Gynecology. The parents were known that the twins developed in their normal course. At the performing of ultrasound examination just before the section cesarean the parents were known the both twins were alive, well developed with normal heart frequency. After the operation the woman was announced the second twin was death couple of days before the operation and with malformation—acrania. The difference among the medical information has given rise suspicion in the family for the exchange of the second twin. This imposed performing of medico-legal examination of the documents, histological materials and DNA analysis of the alive twin, the parents and the histological materials taken from malformed stillborn. We found out the autopsy had been done 4 days after giving birth. DNA analysis was done including mitochondrial DNA but the convictive results allowing clarification of the parental origin of the malformed baby. We connected this with the advanced degradation of DNA due to maceration inside uterus, putrefaction due to delayed autopsy and working of the histological materials. Medico-legal problems in this case are connected with incorrect diagnosis of the development of the second twin, the causes for the non- diagnosed malformation, incorrect result for the death in uterus and the reason for that (retroplacental hematoma) of the second twin and the processes of putrefaction, a result due to delayed autopsy.

OP-186

CASE OF MISJUDGMENT AT THE MEDICO-LEGAL EXAMINATION OF AN INFANT SUFFERING FROM MORBUS CROHN

Rossen Trendafilov Hadjiev[1], Maria Mladenova Grozeva[1], Antonina Tododrova Gegova[1], Petar Borisov Petrov[1], Tzvetelin Neshev Gatev[2]
[1]Department of Anatomy, Pathology and Forensic medicine, Goverment University, Sofia, Bulgaria "St. Kliment Ohridsky"
[2]Department of Military Hospital in Sofia, Bulgaria

While doing medico-legal investigation of infant of the male gender 2 years and 3 months old after life-saving operation because of rupture of the rectum and urinary bladder, medico-legal doctor neglected the fact that both sphincters-external and internal were intact. After the examination the doctor concluded the child had suffered sexual abuse done by his father.

That conclusion led to the arrest of the father to be arrested and remind in the custody for one year.

During the medico-legal examination of the father the following was found out the man was tall over medium size with well-developed penis which in condition of erection could definitely cause rupture of the sphincters of such infant.

After the conclusion the prosecution brought the father to justice for sexual abuse. Subsequently, additional medico-legal expertise was appointed by the prosecution and they rejected the diagnosis "Crohn's disease" of the preliminary investigation. During the trial prosecution continued to claim the child had suffered sexual abuse.

This medical estimation is ungrounded because it has not taken into consideration the fact of undamaged anus, demonstrative clinical signs with the first manifestation at the age of 19 days of the baby at the following more than 18 hospitalizations with taken biopsy material with morphological findings leading to the conclusion the infant-child had disease of the intestinal tract.

The rarity of the Morbus Crohn at such on early age of a child was the main reason for the incorrect expert conclusion together with the inability to recognize the lack of signs of a supposed sexual abuse of this in his infancy, including ignoring the fact that the child communicate with positive emotions with his father.

OP-187

EVALUATION OF THREE MUSCIDAE (DIPTERA) SPECIES AS FORENSIC INDICATORS OF BURIED REMAINS

Alejandro González Medina
Instituto de Medicina Legal de Granada, Spain

BACKGROUND: Assessment of postburial and postmortem intervals of buried corpses is a fairly common problem in forensic practice. Difficulty in the access to the cadaveric remains for insects makes the majority of useful indicators in forensic entomology not valid in these circumstances. Therefore, it's essential to determine what species may colonise buried remains and the study of the physical limits of this colonization. To do so, we studied the variables depth, soil composition and decomposition degree of the substrate of experimental burials to test the colonizing behavior of three Muscidae family species: *Hydrotaea ignava* (Harris, 1780), *Hydrotaea aenescens* (Wiedemann, 1830) and *Hydrotaea capensis* (Wiedemann, 1818).
METHOD: With the help of a test piece, a column of soil was designed. Under the column, we placed 60 g of pig liver, leaving a distance of 2 cm above the same. 15 larvae of the tested species were placed on the column. The following replications of the experiment were performed: for soil, sand, compacted sand and fine gravel were tested; for bait, fresh pig liver, 1 week and 2 weeks old pig liver; for depth, two columns with a depth of 10 and 20 cm respectively. All replications were repeated for each species. 10 days later, soil column was gradually removed from the top to the bottom so we could measure where the larvae had arrived.
RESULTS: *Hydrotaea ignava* seems to be the best forensic indicator for buried remains with a long postmortem interval, while *H. aenescens* has a minimal excavation potential, which makes it a

much less useful marker for this type of cases. In an average position is *H. capensis*, that shows a greater preference for corpses buried at lower depth and with a lower postmortem interval.

CONCLUSIONS: Despite belonging to the same genus, the three species we have studied show a very different behavior when accessing to a buried food substrate. This study points out the need for a deeper knowledge of the biology of necrophagous species associated with human corpses in order to adjust postmortem interval calculations.

OP-188

FAUNAL ENRICHMENT OF SOIL AS A TOOL FOR DETECTING CLANDESTINE GRAVES

Alejandro González Medina
Instituto de Medicina Legal de Granada, Spain

BACKGROUND: Search for clandestine graves is a very important study method both in the investigation of current criminal acts and historical affairs, with special emphasis on crimes against humanity or violations of human rights. The main techniques most frequently used have been geotechnical and biochemical ones, leaving aside the potential utility of the biotic component of edaphic ecosystem. It is well known that soil is a medium where very complex ecosystems develop and decomposers play a predominant role. Our research focuses on the changes undergone by the soil fauna as a result of a corpse burial.

METHOD: Four land parcels of 50×50 in. and equidistant among them 100 m were chosen. Two of them will be the negative controls and, in the other two, the experimental baits will be buried. As animal model, two rabbits of 2.5 kg were sacrificed by cervical dislocation and disposed in two separate square holes 20 cm deep. Sampling consisted in soil removal of the ground remaining just above the carcasses by Kubiena box technique without exhuming them, filling the posterior land gaps with the adjacent ground. Sampling frequency was daily for 3 weeks, a month after the inhumations another sampling was carried out and, since then, monthly frequency until we completed the 6 months of study sampling.

RESULTS: Significant differences were observed in faunal diversity when we compared the negative control with zones where carcasses were buried. These differences were particularly evident from the third week of the experiment. Different areas of burial showed no significant differences between them. Species richness of more than half of the taxa experimented a high increase and a maximum peak after the second month of study was noticeable. We observed that higher population growth occurred in necrophiles (predators of necrophagous organisms), maintaining their diversity constant in time.

CONCLUSIONS: Faunal richness and biodiversity of living organisms which belong to soil environment can be used due to its high discriminating power as a reliable technique in the study of clandestine graves. One of the main problems in the application of this technique consists in the taxonomic identification of sampled specimens, but this method proved to be quite robust faced up to a decrease of taxonomic resolution. Temporal variations observed in arthropod richness and diversity led us think that a future line of research might be based on a successional analysis of edaphic fauna as is done with air-exposed carcasses.

OP-189

SUDDEN DEATH DUE TO CEREBRAL MALARIA

Sebastien Prat[1], Guillaume Desoubeaux[2], Thierry Lefrancq[3], Jacques Chandenier[2], Pauline Saint Martin[1]
[1]Institut Medico-legal, CHRU de Tours, France; Universite Francois Rabelais de Tours, France
[2]Service de Parasitologie, CHRU de Tours, France; Universite Francois Rabelais de Tours, France
[3]Centre de Pathologie, Nevers, France

INTRODUCTION: Malaria is generally diagnosed ante-mortem. Few post-mortem cases have been described in the literature. The French National Malaria Reference Centre has noticed three post-mortem diagnoses within the five last years. A French case published in 2010 presented a post-mortem diagnosis made during a forensic autopsy. Post-mortem cases may present as sudden and unexpected deaths of young individuals rising suspicious of unnatural death, and may therefore be investigated by medical examiners.

CASE: We present the case of a 24-year-old man who died a few days after returning from a trip to Mali (Africa). Death was attributed to cerebral malaria after a thorough post-mortem investigation. This man travelled with a friend who contracted benign malaria, which was treated locally. The diagnosis of cerebral malaria was made after the autopsy, completed by neuropathology, thick film, and blood smear test.

DISCUSSION: Deaths in Europe due to malaria are relatively rare. Fatalities result from importation usually following a travel from endemic areas. *Plasmodium falciparum* is usually responsible. Forensic pathologists have to think about this diagnosis when there is a history of recent travel from Asian, African or South American countries. A blood smear test is a simple analysis that can be made in a timely manner during the autopsy; neuropathology is essential to confirm the diagnosis

OP-190

THE RELATIONSHIP BETWEEN THYROGLOBULIN AND COMPRESSION OF THE NECK

Daisuke Miyamori, Noboru Ishikawa, Mclean Stuart, Hiroshi Ikegaya
Department of Forensic Medicine, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Kyoto, Japan

BACKGROUND: In forensic science, it is crucial to determine if neck compression has taken place or not because of its relationship with cause of death. It is believed that thyroglobulin (TG), which is dimeric protein produced by and used entirely within the thyroid glands, is only present in concentrations above 200 ng/ml in cases of neck compression. However, this study demonstrates that high concentrations of TG are commonly present in autopsy cases where neck compression was not the cause of death.

MATERIALS AND METHODS: This study looked at 215 autopsy cases between August 2008 and October 2011. In addition, cases with a history of thyroid disorder or thyroidectomy were excluded. Serum TG concentrations were measured by Mitsubishi Chemical Medience using the Electro Chemiluminescent Immunoassay method (ECLIA). In line with past research 200 ng/ml was considered the threshold for dividing high and low concentrations.

RESULTS: From the 215 cases, 10 cases were excluded because of thyroid disease. A further 10 cases died following neck compression. These cases contained 3 cases of hanging, 1 case of ligature strangulation and 6 cases of manual strangulation. The serum TG concentrations in these cases ranged from 130 ng/ml to

16500 ng/ml, and the average was 3155.9 ng/ml. In 9 of the 10 cases of neck compression concentrations of TG over 200 ng/ml. However, of the other 195 cases with no history of neck compression, the serum TG concentration ranged from 3.7 ng/ml to 89000 ng/ml. The average TG concentration was 3550.3 ng/ml and in 96 cases with no history of neck compression serum TG concentrations were over 200 ng/ml. The Fisher's exact probability test was used to establish the strength of a relationship between neck compression and high TG concentrations. A statistically significant relationship was found (p value 0.028).

CONCLUSION: In this study, a significant relationship was found between the presence of high serum TG concentrations and neck compression. However, in cases of other causes of death high serum TG concentrations were present; for example asphyxia cases or cases of thyroid external injury. As a result, it is believed that determining the occurrence of neck compression from TG concentrations is very problematic. As a result of the uncertain cause of high serum TG concentrations further research is necessary.

OP-191

A GLOBAL FORENSIC ANALYSIS OF THE ELEMENTS OF THE TURIN SHROUD: KEYS TO UNDERSTANDING THE CRUCIFIXION AND ITS INJURIES

Miguel Lorente
University of Granada, ILM, Spain

The work shows the different meaning of the elements on the Shroud of Turin (blood stains, muscular stiffness of the body, hand's position) and its relation with the crucifixion and health consequences. The signs found on the Shroud of Turin are compatible with the fact that the person covered by the cloth could be alive. We support this conclusion with two groups of data:

1. ABSENCE OF SIGNS OF DEATH:

–The image shows stiffness, but the pattern doesn't fit the laws and features of cadaveric stiffness. There is not correlation between the theoretical time after death and the distribution of stiffness, specially if we considered its irregular distribution in the different part of the body (some joint are stiff and some other not at the same time than a muscular contraction). The incompatibility with a death body is more evident if we considered some other factor as Brown Sequard Law.

– The presence of wounds in the hypostatic zones of the body should give a different pattern in the image and blood stains in the dorsal representation. The dorsal part of the body is full of wounds, in a death body blood would accumulate in the hypostatic parts, what would produce an haemorrhage through the wounds in the back with a complete different pattern in blood stains and image.

2. PRESENCE OF EVIDENCES OF VITALITY:

Blood stain pattern: Both the features of the stains (location, distribution, length… specially the ones from the nail's wounds) as the signs of clot retraction indicates physiopathological processes related to live.

– Hands position in the image with no visibility of the thumbs is compatible with metabolic alterations (hypocalcaemia) due to a traumatic shock. This process only is present in a living person and it disappears after death.

– Muscular stiffness is explained by the same physiopathological process related to the traumatic shock better than by the cadaveric phenomena.

OP-192

COMPARATIVE ANALYSIS OF THE INJURY PATTERN IN HOMICIDAL PEDIATRIC HEAD INJURY DEATHS IN TWO GROUPS: THOSE WITH AND WITHOUT A HISTORY OF TRAUMA

Sarathchandra Kodikara, Michael Pollanen
Centre for Forensic Science and Medicine, Department of Laboratory Medicine and Pathobiology, University of Toronto, Ontario, Canada

OBJECTIVES: To study and compare the injury pattern in homicidal pediatric head injury deaths in two groups; those with and without a history of trauma.

MATERIALS AND METHODS: We have retrospectively analyzed 55 cases of homicidal pediatric head injury deaths, as indicated by the cause of death statement, reported during the period of 1990 through 2000 in the Province of Ontario, Canada. Data for this study was obtained through the review of the pathologic information found in the completed post-mortem reports. In addition, Coroner's Warrants, medical records, police reports and/or the Report of Shaken Baby Death Review Committee appointed by the Attorney-General of the Province of Ontario were reviewed when available.

Following review of the provided clinical history, the cohort was classified into 2 major groups; cases with a traumatic history and without a traumatic history. Scalp bruises, skull fractures, subdural haemorrhages, retinal haemorrhages and hypoxic-ischemic encephalopathy/cerebral edema were assessed separately in the two groups.

RESULTS: The individuals ranged in age from newborn to 7 years. Twenty eight (51 %) cases of the cohort had a traumatic history. The following, within the "traumatic" population demonstrated; 75 % scalp bruises, 32 % skull fractures, 86 % subdural haemorrhages, 79 % retinal haemorrhages and, 89 % hypoxic-ischemic encephalopathy/cerebral edema. The "triad", as defined by subdural haemorrhages, retinal haemorrhages and, hypoxic-ischemic encephalopathy/cerebral edema was present in 18 %, while 53 % showed evidence of triad and blunt force impact to the head. In one case, retinal hemorrhages had not been assessed.

Twenty seven (49 %) of the cases did not have a traumatic history. They revealed 81.5 % scalp bruises, 30 % skull fractures, 85 % subdural haemorrhages, 59 % retinal haemorrhages and, 85 % hypoxic-ischemic encephalopathy/cerebral edema. 11 % showed only triad and 44 % showed evidence of triad and blunt force impact to the head. In two cases, retinal hemorrhages had not been assessed.

CONCLUSIONS: There are no qualitative differences in the injury pattern, between these two groups, except in case of retinal haemorrhages. The significant difference seen in retinal haemorrhages may be due to under assessment of retinal haemorrhages in 3 cases.

OP-193

ACCIDENTAL MECHANICAL ASPHYXIA OF CHILDREN IN GERMANY 2000 TO 2008

Franziska Meyer, Kurt Trübner, Thomas Bajanowski
Institute of Legal Medicine, University Hospital Essen, Germany

INTRODUCTION: Accidents represent one of the highest risks for children. Still, accidental asphyxia is discussed in only few medical publications. Consequently, a systematic analysis of all documented cases of accidental asphyxia in Germany over the years 2000–2008 was conducted. The goal of this analysis was to identify patterns of accidental asphyxia, deduct findings

avoidance measures and providing recommendations for increased product safety and possible precautions.
METHODS: A detailed retrospective analysis of 91 relevant autopsy reports from 24 different German forensic institutes was performed. The cases covered all existing reports in connection with accidental asphyxia from the participating institutes. A variety of demographic and morphologic data was systematically captured and analysed.
RESULTS: Out of the 91 cases, 84 reported the sex of the victim. There were 57 boys (68 %) and 27 girls (32 %). The age spread was from 1 day to 14 years with an average age of 5.9 years. Most accidents happened before the first birthday (20 %) or between the age of 1 and 2 years (13 %), followed by children at the age of 13 (10 %) and 12 years (8 %). In 46 % of the cases, the cause of death was strangulation, with the majority of strangulations occurring in the home environment. In 11 out of those cases there was a suspicion of suicide. In 31 % of all cases, the cause of death was positional asphyxia with the majority resulting from chest compression. In 23 % of all cases, the cause of death was aspiration, with the majority through aspiration of foreign bodies.
CONCLUSION: Today, accidental asphyxiation is a rare cause of death in Germany. Nevertheless, the majority of the cases could have been avoided. Future incidence can be reduced by two major precautions: increased product safety and education of parents of potentially fatal risks. Recommendations are given specifically towards children's beds, toys and children's food.

OP-194

SUDDEN DEATHS RELATED TO METHADONE—PATHOLOGICAL AND TOXICOLOGICAL FINDINGS

Grégory Schmit[1], Sébastien Prat[2], Marc Augsburger[1], Mohamed Faouzi[3], Patrice Mangin[1], Katarzyna Michaud[1]
[1]University Center of Legal Medicine, Lausanne and Geneva, Rue du Bugnon 21, 1011 Lausanne, Switzerland
[2]Institut Médico-légal, Centre Hospitalier Universitaire de Tours, Université François Rabelais de Tours, France
[3]Institut Universitaire de Médecine Sociale et Préventive, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

BACKGROUND: Methadone-related deaths are often difficult to interpret, especially in the presence of history of chronic drug use, concomitant intoxications and if pathological changes are observed. The goal of this study was to evaluate methadone related deaths. The primary purpose of the study was to determine whether there are differences between the cardiac, hepatic and pulmonary pathology in different post-mortem methadone blood-levels. This study also aimed to determine whether differences exist between the concomitant drugs found during toxicological examination.
MATERIALS-METHODS: Methadone-related cases were reviewed retrospectively. For all cases the complete autopsy, including histological examination and a full toxicological screening, was performed. Cases were compared by dividing them into 3 groups according to the post-mortem peripheral blood level of methadone. Pathological lesions were evaluated using semi quantitative scores. As a second step, a comparative study of toxicological analyses between cases of sudden death related to methadone (study group, 118 autopsy cases) and impaired drivers under the influence of methadone (control group, 146 drivers) was performed.
RESULTS: Different pathological changes (cardiac, pulmonary, hepatic) were observed in 97 cases (p-value 0.24). Coronary artery disease was observed in 60.6 % of chronic methadone or cocaine abusers. There is no significant difference in the three levels of methadone.

Toxicological analyses revealed the presence of opioid drugs in 31 % of cases from the study group, drugs metabolised by cytochrome CYP 450 in 47 % of cases, drugs with effects on central non-opioid receptors in 93 % of cases and drugs acting on the QT interval in 27 % of cases. Univariate logistic regression showed significantly higher methadone blood-levels in the study group than in the control group (OR=1.27, p-value <0.0001). Methadone was significantly associated with the QT-acting drugs, (OR=17.75, p-value <0.0001). No significant differences were observed for age, for the presence of ethanol, for the presence of drugs metabolised by cytochrome P450, nor for drugs acting on non opioid central receptors. Drugs acting on central opioid receptors and cocaine were more significantly observed in the control group.
CONCLUSIONS: This study illustrates the difficulty of interpreting post-mortem methadone blood levels. Sudden death related to "therapeutic" blood levels of methadone could be due to the toxic effects of other drugs or due to cardiac arrhythmias. More postmortem studies should be performed in order to further understand and prevent methadone fatalities.

OP-195

A CASE OF SUDDEN DEATH OF A YOUNG MAN WITH RARE BLUE RUBBER BLEB NEVUS SYNDROME OF THE LUNGS

Yanko Georgiev Kolev[1], Stanislav Rachev Rachev[2], Dobrinka Demireva Radoinova[3], Darena Rusinova[4]
[1]Department of Forensic Medicine, District Hospital MBAL, Gabrovo, Bulgaria
[2]Department of Clinical Pathology, District Hospital MBAL, Gabrovo, Bulgaria
[3]Department of Forensic Medicine, Medical University of Varna, Bulgaria
[4]Department of Dermatology, District Hospital MBAL, Gabrovo, Bulgaria

BACKGROUND: Blue Rubber Bleb Nevus Syndrome (BRBNS), or Bean syndrome, is an uncommon mucocutaneous disorder which is characterized by multiple venous malformations in the skin and the gastrointestinal tract, sometimes localized in other internal viscera.
OBJECTIVE: We present a rare case of an 33 year old man who suddenly died at home. Autopsy pointed out the reason of death to be a massive thrombosis of the lung arteries and a multiple lesions (blue rubber bleb nevi) of BRNBS in the lungs. A single cutaneous lesion was found on the skin of the chest. No other viscera were involved. Data about possible affection of his late father by the same disease were collected. A brief review of the literature is given.
CONCLUSION: BRBNS is difficult to diagnose due to its very low frequency (only approximately 200 cases reported in the world literature). In this particular case there were no significant symptoms before death.

OP-196

DO MAST CELLS BE IMPLICATED IN ASPHYXIA? A COMPARATIVE STUDY USING C-KIT AND HIF1-A

Rossana Cecchi[1], Costantino Ciallella[1], Luigi Cipolloni[1], Cristina Sestili[1], Claudio Terranova[2], Barbara Muciaccia[1]
[1]Department of Anatomical, Histological, Legal Medical and Orthopaedic Sciences, University Sapienza of Rome, Italy
[2]School of Legal Medicine, University of Padua, Italy

BACKGROUND: HIF1-α is a key regulator of cellular response to hypoxia.

Mast cells play important roles in many pathological conditions where local hypoxia is observed, including asthma, rheumatic diseases, and certain types of cancer, and it is expected that mast cell activation would occur during insufficient oxygen supply.

CD117 (c-Kit) is a receptor tyrosine kinase expressed on the surface of hematopoietic stem cells and on the surface of mast cells, which expression increases with cell activation.

We have investigated the behaviour of mast cells in the lungs of subjects dead due to asphyxia through IHC staining using antibody against c-Kit antigen and compared with results obtained for HIF1-α antigen.

MATERIALS AND METHODS: A cohort consisting of 66 cases, 41 cases of death due to asphyxia [drowning (15), hanging (7), strangulation (4), smothering (3), aspiration (6) CO intoxication (6)], 9 illicit drug intoxication, 9 natural deaths, 2 pulmonary infection, and 5 head trauma, was evaluated. Lung tissue samples taken from the lung were stained with HE and immunohistochemical technique using antibodies anti CD-117 and anti-HIF1-α. Number and intensity of mast cells positive immunostained for c-Kit and vessels positive immunostained for HIF1-α were studied applying a semi-quantitative method.

RESULTS: In all cases mast cells were typically present in peribronchial and in fibrotic areas. In asphyxia-related deaths mast cells with a strong c-Kit positive immunolabelling were found mostly in perivascular, subpleural and perialveolar regions. The lung sections of cases of death due to asphyxia showed the largest number of perivascular positive mast cells in a decreasing scale: hanging, drowning, aspiration, carbon monoxide intoxication, suffocation, strangulation. In lung infection mast cells were mostly near vessels and alveoli, in illicit drug intoxication and natural death in fibrotic regions.

HIF1-α was always negative in vessels of control groups, and stained positive only after hypoxic stimulus; number and intensity followed a decreasing scale: hanging, aspiration, smothering, CO intoxication, strangulation.

CONCLUSION: In our study c-Kit(+) mast cells were increased especially near lung vessels in asphyxia deaths compared to control groups and HIF1-α (+) vessels were found only in asphyxia cases.

Our results show that there is an immediate activation of vessels and of perivascular mast cells following asphyxia, which confirms a role of mast cells in hypoxic situations and of HIF1-α as a good marker in cases of death due to asphyxia. Both can help in the distinction of the type and timing of O2 deprivation.

OP-197

THINKING FRAMEWORK FOR ACCOMMODATING MULTIPLE CAUSE OF DEATH

Yoni Syukriani[1], Andri Andrian Rusman[2], Noorman Herryadi[1]
[1]Department of Forensic Medicine, Faculty of Medicine, Padjadjaran University, Bandung, Indonesia
[2]Forensic Laboratory, Faculty of Medicine, Jenderal Ahmad Yani University, Bandung, Indonesia

BACKGROUND: Deciding the cause of death after autopsy can be problematic when there are more than one possible causes of death involved. From the perspective of multicausality theory, death could be seen as the end result of various causal components which do not necessarily sequentially interconnected. How pathologists accommodate various causal components into a comprehensive conclusion is seldom studied. Here we demonstrate the thinking framework that has been used in deciding multiple cause of death.

METHODS: Autopsy reports from two forensic centres were collected from one year period (2008–2009) using certain criteria to select cases with more than one causal components. Thinking framework used in the cause of death narrative was translated into thinking model. The data were analyzed descriptively by comparing the model with the framework used in the ICD death certificate.

RESULTS: There are 16 thinking models constructed based on 35 cases selected. Each accommodates a number of causal components. Each component could be attributed as necessary, sufficient, or contributory cause. Most of death cases related to diseases or toxicology could be accommodated by the ICD framework that involves only one linear sequential model with one contributory factor. Most of trauma cases show multiple connections, which could not be accommodated using that simple model.

CONCLUSION: To decide cause of death often requires a more complex thinking framework than the commonly used ICD model. Constructing a broader framework could be useful in assisting the examiner to describe the cause, mechanism and/or manner of death in the narrative, especially in cases with multiple trauma or multiple offenders.

OP-198

THE FIRST-EVER DESCRIBED CASE OF HOMICIDAL URETHANE POISONING. FROM CRIME SCENE TO PROSECUTION

Claudio Terranova, Alessandro Nalesso, Santo Davide Ferrara
Department of Molecular Medicine, Unit of Forensic Toxicology and Antidoping, University - Hospital of Padova

BACKGROUND: A 40-year-old physician with skills in animal surgery experimentation, was sentenced to 26 years in prison for murdering his wife by poisoning her with a mixture of psychoactive substances, volatile anesthetics and an unusual poison, urethane. The case is paradigmatic from a criminological point of view, and unique with regards to urethane involvement and the necroscopic and toxicological features.

METHOD: The scene of the discovery of the corpse seemed too rich of evidences supporting the hypothesis of a suicide. Investigators, assisted by experts in forensic medicine and toxicology, collected numerous clues important for the reconstruction of the dynamics of the event and the profiling of the author of the crime. The autopsy was conducted 36 h after the discovery of the body and external signs of massive, diffuse swelling were present. Dissection revealed widespread polyvisceral necrosis and histological observations showed extensive endothelial necrosis. This necroscopic evidence pointed to poisoning by volatiles.

Toxicological screening by multiple analytical techniques, such as headspace gas chromatography, solid phase micro-extraction and liquid chromatography coupled with high-resolution mass spectrometry was conducted on biological specimens (central and peripheral blood, urine, gastric contents, brain, lungs, heart, muscle, spleen, liver, fatty tissue from injection sites) and non-biological materials (diapers, several samples of water collected from the crime scene, volatile anesthetics).

RESULTS: The xenobiotics identified and quantified in blood samples were urethane (0.8–0.9 μg/mL), lormetazepam (<10 ng/mL), midazolam (range: 3.8–5.9 ng/mL), and diethylether (30–54 μg/mL).

CONCLUSION: These toxicological findings, critically evaluated together with the autopsy findings and histological evidence, were essential in ascertaining the cause of death: severe urethane poisoning with co-presence of diethyl ether, midazolam and lormetazepam. The identification of xenobiotics restricted to use in a hospital setting, such as midazolam and ether, together with data from the crime scene evaluation, was crucial in profiling the aggressor, who was presumed to be the husband of the victim. This hypothesis was strongly supported by the presence of urethane, an anesthetic widely used for animal sedation during surgical experiments. In addition, comparative

evaluation of the pharmacodynamics of the xenobiotics with the route of administration revealed a carefully planned homicide, carried out by sequential administration of multiple substances over a period of a few hours. The quality of the multidisciplinary investigation led to the husband of the victim being sentenced for intentional homicide.

OP-199

THE PAST HELPING THE FUTURE: STUDY OF THE CIVIL WAR SUBMARINE HUNLEY

Jc Upshaw Downs[1,2], Maria Jacobsen[3], Michael Scafuri[3], Michael Reiders[4], Scott Harris[5]
[1]Georgia Bureau of Investigation, Savannah, Georgia
[2]forensX, LLC, savannah, Georgia
[3]Clemson Conservation Center, Charleston, SC
[4]Forensic Archeotoxicology Institute/Reiders Family Foundation, Willow Grove, PA
[5]College of Charleston, Charleston, SC

BACKGROUND: The H.L. Hunley was the world's first successful combat submarine. After accomplishing her mission of destroying a blockading enemy ship in Feb. 1864, the sub disappeared for over a century. Located in 1995, after extensive preparations, the vessel was raised in 2000 and has been undergoing forensic analysis and conservation since.
METHOD: The challenges posed by this unique artifact necessitated the construction of a new, state of the art conservation lab to house and study the vessel. An interdisciplinary team has been excavating and documenting the boat and its contents. The combination of forensic specialties (pathology, anthropology, toxicology, odontology, radiology, biology, and trace) with more various other scientific specialties (underwater archaeology, marine geology, marine biology, and conservation) has proved essential to the project and preserved vital evidence which might otherwise have been lost. The experience of the project reinforces the old adage "fortune favors the prepared mind." Cross pollination between the various disciplines involved facilitated the project by development of multiple new and novel approaches to specific challenges in the project.

A three-dimensional site plan allowed a digitally preserved excavation, facilitating casework despite major obstacles involving the sub and surroundings. A new means of mapping the burial via integration of radiographs and CT imaging of sediment samples was developed. The spatial data was integrated into a single three-dimensional, digital site plan. Marine geology examination combined with study of the various marine life forms have been integrated into the site evaluation.

The basic forensic principle (least invasive testing first) led to the creation of a novel methodology, preserving cranial contents until after anthropologic assessment. Apparent differential decomposition may provide evidence for how the submarine went down and was eventually buried. Toxicology challenges include the burial matrix, potentially impacting suspected toxins.
RESULTS: The interdisciplinary panel involved in the project has proven effective in cross-fertilization between the various specialties and in so doing, created novel methodologies in an effort to answer the fundamental question of all death investigation: "What happened?" Specialized techniques developed/improved in this venture include archeology site mapping and three-dimensional computer modeling of a burial, including the matrix, remains, and associated artifacts; cranial contents stabilization and recovery following anthropology examination & facial reconstruction efforts, and forensic archeotoxicology of historic remains.
CONCLUSION: Several techniques were created and/or improved in this ongoing project. The value of anticipatory multidisciplinary collaboration and flexibility in forensic investigations is reinforced.

OP-200

THE RIGHT VENTRICLE UNDER STRESS: PATHOPHYSIOLOGY AND PATHOLOGY OF RIGHT HEART DAMAGE IN FORENSIC MEDICINE

Tony Fracasso[1], Andreas Schmeling[2], Sara Sabatasso[1], Patrice Mangin[1]
[1]University Center of Legal Medicine, Geneva-Lausanne, Switzerland
[2]Institute of Legal Medicine, Münster, Germany

The study of the right ventricle (RV) is a young discipline indicated in 2006 by the U.S. National Heart, Lung and Blood Institute as a priority in cardiovascular research. The majority of scientific works on cardiac pathology refers to the pathophysiology and pathology of the left ventricle (LV), while the RV has been considered for a long time a merely passive chamber with little functional importance.

In recent times we have concentrated our research activity on the pathology of the RV and have identified by means of histology and immunohistochemistry different medicolegal causes of death in which the RV seems more affected than the LV. Besides cases of pulmonary embolism, cases of ethanol and CO poisoning as well as severe traumatic brain injuries shared similar pathologic patterns.

In this review we will present the actual knowledge on the pathophysiology of acute RV damage and summarize the most intriguing aspects of our investigations.

OP-201

ALCOHOL, CHLORALOSE AND CO POISONINGS: AN UNUSUAL MIXTURE CAUSES HOMICIDE

Mlayeh Souheil, Thaljawi Wathek, Masmoudi Tasnim, Ben Dhiab Mohamed, Souguir Mohamed, Zemni Majed
Department of Legal Medicine, Frahat Hached University Hospital, Sousse, Tunisia

BACKGROUND: Lethal poisoning due to toxic agents is a usual method of suicide or accidental death but an unusual cause of homicide. Psychoactive drugs are mostly reported. Carbon Monoxide (CO) or Chloralose and even Alcohol poisonings are mostly used in suicidal or accidental circumstances but not as far as we know in association and especially to make homicide.
CASE: We report a homicide case of a 37-year-old male for whom the forensic autopsy revealed heavy poisoning with Alcohol, Chloralose and (CO). No other injuries were found except a middle putrefied body.
CONCLUSION: The present report demonstrates the difficulties that the medical examiner may face while determining the cause of death. The importance of careful and thorough autopsy must be emphasized. Post mortem toxicology is fundamental and should be systematically practiced. Some forensic aspects of our non-suicidal (and non-accidental) intoxication case were discussed too.

OP-202

SUDDEN DEATH AND MITRAL VALVE PROLAPSE

Alessia Viero[1], Rafael Boscolo Berto[1], Paolo Fais[1], Stefania Rizzo[2], Alessandro Amagliani[1]
[1]Department of Molecular Medicine, Section of Legal Medicine and Forensic Toxicology, University of Padova, Via Falloppio 50, 35100, Padova, Italy.
[2]Department of Cardiac, Thoracic and Vascular Sciences, University of Padova, via Gabelli 61, 35100, Padova, Italy.

INTRODUCTION: The two presented cases of forensic interest demonstrate the important role of cardio-pathological examination in ascertaining cause of death.

Case 1. A man of 25 was found dead inside his car, while changing a tyre. As there was reason to suspect third-party liability, a forensic autopsy was ordered, to identify the cause, means and dynamics of death.

Case 2. A man of 43, stopped by police in a state of acute drunkenness, was detained in the police station and later underwent compulsory hospitalisation in a hospital. He was treated with psychoactive drugs, and died few hours later. A forensic autopsy was ordered to ascertain the professional liability of doctors or of police, regarding possible maltreatment in the police station.

METHOD: In both cases, procedures for circumstantial-clinical-documentary and necroscopic ascertainments were applied, including external examination, autopsy, histopathological and chemico-toxicological analyses.

RESULTS AND DISCUSSION: Neither necroscopic ascertainments revealed extra-cardiac pathologies which might have caused the deaths. Macroscopic examination of both hearts revealed floppy and thickened mitral valve leaflets. The chordae tendineae were elongated, thickened but not ruptured. Histopathologic examination revealed thickening of both spongiosa and fibrosa layers due to myxomatous infiltration and patchy fibrosis of the papillary muscles and of subendocardium.

Chemico-toxicological analysis was negative in case 1, and showed therapeutic concentrations of psychoactive drugs in case 2.

Analysis of circumstantial and clinical records showed that arrhythmia was triggered by physical effort in case 1 and by a combination of physical effort and emotional stress in case 2.

Comparative analysis of the clinical, autoptic and chemico-toxicological results, in both cases, revealed arrhythmia due to ventricular fibrillation.

CONCLUSIONS: Sudden cardiac death is the result of interaction between pathological substrate and an acute functional change, or trigger, eligible to cause an autonomic imbalance with increased adrenergic tone. In these cases, the pathological substrate, consisting of patchy-fibrosis of the myocardium, typical of mitral valve prolapse, involved dispersion of ventricular repolarisation. The trigger, acting on this substrate, led to a delayed after-depolarization and inhomogeneous electric cardiac response, with ventricular fibrillation and sudden death. In the ascertained absence of data indicating natural extra-cardiac, traumatic and/or toxic pathologies, these two cases demonstrate the important role of cardio-pathological examination in defining cause of death. In these contexts, it is essential to recognise mitral valve prolapse as the substrate eligible to trigger a lethal arrhythmia and to identify the triggers, their interaction, and the possible correlation with criminal dynamics.

OP-203

MOLECULAR AUTOPSY IN INFANTILE DILATED CARDIOMYOPATHY

Rafi El Mazloum[1], Elisa Carturan[2]
[1]Department of Molecular Medicine, Section of Legal Medicine and Forensic Toxicology, University of Padova, Via Falloppio 50, 35100 Padova, Italy.
[2]Department of Cardiac, Thoracic and Vascular Sciences, University of Padova, Via Gabelli 61, 35100 Padova, Italy.

BACKGROUND: The case in question is of forensic importance, due to the hypothesis of medical liability. It demonstrates the usefulness of the molecular autoptic approach in providing a diagnostic and etiopathogenetic framework in cases of infantile dilated cardiomyopathy.

METHODS: The body of a 9-month-old child, died of congestive heart failure, was autopsied, including macro-microscopic and molecular examination by PCR and RT-PCR, with primers specific for amplification of RNA and DNA of cardiotropic viruses (Adenovirus, Cytomegalovirus, Epstein-Barr Virus, Enteroviruses, Influenza Virus A/B, Parvovirus B19, Herpes Simplex Virus, Human Herpes Virus 6) on frozen samples of heart and spleen.

RESULTS: The necroscopic investigation revealed endocardial fibroelastosis. Molecular examination detected Cytomegalovirus in the myocardium and spleen, the latter as viral reservoir, and the absence of all other viruses.

CONCLUSION: Final diagnosis was dilated cardiomyopathy with endocardial fibroelastosis most probably due to intrauterine Cytomegalovirus infection. The diagnostic definition and the forensic solution of the case were founded on bio-molecular examinations, even useful in clinical cases for preventive and therapeutic purposes.

OP-204

A REVIEW OF OPIATE- AND CANNABINOID-RELATED DEATHS, IN LISBON JURISDICTION (2009–2010)

Cátia Costa Viana, Md, Mário João Dias, M.sc, Luisa Eiras, Md, Cristina Mendonça, Phd, Jorge Costa Santos, Phd
South Branch of National Institute of Legal Medicine, IP

BACKGROUND: According to"2010 National Report to the European Monitoring Centre for Drugs and Drug Addiction ", opiate and cannabinoid substances are among the most frequently illicit drugs consumed in Portugal; this consume has been increasing over the last decade; cannabis is the illicit drug for which initiation occurs at an earlier age.

Substances of both groups are known for its psychoactive effects.

OBJECTIVE: review data from opiates and/or cannabinoids related deaths, among the autopsies performed at DS-INMLCF (in Lisbon jurisdiction).

METHOD: Forensic autopsy reports performed at DS-INML in a 2 year period (2009–2010), in which the toxicological analysis revealed the presence of opioids and/or cannabinoids were reviewed.

Descriptive data analyzed and collected include socio-demographic characteristics of the deceased, autopsy findings and analysis of cause and manner of death.

RESULTS: In a total of 2102 autopsies performed at DS-INML, the presence of drugs was investigated in 818 (38.9 %). Among these, 77 (9.4 %) revealed positive result to opiates and/or cannabinoids, 29 (37.6 %) in 2009 and 48 (62.4 %) in 2010. Only 3 (3.9 %) of the victims were female.

In 57 (74.0 %) of the cases more than one substance was detected, besides opiates and/or cannabinoids. Ethanol and antidepressants are among the substances most frequently found.

CONCLUSIONS: Our results, in general, are in accordance with literature.

More than one substance is usually found among positive cannabinoids and/or opiates cases. This fact makes assignment of cause of death a hard task for the pathologist, because of the potential interactions among the substances.

Analyze cause and manner of death in cannabinoids and/or opiates related deaths are important to the establishment of public-health and security policies, enhanced by the fact that these illicit drugs are among the most frequently consumed in Portugal.

OP-205

RECOGNITION OF INFLICTED INJURIES AND BITE MARKS IN ABUSE

Pamela Wallace Hammel
Children's Hospital of Michigan

After attending this presentation, attendees will be able to asses injuries in child abuse as accidental or non-accidental trauma; and be able to

recognize bite marks, their frequency and significance. The goal of this presentation is to inspire multiple agencies; medical, dental, legal, and social services to have an increased awareness of inflicted child abuse injuries, precluding the possibility of missed evidence.

Health care professionals have important ethical responsibilities in recognizing inflicted injuries. Approximately 65 % of child abuse injuries are to the head and neck, clearly visible to the knowledgeable observer, including teachers, social workers, and law enforcement. Certain injuries and infections in the mouth and palate should be recognized and reported as abusive.

Bite marks are often found on victims of abuse, and there are several characteristics that can aid the examiner in determining the potential source. Bite marks are often under reported because they are not often recognized, or if recognized, are dismissed as having little significance.

Proper documentation can assist in preserving evidence of the injuries for investigation by law enforcement and the courts.

OP-206

DIAGNOSIS OF DROWNING – 2012 UPDATE

Hiroshi Matsumoto, Ryuichi Katada, Satoshi Watanabe, Shunichiro Okazaki, Keisuke Mizuo, Atsushi Ishizaka
Department of Legal Medicine and Molecular Alcohology, Sapporo Medical University School of Medicine, Sapporo, Japan

Drowning is a major cause of death in unnatural death. However, its definite diagnosis has been very difficult for forensic pathologists. In general, diagnosis of drowning has been established by detection of diatom in the body, especially lungs, liver, kidneys, and so on. For several years, a number of new methods have been reported. Detection of plankton DNA in the lung and other organs was developed from enzymatic detection of diatom. On the other hand, the lungs and pleural effusion/spleen weight ratio may be a useful index to accurately diagnose death by drowning, which is one of a pathological diagnosis. Crystal formation in the pleural cavity could be believed as death of drowning, especially by seawater. Recently, electrolyte concentration in pleural cavity and cardiac blood would be forensically useful for differentiation between fresh water drowning and seawater drowning. We found that brain AQP4 can be a strong tool for diagnosis of fresh water drowning. I focus on update on 2012 for diagnosis of drowning.

OP-207

THE LUNG FLOATING TEST TODAY— A PROSPECTIVE AUTOPSY STUDY

Sibylle Banaschak[1], Anna Lena Große Ostendorf[1], Annette M. Müller[2], Markus A. Rothschild[1]
[1]Institute of Legal Medicine, University Hospital Cologne
[2]Department of Paediatric Pathology, University of Bonn

BACKGROUND: The lung floating test is an obligatory measure to distinguish whether a newborn was born dead or alive. In order to scrutinize the reliability of the floating test, a new clinical trial should bring evidence whether it is still contemporary.
METHOD: After informed consent for autopsy 209 newborns lungs were tested with the floating test. Although miscarriages were not of interest for this study, they were tested as well to have an entire clinical cohort. Every natural miscarriage as well as newborns and induced abortions were scanned.
RESULTS: The test showed the expected result in 205 cases. It proved wrong in 4 cases, in which the test showed a false negative result with the lungs sinking although life was reported by medical staff.
CONCLUSION: Overall, the study was able to show that the results of the floating test are reliable in 98 %. There was no false positive result (lungs of a stillborn swim) at all. On the other hand it demonstrated that a negative test result cannot be claimed as a proof for a newborn having not breathed at all.

OP-208

NURSE AWARENESS ABOUT MALPRACTICE IN A PRIVATE HOSPITAL IN TURKEY

Aykut Taner Guven[1], Ayse Selcen Guchan[2], Esin Akgul[3], Sadık Toprak[4], Rıza Yılmaz[4]
[1]Department of forensic medicine, istanbul bilim university, istanbul, turkey
[2]Forensic medicine institude, istanbul university, istanbul, turkey
[3]Department of forensic medicine, 18 mart university, canakkale, turkey
[4]Department of forensic medicine, zonguldak karaelmas university, zonguldak, turkey

OBJECTIVE: Nurses may be responsible for professional mistakes and negligence that result in patient injury or death. This responsibility may cause both compensation liability and prison sentences. In 2011, an obligatory medical liability insurance was enforced by the government for medical doctors but not for nurses. As a result, awareness regarding malpractice and liability issues was increased for medical doctors in Turkey. Following this process, we aimed to assess the level of awareness regarding malpractice among nurses.
METHODS: A 22-item standardized questionnaire was used to assess the level of awareness regarding malpractice among nurses in a private hospital. A reference center for cardiovascular surgery and in which the most cardiac transplantation procedures in Istanbul had been performed in 2011was selected. Based on this criteria, it was hypothesised that a well-chosen and skillful population of nurses would be employed in a reference center of this respected stature. Seventy four nurses participated in the study. They were asked about their age, gender, administrative status, length of work experience and working area. Fifteen questions regarded basic knowledge of compensation and criminal code issues linked to liability of medical malpractice. Two additional open-ended questions asked the nurses opinions regarding obligatory malpractice liability insurance and the causative factors observed in nursing malpractice.
RESULTS AND CONCLUSION: 69,9 % of participants were women. The mean age was 27,79 (at 7,356 st. dev.) The mean of length of work experience was 7,06 (at 6,035 st. dev.) 8,2 % were in management positions. 45 % were service nurses. 13,7 % were emergency department nurses
41 % were intensive care unit nurses. The total mean score was just 70,02 in the 15 basic knowledge questions.

In the open-ended questions 54 % of participants wanted obligatory medical malpractice liability insurance. 33,78 % thought that the most common malpractice is medication application error. 18,91 % wanted administrative precautionary measures.

We believe that the future of the health care system in Turkey will bring many challenges to nurses. This study addresses that nurses must be more educated about malpractice issues.

OP-209

KNOWLEDGE ABOUT FORENSIC NURSING IN STUDENTS AND NURSES

Rupendra Simlot, David Lester, Theresa Allen Robinson
Richard Stockton College of New Jersey, USA

Forensic nursing is incorporated with both the nursing community and with the criminal justice community. Forensic nurses work hands-on with detectives to solve cases. The present research examined the knowledge that nursing students have about forensic nursing compared to nurses working in hospital. The hospital nurses had more accurate knowledge of forensic nursing than the nursing students, and it is recommended that forensic nursing should be added into the curriculum of nursing students.

OP-210
FORENSIC ODONTOLOGY PERSPECTIVES IN THE ARAB WORLD

Salem Altalie[1], Salem Altalie[2], Patrick Thevissen[1], Guy Willems[1]
[1]Katholieke Universiteit Leuven
[2]Abu Dhabi Police GHQ

Forensic Odontology is a specialism within dentistry, which studies dental and related structures in legal proceedings. It mainly includes human dental identification, mass disaster management, bite mark recognition and comparison, dental age estimation of dead and living individuals, management of abuse, and expert witness testimony. Its multidisciplinary approach highlights the close collaboration with other fields of forensic science. The aim of this study is to update the Arabic forensic community on forensic odontology and to present a management plan for forensic odontology applications in Arabic countries.

At present time no active dental victim identification team(s) exist in Arabic countries. Although not always applicable identification is performed through DNA and finger print analyses. Bite marks are documented as patterned injury, but no analyses or comparisons are performed. With regards to age estimation, dentists use unreliable diagrams and methodologies. Dental malpractice is uncontrolled because of the shortness of expert witnesses in the field of dentistry.

To solve these problems, education in forensic odontology is fundamental. Therefore certain Arabic dentists should obtain a scientific degree in forensic odontology and maintain the acquired knowledge attending workshops, conferences and meetings. It should allow these specialized Arabic forensic odontologists to use their expertise according the specific needs and laws of the Arabic countries. Then, they should set up forensic odontology department(s), containing all necessary infrastructure and specialized equipment. Correspondingly, management plans for forensic odontological specialisms should be developed. An important aspect of these plans is to create facilities enabling to instruct and train local dentists in an attempt to build Arabic forensic odontology teams. In particular during disaster, dental identification teams could collaborate with Interpol as part of disaster victim identification (DVI) team(s). Moreover creating teams, allows for a permanent availability of forensic odontology support. A standardized protocol for (dental) age estimation within the Arabic countries should be established. Further focus points are needed to instruct general dentist in recognizing abuse and neglect, bite marks and dental malpractice. Since forensic odontology is a multidisciplinary science, collaborations with other Arabic sections in forensic science and science in general should be developed.

OP-211

COMPARISON OF GREULICH AND PYLE AND TANNER-WHITEHOUSE METHODS (TW2 RUS AND TW3 RUS) FOR AGE ESTIMATION IN A SAMPLE OF ITALIANS

Martina Focardi[1], Fabio Corradi[2], Federica De Luca[1], Elena Mazzeo[3], Gian Aristide Norelli[1], Valentina Piredda[3], Vilma Pinchi[1]
[1]Department of Legal Medicine, University of Florence, Florence, Italy
[2]Department of Statistics, University of Florence, Florence, Italy
[3]Department of Legal Medicine, University of Sassari, Sassari, Italy

BACKGROUND: The skeletal age assessed by the wrist-hand bones maturation is an effective and accurate method to predict the chronological age of children/adolescents. There are several methods to evaluate the radiological development of the hand and wrist. The most spread methods are the Greulich and Pyle (atlas) method (GP) and the Tanner-Whitehouse (scoring-system) method (TW). The easy use of GP makes such a method the most popular in forensic age estimations than TW (TW2 or TW3), which is rather time consuming. To our knowledge few studies compared the accuracy of different methods addressed to assess the skeletal age, namely GP, TW2 and TW3.
AIM: Our study aims to compare the reliability of the three methods (GP, TW2 RUS and TW3 RUS) to assess age in a sample of Italian children and adolescents. The results will foster the research addressed to focus the more suitable method to assess skeletal age for legal and judicial purposes.
MATERIALS-METHODS: The sample was composed of 266 left hand and wrist X-rays of Italian children and adolescents, 121 male and 145 female, aged between 2460 days and 7305 days. No medical records and information regarding growth disorders or other diseases of the sample were known. One specialist in forensic pathology and expert in age estimating process, provided the age skeletal evaluations applying the GP, TW2 and TW3 methods. The operator only knew the sex at the time of skeletal age estimation. In order to test the intra-observer variability, the operator rescored 40 X-rays randomly selected from the whole sample after tree weeks.
RESULTS AND CONCLUSION: The correlation index between chronological age and estimated age with the three methods are high, and preliminary results show GP and TW3 to be more accurate methods than TW2. More specifically the latter method is prone to produce a remarkable overestimation of the age. The statistical analysis is nearing completion.

OP-212

ETHICAL FALLACIES DURING POSTHUMOUS ANNULATIONS OF A LIVING WILL

Gentian Vyshka
Faculty of Medicine, Tirana, Albania

INTRODUCTION: The issue of annulations of living wills after the death of the person who was entitled to perform such a legal act has been consistently raised from Albanian courts during two last decades; prior to this period the legal issues related to propriety and inheritance were reticently by-passed from the totalitarian state.
METHODOLOGY: We studied the judicial itinerary of a case raised in an Albanian court, where descendants of a person dead more than 30 years before, were trying to nullify a contractual living will, through which the deceased donated part of his propriety. Instead of focusing on the details of the compiling modulus and of the procedural inconsistencies in upholding such a living will, the descendants and their attorney opted to raise the question of inability to make a living will due to mental disorder.

RESULT: Raising the question of the inability to make a living will due to mental disorder at the time of compiling such a living will, after the death of the person, is only but a bad option of living will annulations. Proving the inability to make a living will posthumously is problematic, since psychiatric classifications and definitions differ inherently when we consider moments of time separated from decades. The psychiatric disorders rarely however have been confined to the hic et nunc validity when Albanian courts have evaluated mental situation of judged persons, but this has been mainly done when those persons were still alive.
CONCLUSIONS: Apart from classificatory discrepancies, posthumous annulations of living wills are unethical when a mental disorder is opted for invalidating the legal act. Although rarely upheld in courts, legal measures to avoid abuse are necessary and logical.

OP-213

HUMAN ERRORS IN ANAESTHETIC DEATHS IN MTHATHA AREA OF SOUTH AFRICA

Banwari Lal Meel
Banwari L. Meel

Human error and rarely equipment malfunction are estimated to lead to critical incidents in approximately 1 in 200,000 cases in which anaesthesia are administered (Unisci, 2002). Malfunctions in the anaesthetic machines and the ancillary equipment occur when the machines are not checked before use. These case reports highlight both issues. It is always prudent to check the machine every time one begins to administer anaesthesia. The history of the cases, mode of administration of the anaesthetic agent, and the ethical issue of whether there was negligence are discussed in this report. Safety measures have been suggested.

OP-214

MEDICAL CONFIDENTIALITY AND FIGHT AGAINST DOPING

George Adrian Patru, Cécile Manaouil
University Hospital Amiens, Department of Forensic Medicine

French law prohibits doping in all competitions and sporting events.

Physicians play an essential part in the chain of the fight against doping. While allowing the sportsmen or women to be as well prepared as possible, they must not support or encourage doping.

Any medical doctor may be requested to issue a certificate stating the ability to participate in a sport. Top-level sportsmen and women are monitored by the federation's doctors, who are simultaneously attending physician, workplace doctor and sports doctor.

When a top-level sportsman or woman has to take medication which is on the prohibited substances list, he/she must obtain authorisation from the French Anti-Doping Agency. The use of any prohibited substance by an athlete for medical reasons is possible by virtue of a Therapeutic Use Exemption (TUE). If the doctor suspects the practice of doping, he must inform the medical unit of the fight against doping.

Sportsmen and women cannot demand absolute confidentiality of their health status. Does the general demand for transparency and the desire for "clean sport" have to be accompanied by an erasure of confidentiality concerning the health of sportsmen and women?

It appears difficult to reconcile a strict observance of confidentiality with an efficient fight against doping.

OP-215

THE IMPORTANCE OF CREATING A DEONTOLOGY CODE FOR FORENSIC SCIENCES IN GREECE

Grigorios Leon[1], Angela Papetta[2]
[1]Medicolegal Office, Athens, Greece
[2]First Department of Pathology, Medical School, The Athens National and Kapodistrian University, Athens, Greece

BACKGROUND: Legal Medicine is a compound science with an important role in today's society. The forensic scientist due to the nature of his work often deals with ethical dilemmas. The connection of forensic science with law and legal procedures on the one hand, and society's attitude towards the treatment of the dead body on the other, bring the scientist in front of these dilemmas. The ultimate aim of this study is to reveal how necessary the creation of a Deontology Code of Forensic Sciences is in Greece.
METHOD: For the purpose of this study, relevant national and international bibliography, many of the existing national and international Deontology Code of Forensic Sciences, the relevant legislation, the case law and the international Conventions were reviewed. A clear distinction was made between Law and Ethics and between "legality" and "ethics". Bioethics was the most important tool in our research and the analysis of the ethical issues. Deontology was the subject of the study. Issues, such as the education and the certification of the forensic scientist, the treatment of the dead human body, an autopsy denial, the legal framework for the expert witness, the professional's confidentiality, the informed consent and the relationship between forensic scientists and mass media, were analyzed.
RESULTS: The forensic scientist in Greece has neither specialized training, nor a corresponding certification. The ethical issues that occur are too many and they are impossible for all to be dealt with through the legal and deontological framework that currently exists in the country. A characteristic example is that the Greek code of medical deontology does not protect the forensic pathologist; this specific code's initial definition seems to exclude forensic pathology. In most of the cases reviewed, forensic scientists appear to have nothing in terms of a deontological reference field.
CONCLUSION: The creation of a Deontology Code of Forensic Sciences in Greece is considered necessary. The creation of a code, its disclosure, its use as an educational tool, its reinforcement from the scientific community and its further reinforcement in practice will prove to be very important for the future correlation between forensic sciences and the Greek society.

OP-216

FORENSIC MEDICINE IN LEBANON: AN UPDATE

Doureid Mohammad Oueidat, Abdo Romanos Jurjus, Hajj Hussein M. Abdallah Inaya
Department of Anatomy, Cell Biology and Physiology, American University of Beirut, Beirut, Lebanon

Forensic medicine goes back to the early practices of ancient civilizations, passing by the remarkable milestones of the Middle Ages, and the most advanced practices of the modern era of medical jurisprudence, particularly, in Europe and the United States. As a discipline, forensic medicine was enriched enormously in Lebanon and has become a separate and well-developed specialty always ready to serve the various systems

of justice. Many countries in the Middle East and the Arab World, early in the 20th century, established societies and institutions of legal medicine. Annually, regional and national conferences are being held to address the new advances and discoveries in the fast evolving forensic medicine in the world moving from cadaver to DNA molecule. Lebanon is consolidating the basics of his medical-legal system which had a turning point in 1946 when the discipline was officially recognized and a post of "Legal Physician" was established by the government under the umbrella of the Ministry of Justice. By 2012, there were 78 physicians with "Legal Medicine" appointment distributed in all regions of the country of 4 million inhabitants. There is one doctor per 512000 inhabitants, a very good ratio distributed adequately in all regions. The present situation of forensic medicine in Lebanon is stressing more and more the use of modern techniques of molecular biology and DNA testing in multiple centers.

This article describes the types of autopsies usually done at the Institute of Legal Medicine in Beirut (IMLB), and the complementary forensic tests taking place in laboratories accredited in Lebanon.

OP-217

BRACHIAL PLEXUS INJURIES: A RETROSPECTIVE STUDY

Gözde Görücü Şirin[1], Bora Büken[2], Öner Daregenli[1], Zerrin Erkol[3]
[1]Ministry of Justice, Council of Forensic Medicine, Istanbul, Turkey
[2]Düzce University, Faculty of Medicine, Forensic Medicine Department, Düzce, Turkey.
[3]Abant Izzet Baysal University, Faculty of Medicine, Forensic Medicine Department, Bolu, Turkey.

BACKGROUND: In this study, definition of the characteristics and the risk factors of congenital brachial plexus injury (BPI) cases, and comparison of our data with the literature is aimed.
METHOD: Total 49 cases, claiming medical malpractice about BPI at labor, evaluated by the 2nd and 3rd Specialization Boards of the Council of Forensic Medicine between years 2004–2009, were included in this study.
RESULTS: Of them, 31(63.27 %) were male, 18(36,74 %) were female, of their mothers, 5(10.20 %) were primipara, 4(8.16 %) were diabetic, 1(2.04 %) was diagnosed as preeclampsia during pregnancy. All of the birth actions were taken place at a hospital. Type of delivery as follows; spontaneous vaginal delivery without need of any extra intervention for 23(46.94 %) cases, spontaneous vaginal delivery using specific maneuvers for 15(30.61 %) cases, vacuum extraction for 5(10.20 %) cases, vacuum extraction after an attempt of a maneuver for 5(10.20 %) cases, cesarean section for 1(2.04 %) case. The mean birth weight of the babies was 4274,49±663,42 g (med:4330.00, between 1600 and 5500 g). There were 14 (28.57 %) cases in the groups less than 4000 g, between 4000 and 4499 g and between 4500 and 4999 g each other, and 7 cases in the group more than 5000 g. Forty-eight (97.96 %) of the deliveries were head presentation, 1(2,04 %) was breech presentation. The injured site was upper arm (Erb-Duchenne type palsy) in 19(38.78 %) cases, lower arm (Klumpke type palsy) in 5(10.20 %) cases, and total brachial plexus palsy in 21(42.86 %) cases. Shoulder dystocia was documented in 36 (73.47 %) cases. There were no other traumatic finding described besides brachial plexus palsy in 24(48.98 %) cases whereas there were traumatic findings in the remaining cases (n:25–51,02 %). Among the 45(91.84 %) cases that have recorded information about prognosis, 11(24.44 %) was healed without any sequel. There was no statistically significant difference between the groups that underwent surgery or not, in terms of sequel formation ($p>0.05$). There was no significant effect of physiotherapy on complete recovery (n:45-$p>0.05$). Among the 46(92.73 %) cases that are physically examined by the Board, any type of deformity was present in 31(67.39 %) cases. For the cases that are accepted as malpractice by the Board, there was no significant correlation in terms of the mother having single or multiple risk factors, type of the delivery, presentation of the baby, presence of shoulder dystocia, presence of physiotherapy and/or surgical operation, and presence of sequel ($p>0.05$).
CONCLUSION: For BPI cases, any malpractice claim should be evaluated well-rounded in its circumstances before making decision in every case.

OP-218

FREQUENCY OF EPIDEMIOLOGIC PATTERN OF OCULAR MEDICOLEGAL CASES IN SOUTH IRAN FROM APRIL 2010 TO MARCH 2011

Mojgan Sattar[1], Arya Hedjazi[1], Hossein Ashraf[2], Mohammad Zarenezhad[1]
[1]Iranian legal medicine research center
[2]Shiraz University of Medical Sciences

PURPOSE: According to large amount of ophthalmic medico legal cases and effect of visual disorders on people's life and heavy payments considered for ocular injuries and as we didn't have same studies in Iran, in present study we describe the epidemiologic pattern of ocular medico legal cases in south Iran from April 2010 till march 2011.
METHOD: A retrospective study was done to review 106 files from south Iran referred to ophthalmic medico legal commission. The information was collected by questionnaire. Data entry and analysis was done using SPSS version 16.
RESULTS: We had 106 cases in period of 2 years. 83 % of complainants were male with average age of 38+−7.8. Cases were categorized in 4 groups.72 % of them were trauma, 23 % medical malpractice, one case of inability to tolerate prison and 3 cases asked for Retribution.73 % of complainants were urban & 27 % were rural. We had 7 cases with malingering &13 cases that had old visual disorders. In cases of trauma 47.5 % were crashes (accident),2.5 % work related injury & 2.5 % incidental events.58.8 % of traumatic injuries were accepted,30 % were rejected,6.3 % needed judicial investigation,2.5 % were improvable and 2.5 % were not provable(could not confirm).12.5 % of traumas were sharp ocular injuries,50 % blunt eye injuries,33.8 % head trauma & 3.8 % trauma to other parts of body. Medical malpractice cases 92 % were rejected, only 8 % were confirmed.10 cases (40 %) had cataract, 2 cases (8 %) glaucoma, 5 cases (20 %) Lasik surgery, one case of retinal detachment, one case of strabism & one case endophthalmitis & 5 cases had other ocular disorders. In this category 37.5 % were in public hospitals,53.1 % private hospitals & 8.3 % private clinics.3 of doctors were general physician, one neurosurgen,11 ophthalmologist (specialist),4 retina subspecialist,5 cornea Subspecialist and one of them was occuloplastic subspecialist.
CONCLUSION: most of ophthalmic medic legal cases in south Iran were for determining payments?, after that were medical malpractice. Most of medical malpractices were cataract surgery and then Lasik surgery. They were mostly due to inevitable surgical complications. Number of confirmed malpractice cases in Iran was lower compared to universal studies.

OP-219

GLYCOGENOSIS: WHEN A METABOLIC DISEASE EXPLAINS CASES OF SUSPECTED CHILD ABUSE AND MEDICAL MALPRACTICE

Laura Marasciuolo, Alessio Battistini, Salvatore Andreola, Guendalina Gentile, Riccardo Zoja
Sezione di Medicina Legale, Università degli Studi di Milano

INTRODUCTION: The death of a child without previous clinical symptoms or post-mortem macroscopic findings opens up different perspectives, such as child neglect and abuse, medical malpractice or Sudden Infant Death Syndrome.

In similar cases, only histological examination and a careful reconstruction of physio-pathologic mechanisms could allow a diagnosis of cause of death and consequently resolve the judicial aspects.

Glycogenosis is a genetic pathology caused by the deficiency of an enzyme involved in the glycogenic metabolism that affects primarily liver, skeletal muscle and heart. In neonatal and infantile forms, glycogenosis leads to death within the first year of life; in juvenile and adult form, glycogenosis may be asymptomatic or may cause only muscular clinical features (muscle fatigue, exercise intolerance or cramps).

MATERIALS-METHODS: the authors report the post-mortem findings and histological results of two babies found died by parents in their bed; in the first case, the baby was 4 months old and a child abuse was prospected, such as the shaken baby syndrome, because of bloodstains on his face and ear. In the second case, the baby was 2 months old and healthy at the paediatrician examination 3 days before.

RESULTS: in both cases the post-mortem examination has shown a common congestion of the organs, cardiac and pulmonary petechiae and hepatomegaly; the histology has shown multiple foci of pulmonary intra-alveolar haemorrhage; hepatocytes, PAS-positive, are characterized by cytoplasmic glycogen storage and a cell membrane distension with peripheral displacement of organelles. The diagnosis of glycogenosis is confirmed by genetic analysis on samples taking during the autopsy.

CONCLUSIONS: in either cases, glycogenosis brings to death without previous symptoms that could lead to a diagnosis. Glycogen storage diseases, such as other metabolic diseases, should be considered as a differential diagnosis with Sudden Infant Death Syndrome and child abuse.

OP-220

DEFENDING CHILDREN'S RIGHTS; ABOUT THE COMPENSATION OF CHILDREN BORN DISABLED IN FRANCE

Cécile Manaouil, George Adrian Patru, Olivier Jardé
Department of Forensic Medicine, University Hospital Amiens, France

Since March 1st, 2010, French citizens have a new procedure to defend their rights: the priority preliminary ruling on constitutionality (QPC). During a trial, any citizen may request that the Constitutional Council be seized if he/she considers that a provision of a law applicable is inconsistent with the Constitution.

One of the first QPCs was released regarding the Perruche anti-jurisprudence provision. The decision of the Supreme Court (Cour de Cassation) on November 17, 2000 had granted the child Nicolas Perruche the right to financial compensation for the material costs related to his physical disability as a result of congenital rubella. In response, Article 1 of the law of March 4, 2002 was passed in order to prohibit the compensation of a child "solely because of his/her birth". Since this law was enacted, only the moral injury of the parents can be indemnified in a case like that of Nicolas Perruche.

Over time, the application of this article of the law of March 4, 2002 has become the subject of a heated debate. In the QPC decision of June 11, 2010, the Constitutional Council found the "Perruche anti-jurisprudence" provision to be consistent with the Constitution, except for the transitional provisions. Thus, it is assumed that the "Perruche antij-urisprudence" provision applies to all children born after the entry into force of the law, i.e., as of March 7, 2002. In addition, the Perruche jurisprudence prevails for all claims filed before March 7, 2002. The issue of the cases for which legal action was taken after March 7, 2002 for a child born before March 7, 2002 remains debated. The current debate is whether the implementation of the law of March 4, 2002 should be extended or not to instances subsequent to March 7, 2002 for births prior to that date. In the present state of jurisprudence, the Court of Appeals answers negatively and applies the Perruche jurisprudence to all children born before March 7, 2002, regardless of the date by which the claims were filed.

OP-221

FREQUENCY AND NATURE OF TESTICULAR LESIONS IN FORENSIC AUTOPSIES

Geoffroy Lorin De Da Grandmaison[1], Jéhanne Marchaut[1], Laurence Watier[2], Zakia Médiouni[1], Philippe Charlier[1]
[1]Department of Pathology and Forensic Medicine, Raymond Poincaré Hospital, AP-HP, Versailles Saint-Quentin University, Garches, France
[2]Department of Public Health (INSERM U657), Raymond Poincaré Hospital, AP-HP, Versailles Saint-Quentin University, Garches, France

BACKGROUND: The aim of our study was to determine the frequency and nature of testicular lesions in forensic autopsies.

METHOD: A retrospective study was carried out on 495 adult male cases that underwent forensic autopsy from January 2008 to December 2011 in our Department. For each case, following parameters were reported: Age, Body Mass Index (BMI), nature of testicular lesions, associated lesions in external genitalia, testicle weight, cause of death, manner of death, resuscitation attempts and prior medical history. In case of macroscopic lesions, histology study of the testicles was carried out to confirm the nature of the lesions.

RESULTS: Mean age of the studied population was 47.8 years (range 18–96). Mean BMI was 25.3 kg/m2 (range 15–46.2). Testicular lesions were found in 16.4 % of the cases (n=81). In 5 of these cases, two different types of lesion were found. The most frequent lesions were respectively atrophy (n=38) and trauma (n=28). In 3 cases showing traumatic lesions, associated lesions were found in external genitalia. Mean testicular weight was respectively 17.9 g for the right and 20.8 g for the left (range 2–38). Atrophy was associated with testicular weight less than 10 g. Most frequent cause of death was respectively blunt trauma (19.9 % of the cases), asphyxia (17.5 %) and cardiovascular pathology (16.7 %). Manner of death most frequently associated with testicular trauma were respectively road traffic accidents (n=11) and suicidal falls (n=6). Testicular trauma was found in 3 homicide cases, including two cases of stab injuries.

A significant association between testicular atrophy and age was found, the risk of atrophy increasing quite linearly with age. No significant statistical link between prior medical history and testicular pathology was found, especially chronic alcoholism, other drug addiction and endocrine pathology. There was also no influence of BMI. Resuscitation attempts were not statistically associated with testicular traumatic lesions.

CONCLUSION: Our study showed the interest of systematic examination of testicles during forensic autopsy.

OP-222

DEATH DUE TO GASTROINTESTINAL COMPLICATIONS OF CLOZAPINE USE

Pauline Saint Martin[1], Sébastien Prat[1], Gilbert Pépin[2], François Paraf[3]
[1]Institut Médico-Légal, CHU de TOURS, 37044 TOURS Cedex 9, France
[2]Laboratoire TOXLAB, 7 rue Jacques Cartier, 75018 PARIS, France
[3]Service de Médecine Légale, CHU Dupuytren, 87042 LIMOGES, France

INTRODUCTION: Clozapine is known to induce serious gastrointestinal adverse effects. This case report highlights the consequences of undertreated clozapine-related constipation.
CASE: A 40-year-old male with a history of schizophrenia was found dead in his father's house. He had been on long-term treatment with benzodiazepines (clonazepam), and antipsychotics (cyamemazine, amisulpride, aripripazole). Clozapine had been introduced 3 weeks before he died and since then, he had complained of vomiting and constipation. At autopsy, there was no sign of foul play. The abdomen was distended, and we noted a severe colonic dilatation, with several petechial areas of the mucous membrane. Fecal impaction was present. The lungs were edematous and congestive. A bacteriological analysis of a lung fragment showed a bacterial translocation from the colon. Toxicology confirmed the presence of clozapine. Death was attributed to gastrointestinal complications of clozapine use.
DISCUSSION: Clozapine is used in patients with treatment-resistant schizophrenia and schizophrenia with prominent negative symptoms. Constipation is a common and usually benign side effect of treatment with clozapine. The physiopathology has always been assumed to be due to an anticholinergic side effect of the medication, leading to impairment of gastrointestinal motility. Several cases of fatal complications, including fecal impaction, subacute bowel obstruction, and bacteraemia by translocation from the dilated colon, have been described in the literature.
CONCLUSION: Physicians should be aware of the seriousness of clozapine-induced constipation and of the risk of progression to bowel obstruction.

OP-223

DECLINE OF RULE OF LAW IN SOUTH ASIA AND IMPLEMENTATION OF ISTANBUL PROTOCOL—SRI LANKAN PERSPECTIVES

Clifford Priyantha Perera
Departmen of Forensic Medicine, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka

Adoption of Torturous practices against civilians by the state and its allies in post independent Sri Lanka have been increased in an exponential rate over the last three decades. Many preventive mechanisms attempted to curb such practices have found a unique strength in the Sri Lankan medical field which could be harnessed to minimize torture in the local society. It was the detailed medico-legal documentation maintained by forensic practitioners on the alleged torture victims they had examined since eighties.

Documentation of torture for medico-legal purposes is a multidisciplinary, multi-stage and integrated exercise decisive in providing reparation. The UN-endorsed Istanbul Protocol contains the first internationally recognised standards and procedures for effective documentation of torture which could be used to record scientific evidence on torture required to be submitted to courts.

The International Rehabilitation Council for Torture Victims (IRCT) launched a project to promote the application of the Istanbul Protocol in five countries, including Sri Lanka in 2004. This Istanbul Protocol Implementation Project (IPIP) has brought forth the effective means of medical documentation of torture into a broader forum of discussion in Sri Lanka during last 5 years.

However continuous decline of rule of law and legislative infrastructure in Sri lanka seriously affected IPIP worlk and adoption of Istanbul protocol to the domestic context of the society. Following an extensive approach to the principles of Istanbul Protocol at various professional levels it is now clear that unless and until rule of law is firmly estabilsed in the entire country, the mere acception of Istanbul protocol would not bring forth any considerable change. Our attempt in this paper is to elaborate the association of rule of law and Istanbul protocol, its effects and the way forward more extensively.

OP-224

ACCREDITATION IN FORENSIC PATHOLOGY—A TEN-YEAR EXPERIENCE

Hans Petter Hougen, Steen Holger Hansen
Department of Forensic Medicine, Faculty of Health Sciences, University of Copenhagen, Denmark

The Section of Forensic Pathology, Department of Forensic Medicine, University of Copenhagen was the first forensic pathology institution that was accredited under the ISO 17020 standard. We have now 10 years experience as an accredited organization. Experiences with the implementation and maintenance of the accreditation will be outlined and discussed.

OP-225

SUDDEN DEATH ASSOCIATED WITH MEIGS SYNDROME: AN AUTOPSY CASE REPORT

El Akri Abdelhafid, Chagnon Françoise, Meagher Tim, Sestier François
Program In Insurance Medecine And Medicolegal Evaluation, Montreal university

The diagnostic criteria of Meigs syndrome are the presence of ascites and hydrothorax in association with a benign solid ovarian tumor and spontaneous resolution of ascites and pleural effusion on tumor resection. The case of a middle aged woman who died suddenly at home without significant history of illness is presented. Autopsy found a large left ovarian fibroma (which was confirmed histologically), ascites and bilateral pleural effusion with collapsed lungs. The commonest gynecologic causes of sudden death are ruptured ectopic pregnancy and induced abortions. Two case reports of death associated with Meigs syndrome were identified in the literature; both were diagnosed before the patients died. Literature search found no publication on "sudden death associated with Meigs syndrome." This is probably the first report of sudden death associated with Meigs syndrome. The terminal cause of death in this case was collapsed lungs (atelectasis). The autopsy investigation of ascites and or pleural effusion associated with an ovarian mass or lesion should always include consideration of Meigs syndrome. Sudden death associated with Meigs syndrome (undiagnosed in life) in a middle aged female is described, and selected literature on the condition reviewed.