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ABSTRACTS

WORKSHOPS

June 30 – July 4, 2012

W1 - 6TH FASE WORKSHOP ON FORENSIC ANTHROPOLOGY

FASE - Forensic Anthropology Society of Europe

This 6th workshop organized and taught by FASE will focus on the main diagnostic steps and issues in modern forensic anthropology. The following subjects will be discussed: aims of forensic anthropology in the 21st century; time since death; identification of species; excavation and recovery of human remains; biological profile; factors of individualization; facial approximation, forensic odontology, traumatic injuries; cause and manner of death in forensic anthropology; crimes against humanity and mass disasters; forensic anthropology and the identification of the living; cases studies. This 40 h course will include theoretical and practical classes and will be taught by Cristina Cattaneo, Eugenia Cunha, Douglas Ubelaker, Eric Baccino, Laurent Martrille, Zuzana Obertova and Danilo de Angelis.

W7 - MULTIPHASE POST-MORTEM CT-ANGIOGRAPHY (MPMCTA)

Introduction of MPMCTA into forensic medicine – Dream or reality

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Background: Multi-detector-CT scanning has been recognized for several years as a powerful technique to assist forensic pathologists in their post-mortem investigations.As a matter of fact CT has proven to be useful for the examination of bone structures, the detection of foreign bodies and air embolisms and the diagnostic of gross abnormalities of the soft tissues. On the other hand a CT-scan without the injection of contrast agent cannot the provide information about abnormalities of the vascular bed of the viscera and lesions of the vascular system.

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Method: In this respect the development of post-mortem CT angiography contributed to solve this problem in allowing the visualization of the vascular system of an entire cadaver through a minimally invasive technique using the application of the oily contrast agent Angiofil and a modified heart-lung machine in order to establish a post-mortem circulation. The protocol which includes one native scan before performing a minimum of three angiographic phases (respectively venous, arterial and dynamic/circulating phases) leads to a complete filling of the vascular system without extravasation of the perfusion liquid and the contrast agent mixture. In order to carry out toxicological analyses without any contamination and possible artifacts due to the contrast agent mixture, blood, urine, gastric contents, vitrous humor and bile were collected using image-guided specimen sampling if necessary.
Discussion: Post-mortem angiography has been introduced for a few years into the daily practice of our Unit of forensic medicine. Principal indications are represented by any situations where a whole-body angiography is required for vascular diagnosis This technique is performed in one hour in average by a well trained radiographer and then always followed by a conventional autopsy. Nearly all vascular pathologies revealed by the conventional autopsy were detected before by the post-mortem angiography which sometimes appeared more efficient especially in cases requiring detection of arterial or venous hemorrhages and their sources.
Conclusion: MPMCTA brings a substantial added value to conventional autopsy which contributes to enhance significantly the overall quality of the post-mortem investigation. Furthermore, the acquired data can be reevaluated at any time and is fully reproducible for research and counter-expertise. Therefore it is not exaggerated to foresee in a near future a widespread use of this technique in forensic medicine.

W8 - WORKSHOP IN FORENSIC HISTOPATHOLOGY

Chairmen: Markus A. Rothschild[1], Bernd Brinkmann[2]
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The Workshop will present a selection of special subjects in forensic histopathology: Heat-induced changes of airways and lungs including the estimation of whether the findings are vital signs; histopathology of

the lungs in fresh water drowning; the forensic meaning of different forms of structural myocardial injury and timing of myocardial necroses; drug- and toxin-induced histopathological changes to different organs; the estimation of the chronology of intracranial injuries; detection of diffuse axonal injury in head trauma and the role of ß-amyloid precursor protein in diagnosis.

Special stainings and microscopic technics will be presented and discussed in this workshop.

W9 - APPLYING INFORMATION TECHNOLOGY TO FORENSIC SCIENCES

Enrique Villanueva[1], Carlos Rodríguez-Domínguez[2], Kawtar Benghazi[2], José-Luis Garrido[2], Aurora Valenzuela[1].
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Background: Modern caused deep social and cultural changes that might have a relevant impact in Forensic Sciences. Specifically, mobile systems and wireless communications have enhanced every aspect of modern life, yet bringing significant challenges to the forensic community. Almost none of the current work in ICT has been dedicated Forensic Sciences, being only applied to the field of Digital Forensics.
Method: The goal of this workshop is to educate and inform participants about principles, opportunities and advantages for supporting common, cooperative forensic experts' activities on the basis of the new capabilities offered by ICT. In particular, it is presented a new mobile, context-aware software platform (called Mobile Forensic Platform) supporting real-time communication and coordination for data collection and sharing. In such as a platform, specific tasks are supported in a cooperative and coordinated way: informal communication on networks with an infrastructure or not, document authoring and sharing, concurrent and remote access to the information, automatic and manual data synchronization, etc. All of these tasks can be carried out while preserving security and privacy of the information, and independently of specific communication technologies (BlueTooth, Wi-Fi, etc.), since the software has been designed to automatically and transparently switch between a set of available technologies when required.
Results: The Mobile Forensic Platform has been designed for being adaptable (by users themselves or by organisations) to different data models and user interfaces according to the needs of specific official institutions and allowing its application to different real scenarios (crime scenes, natural disasters, accidents, etc.). The proposal has been initially developed for the iOS platform (iPhone, iPod Touch and iPad), since these devices ensure us a homogeneous user experience.

After this seminar it is expected to provide law enforcement, medical examiners/coroners, and forensic investigators with general knowledge of the scope and application of the more recent ICT within different forensic scenarios.
Conclusion: The role of modern technologies will be discussed in terms of how they can be used to improve quality assurance in mass casualty situations, documentation of cases of torture, recognition and documentation of gender violence or other type of violence, traffic accident investigation and documentation, among others. It is expected the active participation of the audience using the platform through scenario-based practical exercises.

W12 - WORKSHOP IN SUDDEN CARDIAC DEATH

Massimo Montisci, Davide Ferrara, Gaetano Thiene and Cristina Basso
Italy

How to study and prevent sudden death in the young: major forensic issues. Forensic pathologists investigate sudden and unexpected deaths in order to determine the cause and mode of death. The goal of this presentation is to educate and inform participants about the correct process for investigation the sudden cardiac death. This presentation will impact the forensic science community by informing practitioners how to obtain the maximum amount of information from the autopsy of sudden and unexpected deaths in young people. The epidemiology and the cause of sudden cardiac death in young people will be discussed. The study methodology (potential and limitations of the testing processes – see molecular autopsy) will be discussed and evaluated. In a significant percentage of cases, this type of deaths can be the result of the toxic effects of one or more drugs or poisons. In many other cases, toxicologic findings may help to explain the circumstances of death. The presentation will be augmented by the discussion of specific cases, selecting protocols, proper specimen and laboratory analysis to perform the study.

W13 - SEXUAL VIOLENCE VICTIMS AND CLINICAL FORENSIC MEDICINE EXAMINATION METHODS

Carmen Barbu, MD, Department of Forensic Medicine, European Union Rule of Law Mission, Kosovo
M. Selim Oskok MD, Adnan Menderes University, Faculty of Medicine, Aydın, Turkey
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The violence against women takes different appearances going from verbal and psychological abuse until physical violence and sexual assault.

Rape is an act of violence, domination and anger, happening more often than statistics indicate. It is a wrong understood way to express the power and humiliate another human been.

It is the role of forensic medicine to bring light on this difficult field of darkness and fear, by bringing sustainable evidence in court that can prove that a sexual assault has happened.

The methodology in this workshop will be the presentation of some typical case of our personal casuistry and providing a practical training in the forensic physical examination in suspected sexual assault, focusing on specific procedures of the clinical examination.

Both methods, the classical one and the new trend – the forenscopy, will be emphasized.
An examination protocol that includes colposcopy may be the most reliable means to document and characterize genital findings in sexual assault patients, especially the very fine ones, and to evaluate whether findings may be linked to the reported sexual assault.

The forensic evaluation will be developed with of some pitfalls in clinical examination, asking for more attention and caution of the medical examiner in reporting a sexual abuse.

Long term consequences, like sexual transmitted diseases, will be presented as well.

The workshop is addressing to the forensic doctors, forensic nurses, lawyers, residents in forensic medicine, social workers, psychologists and any other person interested in the field of sexual violence and human rights, to present non only a technical methodology of clinical examination in suspected sexual assaults, but showing also a distinct aspect of rape – the rape as a war crime under the international law and the special approach that such forensic expertise request.

W14 - ROLE OF THE FORENSIC NURSE EXAMINER IN SEXUAL VIOLENCE ACROSS THE LIFE SPAN: PEDIATRIC TO GERIATRIC CASES

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The science of forensic nursing represents an emerging worldview within the multidisciplinary forensic science disciplines. The forensic nurse examiner (FNE), as the first point of contact in the immediate post-trauma period, is in an ideal position to gather information and physical evidence related to the crime. Primary responsibilities include the identification of trauma and the recovery of medical/forensic evidence. When sexual violence is reported it is imperative to identify both genital and non-genital trauma, skillfully interview patients with appropriate sensitivity, evaluate the nature and scope of the injury, accurately document findings, recover, preserve and secure evidence, coordinate with police and testify if required. U.S. prosecutors agree that forensic nurses are formidable witnesses in court. Prosecutors, police, sex crimes units, homicide detectives, and forensic pathologists who work with FNEs concur that forensic nursing services are superior to by non-forensic healthcare professionals. An identified shortage of skilled forensic physicians has resulted in serious deficits of quality forensic services in the U.S. and other countries. Recent strategies to improve global standards of care for victims of crime, the falsely accused and those wrongly convicted necessitate the application of forensic science to nursing practice. Forensic nurse examiners serve as a clinical liaison to medical and legal agencies, to provide fair and equal justice as questions of innocence or criminality arise.

As early as 1974, forensic nurses were qualified to provide sexual assault forensic/medical services. In 1996, U.S. Federal Bureau of Investigation recognized the forensic nurse examiner as the ideal clinician to provide sexual assault examinations, recover and preserve biological evidence for inclusion in the CODIS data bank. The American College of Emergency Physicians has endorsed the FNE concept and jointly assisted in developing protocol for the sexual assault nurse examiner. Increasingly, forensic pathologists are employing FNEs to provide rape homicide medical evidence recovery prior to autopsy. Currently, the U.S. Armed Forces have expanded forensic nursing services to become available in medical treatment facilities worldwide. The FNE role in sexual assault examination across the lifespan of the pediatric, adult and elder patient will be addressed. *Forensic Nursing Services*, an exceptional model program with a mobile forensic unit serving 10 hospitals and a forensic nurse examiner evidence recovery unit attached to homicide investigations will be addressed.

W15 - DRUG FACILITATED SEXUAL ASSAULT: GET IT RIGHT!

The right investigation, the right drug, the right specimen, the right lab and, the right interpretation

Ashraf Mozayani, Ph.D., Harris County Institute of Forensic Sciences, Houston, Texas
Douglas Posey, MD, Georgia Bureau of Investigation, Atlanta, Georgia

The goal of this presentation is to educate and inform participants about the correct process for investigation and selecting the proper testing protocol in suspected DFSA cases. The advantages and disadvantages of the several potential test specimens will be discussed. The analytical capabilities and limitations of the testing processes will be discussed and evaluated.

This presentation will impact the forensic science community by informing practitioners how to obtain the maximum amount of information from a potentially limited amount of DFSA evidence by the initiating appropriate investigation, selecting the proper specimen, testing protocol and laboratory to perform the analysis.

Sexual assault investigations, especially when Drug Facilitated Sexual assault is involved, require a thorough characterization of properly collected evidence and an informed interpretation of results. The critical steps are: 1) the collection and preservation of evidence, 2) the submission of the evidence to an adequately equipped laboratory and 3) the interpretation of the findings of these analyses.

The proper collection and preservation of evidence has been addressed, normalized and disseminated for biological evidence intended for DNA testing, but not for forensic toxicology including DFSA evidence.

The analytical capabilities of laboratories vary widely. DFSA evidence must be analyzed for a large number of drugs, many of which require special techniques and expertise not available in some laboratories. Laboratories that mainly provide clinical laboratory services or occupational urine drug screens are seldom appropriate for forensic toxicology. The lab selected to perform DFSA testing should be able to furnish a report either excluding or confirming the presence of alcohol, opiates, benzodiazepines, tricyclic antidepressants, antihistamines, muscle relaxants, barbiturates, and cannabinoids.

The interpretation of analytical data in forensic toxicology is not standardized. This results in confusion among those who are responsible for adjudicating alleged DFSA assaults.

Standards for the type of sample collected, the handling of DFSQA evidence, a comprehensive drug screen and standardized interpretation of results would assist the trier's of fact in determining whether DFSA occurred, thereby protecting both the rights of the victims and the accused.

W17 - VIRTUAL ACCIDENT RECONSTRUCTION: WHAT'S GOOD AND WHAT'S NOT SO GOOD IN CRASH SIMULATION SOFTWARE

Thomas Bohan, MTC Forensics, Maine, USA
Joseph Canova, Engineering Dynamics Corporation, Oregon, USA
Heinz Hoschopf, Technical University in Graz, Austria
April Yergin, ATA Associates, Texas, USA

Over the past 25 years, accident reconstruction software applications for personal computers have proliferated. Originally they were directed at automating simple but oft-needed accident-reconstruction

calculations (speed from skid mark length and critical-speed scuffs, etc.)Soon, however, main-frame-computer programs designed to carry out rudimentary crash simulations were adapted for use with desktop computers. By the early 1990s, reconstructionists began creating animations ("scientific visualizations") with which to illustrate their trial testimony. The early animations were created with programs not specific to vehicle crashes and consequently awkwardly fitted to this purpose. By 1995, vehicle-crash simulation programs began to incorporate increasingly sophisticated visualization modules that permitted simulations to drive the creation of animations possessing good and then excellent visual verisimilitude. Two such programs dating to this period continue to be major players in the field: HVE and PC Crash. In more recent years, a third application has entered the field and quickly spread among accident reconstructions: ARAS360. Each of the three has areas where it appears superior to the other two. Similarly, each can produce artifacts that behoove the practitioner to be aware of.

Attendees will be instructed and guided in the use of all three, which will be temporarily loaded onto their laptop computers. (PC operating system required.) Approximately two hours devoted to each of the three. With some differences specific to the particular application, the topics covered will be as follows.

(A) Introducing and manipulating vehicles, including load distributions
(B) Setting the stage for the simulation
(C) Importing total station data and online satellite views, etc.
(D) Articulated vehicles
(E) Producing movies of simulations
(F) Camera positioning for POV
(G) Crash-generated damage profiles and roadway markings
(H) Use of simulation movies in court
(I) Program quirks to be aware of

W18 - IMMERSION DEATHS

The postmortem diagnosis of drowning is one of the most difficult in forensic medicine. Some cases of drowning have autopsy findings that are indicative of drowning. However, many cases have indeterminate findings, particularly if decomposition is present. A persistent issue has been developing modalities and tests that can reliably determine if drowning occurred. Some laboratory procedures that can provide useful results include histologic examination of lungs, biochemical testing, strontium measurements (particularly in sea water drowning), and diatom testing. Diatom testing has become the mainstay of laboratory methods in some parts of the world. Great strides have been made over the past decades to show the utility and validity of the diatom test, particularly when the diatoms isolated from body tissues are compared to diatoms in the drowning medium. In the last few years, three new testing modalities have been developed: microbiologic-based approaches, postmortem CT scanning, and PCR analysis of plankon ribosomal DNA extracted from blood and tissues obtained at autopsy. In addition, there is increasing data indicating that sudden cardiac events, including channelopathies,can precipitate drowning. The speakers will highlight classical aspects of drowning and emerging issues related to postmortem imaging and new laboratory testing methods.

Correlation of post-mortem findings with ct scan appearance in drowning cases

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Correlation is limited to cases of wet drowning in which post-mortem findings are well described. Among known features are froth in the oral cavity and airways, hyperinflation of lungs (emphysema aquosum) leading to rib markings on the pleura, pulmonary oedema and distension of alveolar spaces. Other features include fluid in the air sinuses, fluid in the stomach and aspirated material in the airways.

Most of the features described can be visualised through the CT scan and in some instances, better illustrated. Fluid in air sinuses is clearly demonstrated. Froth in the airway can be seen as low attenuation material, usually with an irregular air-fluid level in the pharynx and airways. Scans of hyperinflated lungs can be demonstrated in multiaxial views. Pulmonary oedema can be shown as diffuse ground glass appearance in the lung fields associated with septal lines. Aspirated material if present can be clearly visualised in the CT scan even in the distal airways. Any fluid in the stomach can be easily visualised as air-fluid level.

Decomposition would obscure most of the CT scan findings and hence it would not be useful in such cases. Nevertheless, presence of pleural effusion which has leached from the lungs during decomposition, a feature known to be associated with drowning process can be clearly demonstrated.

The CT scan appearance is useful if circumstances and post-mortem findings are correlated. With the exception of aspirated material in deeper airways, any finding if taken alone is non-specific. The literature of CT findings in drowning cases is still scarce. To our knowledge, none of the described features have been compared with non-drowning cases of immersion in water. Some of the features described are also present in natural disease e.g. pulmonary oedema. However, when all the features are taken into consideration together with the circumstances, the CT scan findings in drowning are quite definite and serve as a useful adjunct to post-mortem examination.

W19 - STATEMENT VALIDITY ASSESSMENT: A STEP BY STEP GUIDE

Guenter Koehnken

The workshop will be based on the lecture on SVA. It is therefore recommended to attend the lecture before attending the workshop. The workshop will follow a practically oriented approach on assessing the validity of a statement. We will discuss how to generate hypotheses that guide the collection and evaluation of data, how to analyse the case file in order to generate appropriate hypotheses, how to prepare and conduct the examination of the witness and how to analyse the data. The presentation will include examples of statement analysis taken from real court cases.