was significantly increased in patients who were VNTR a-allele carriers, compared to VNTR b/b patients (P = 0.015). In multivariate Cox proportional hazard analysis, the VNTR polymorphism was an independent prognostic factor for survival. Homozygous b/b patients were at higher risk for death (HR, 2.22; P = 0.013) compared with a-allele carriers.
Conclusions: The results support the role of the VNTR polymorphism in intron 4 as a marker for survival in patients with advanced-stage NSCLC who were fit for standard chemotherapy. Updated data will be reported.

9029 POSTER

Prognostic value of immunohistochemical stain pattern for carcinoembryonic antigen in patients with completely resected pathological stage I non-small cell lung cancer

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Background: Surgery alone remains the standard therapy for patients with stage I NSCLC based on the recent results of randomized control trials. There is, however, a subgroup of patients with stage I disease who have a poor prognosis, for whom adjuvant chemotherapy can be as effective as that for patients with more advanced disease. Preoperative serum carcinoembryonic antigen (CEA) levels have been reported to be an independent prognostic factor for stage I NSCLC. Nevertheless, adjuvant therapy is not performed based on the serum CEA levels, because serum CEA levels can be influenced by smoking or other lung conditions. Therefore, a more definitive indicator is considered necessary. We hypothesized that immunohistochemical (IHC) CEA expression would be a more reliable and effective prognostic marker than serum CEA levels.
Material and Methods: Between 1986 and 2000, 333 patients who underwent complete resection at our hospital were diagnosed as having stage I lung cancer. Immunohistochemical staining with the antibody for CEA was carried out on paraffin embedded sections of those tumors using the avidin-biotin-peroxidase complex method. Staining patterns were classified into three patterns: Type1: CEA immunoreactivity was negative or demonstrated only the cell surface; Type2: CEA immunoreactivity was distributed in the cytoplasm; Type3: CEA immunoreactivity was demonstrated both at the cell surface and in the cytoplasm. Preoperative serum CEA levels and other clinicopathological factors were also investigated by univariate and multivariate analysis.
Results: The below table shows the number of patients, 5-year survival rates, and serum CEA levels according to the CEA IHC pattern. The CEA IHC pattern was significantly associated with serum CEA levels (P < 0.0001). Univariate analysis revealed age, sex, smoking history, tumor size, histology, lymphatic invasion, vascular invasion, pleural invasion, serum CEA levels, and CEA IHC pattern was significant prognostic factors. With regard to histology, univariate analysis revealed that the CEA IHC pattern was a significant prognostic factor only in patients with adenocarcinoma, however, not in non-adenocarcinoma. Multivariate analysis conducted only in patients with adenocarcinoma disclosed that CEA IHC type 3, vascular invasion, and older age were independent adverse prognostic factors.

CEA IHC pattern	All patients	5yOS	Ad	5yOS	Non-Ad	5yOS	High serum CEA level
type1	140	82.9	102	90.2	38	63.2	31(22.1%)
type2	169	65.1	107	72.9	62	51.6	69(40.8%)
type3	24	41.7	13	38.5	11	45.5	17(70.8%)
p value		<0.0001		<0.0001		0.8903	

Conclusions: The CEA IHC pattern was a more effective prognostic marker than serum CEA levels for patients with pathological stage I lung adenocarcinoma.

9030 POSTER

Human Mena (hMena) and isoforms hMena+11a and hMenadeltaV6, estrogen receptor-beta (ER-B), epidermal growth factor receptor −1 and −2 (EGFR/HER-2) expression as prognostic factors in node-negative Non-Small-Cell Lung Cancer (NSCLC)

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Background: hMena is a cytoskeleton regulatory protein involved in adhesion and cell motility, particularly in response to EGFR activation. In addition, a possible correlation between ER-B and EGFR expression has been recently suggested in NSCLC. We therefore investigated the potential relationship and prognostic value of hMena, hMena^{+11a} and hMena^{deltaV6}, ER-B, EGFR and HER-2 expression in node-negative NSCLC patients (pts) who underwent surgery at our institution.
Methods: hMena (plus isoforms), ER-B (isoforms 1, 2), EGFR and HER-2 expression, analyzed on 2 Tissue Micro Array (TMA) copies, were correlated to disease-free, cancer-specific, and overall survival (DFS/CSS/OS) using a Cox model including sex, stage, age, grading, histology, number of resected nodes (RN). Logistic and generalized linear models were used to evaluate predictors of significant Cox-model variables. Receiver Operative Curve (ROC) analysis identified optimal cut-off values. Internal cross-validation (100 simulations with 80% of the dataset) was accomplished.
Results: 248 pts were gathered (median follow-up 36 months, range 1−96; male/female 71/29%; adeno/other 43/57%; grading G1−2/G3 45/55%; Stage I/II 82/8%; RN ⩽10/>10 34/66%). No significant difference between the 2 TMA copies was found for each factor. Multivariate analysis, is shown in the table:

	DFS		CSS		OS	
	HR (95% CI)	p	HR (95% CI)	P	HR (95% CI)	p
RN	1.84 (1.16, 2.94)	0.01	–	n.s.	1.83 (1.10, 3.05)	0.02
Stage	1.76 (1.00, 3.09)	0.05	2.56 (1.24, 5.28)	0.01	1.98 (1.10, 3.58)	0.02
hMena	1.67 (1.00, 2.81)	0.05	2.34 (1.22, 4.51)	0.01	–	n.s.
hMena^{+11a}	1.85 (1.10, 3.12)	0.02	1.88 (0.93, 3.82)	0.08	1.68 (0.97, 2.91)	0.06
hMena^{deltaV6}	1.58 (0.91, 2.73)	0.10	–	n.s.	1.78 (1.00, 3.20)	0.05
ER-B	–	n.s.	1.01 (1.00, 1.02)	0.07	–	n.s.

Pts with hMena^{+11a} overexpression (cut-off >50 according to ROC analysis) have a significantly better 3-yrs DFS and CSS (69.5% versus 58.9%, log-rank p = 0.03) and a better OS (68% vs 75.4%, p = 0.06). EGFR strongly predicted both hMena isoforms overexpression (p = 0.005, p = 0.03); indeed, when hMena was removed from the multivariate model, EGFR was independent predictor of CSS (p = 0.07). Cross-validation analysis confirmed the prognostic role of hMena and isoforms with a replication rate of 51/72% for DFS/CSS.
Conclusions: hMena, hMena^{+11a} and hMena^{deltaV6} expression is prognostic in early NSCLC undergoing curative surgery. EGFR strongly correlate with hMena status and their prognostic role deserves further investigation.

9031 POSTER

Lung cancer in women: the Spanish female-specific database WORLD 07

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Background: Lung cancer is the leading cause of cancer mortality among women in many countries. Gender differences have been reported, most of them based on retrospective analysis.
Materials and Methods: WORLD07 is a prospective, multicenter, epidemiologic female-specific lung cancer database developed by the Spanish Lung Cancer Group. Data on demographics, previous cancer

history, reproductive and hormonal status, diet, alcohol, tobacco, and occupational information are being collected just as histology, stage, treatment and survival.
Results: From October 2007 to February 2009, 409 female newly diagnosed of lung cancer were collected in an e-database in 22 Spanish centers. Patients (p) characteristics are: median age 61.7 years (y) (range: 36−87); Caucasian: 98.2%; Marital status (%): married 67.7, unmarried 11.2, divorced 7.1, widow 14. Educational level (%): basic 57.4, secondary 29.1, university 13.5. Median age of menarche 12.7 y. Children: 79.4% (median: 2); Median age of first child 27 y. Oral contraceptive: 30.6%. Pre-menopausal 15.4%, postmenopausal 84.6%. Median age of menopause 46.7 y. HRT: 5.3%. Median duration of HRT: 4.4 y. Obesity: 11.3%. Smoking habit (%): never (passive smoker/no exposition)/former/current smokers: 42 (42.8/57.2)/19/39; Median packs/year 72.4. Former smokers: 1−5/5−10/10−15/>15 y (%): 51/11.8/7.8/29.4. Work exposure 3.5%. Alcohol consumption 3.2%. Familiar history of cancer: 45.5% (lung cancer 29.7%). Previous history of cancer 13.8% (breast 33.3%). Current lung cancer histology (%): adenocarcinoma/BAC/squamous/large cell/NOS: 70.4/5.7/10.4/7.9/5.7. SCLC 11.8%. TNM I/II/III/IV (%): 16/3.9/28.7/51.4. Surgical treatment 24.7% (lobectomy/pneumonectomy/exploratory: 85.5/9.2/5.3%). Available data of 122 stage IV NSCLC p: 74.6% receive chemotherapy, 92.3% of them two drugs and 68.9% platinum-based (59% cisplatin). EGFR mutations analysis 7.9%.
Conclusions: According this series, 42% Spanish lung cancer women are never smokers and 70.4% have adenocarcinoma. Other collected information, choice of treatment and survival outcomes will be also analyzed.

9032 POSTER

The effects of prenatal factors on the development of non-small cell lung cancer

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Background: Lung cancer is still the most frequently encountered cancer and the leading cause of deaths from cancer. The effect of certain prenatal factors on the overall health of infants has been investigated for a long time. The aim of the present study was to investigate the possible effects of prenatal factors on the development of non-small cell lung cancer (NSCLC). Materials-Metods: The study participants included 101 patients with NSCLC, who attended the Medical Oncology Outpatient Clinic of the Farabi Hospital at the Karadeniz Technical University School of Medicine. The same questionnaire was applied to both the patient and control groups. Prenatal factors, together with other known factors for the development of NSCLC, were addressed via this questionnaire. The normality of the distribution of data was evaluated by using the Kolmogorov Smirnov test for each group. The Student t-test was used for comparison of variables with a normal distribution, both in the NSCLC and control groups. Qualitative data were analyzed via a chi-square test.
Results: It was determined that patients with NSCLC had older parents compared to the control group ($p < 0.0005$; $p < 0.0005$). In addition, a lower level of education, lower income, larger families, increased prevalence of smoking in the patients, increased prevalence of smoking in the patient's father, and having more first degree relatives with a history of cancer were detected in the patient group compared to the control group ($p < 0.0005$). Also, the height of the patients was shorter than the height of the control group ($p = 0.003$). When the patients were classified as normoweight, overweight, or obese according to their body mass index, a lower ratio of patients with NSCLC was overweight when compared to the control group ($p < 0.0005$).
Conclusison: In light of the present study, having older parents is a risk factor for the development of NSCLC, in addition to other known risk factors. Further comprehensive studies are needed in this subject.

9033 POSTER

Multicenter evaluation of malignancy in small-sized lung adenocarcinomas: revision of variations among institutions and underestimation generated by tumor size on PET/CT values using a phantom study

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Background: Malignant biological aggressiveness of small lung adenocarcinomas (AD) remains unclear, and understanding this feature is critical for choosing suitable treatment. We evaluated malignancy using fluorodeoxyglucose-positron emission tomography/computed tomography (PET/CT), high-resolution CT (HRCT) and postoperative pathological examination in a multi-institutional setting. Moreover, we focused on inconsistencies generated by multicenter studies resulting from PET/CT instruments of variable quality and inconsistencies induced by small tumors.
Materials and Methods: A total of 201 patients with clinical T1N0M0 AD underwent PET/CT and HRCT followed by complete resection. We analyzed relationships among components of bronchioloalveolar carcinoma (BAC) on pathological specimens and maximum standardized uptake values (maxSUV) on PET/CT, the ground-glass opacity (GGO) ratio and tumor disappearance rates (TDR) on HRCT, and the associations between these findings and surgical outcomes. MaxSUV data were adjusted by an experimental phantom study (corrected maxSUV), and underestimation of corrected maxSUV data by tumor size were successively revised using a correction equation based on the phantom study (PVC-maxSUV).
Results: The phantom study decreased overall variations in maxSUV among institutions from 7.5% to 3.9%. PVC-maxSUV, pathological BAC ratio, TDR and the GGO ratio reflect tumor malignancy grade in that order in terms of lymphatic permeation, vascular and pleural invasion and nodal metastasis. Although TDR ($R2 = 0.5082$) and the GGO ratio ($R2 = 0.5860$) closely correlated with the BAC ratio, PVC-maxSUV ($R2 = 0.2652$) and corrected maxSUV ($R2 = 0.2628$) were far less important preoperative indicators of the pathological BAC proportion. PVC-maxSUV (cutoff value = 4.0, $p = 0.001$), corrected maxSUV (cutoff value = 2.5, $p = 0.003$) and the pathological BAC ratio (cutoff value = 50%, $p = 0.010$) were significant prognostic factors of disease-free survival, whereas the GGO ratio (cutoff value =50%, $p = 0.054$) and TDR (cutoff value = 50%, $p = 0.202$) were not.
Conclusions: Phantom studies can minimize inter-institutional variations and underestimations induced by tumor size on maxSUV, which reflects malignant biological grade in clinical T1N0M0 AD, independently to the BAC ratio. Preoperative PET/CT assessment in addition to HRCT is useful for selecting appropriate strategies for treating small lung AD.

9034 POSTER

Medical treatment choices of over 1000 Italian patients affected by stage IIIB-IV NSCLC in routine clinical practice: results from the observational "SUN" (Survey on the lUng cancer maNagement) study on behalf of SUN study Group

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Background: Treatment options of locally advanced or metastatic non-small cell lung cancer (NSCLC) have substantially evolved during the last decade. The development of third-generation agents, such as vinorelbine or gemcitabine, has led to an improved therapeutic management of NSCLC, especially when tailored to patients' comorbidities and performance