Background: Metastasis are responsible for the death of 90% of patients with lung cancer (LC) indicating the necessity to know the multiple signaling pathways involved. Among them, high-grade neuroendocrine lung carcinomas (NELC) invade and metastasize rapidly. Therefore, biomarkers of aggressiveness in LC remain to be determined, especially in NELC. Epithelial to mesenchymal transition (EMT) genes profile emerge promise as indicator of invasion and metastasis. The aim was to investigate the expression of EMT markers and assessed their relationship with the clinicopathological features and prognosis. **Method:** Fresh frozen tissue from SCLC (n=15) and NSCLC (ADc n=23 and SqCC n=10) and matched normal tissue samples were collected for qRT-PCR analysis carried out on StepOnePlus™ Real-Time PCR with RT^2 Profiler PCR Array System for the EMT pathway with 84 target genes (Qiagen, Dusseldorf, Germany). Gene expression was correlated with clinicopathological variables in the SCLC and NSCLC groups. Survival curves were calculated using the Kaplan-Meier method and risk factors determined by multivariate Cox regression model. Differences were regarded as statistically significant at P<0.05. **Result:** Female patients presented significant higher expression of EGFR (p=0.03), ILK (p=0.05), JAG1 (p=0.01), MMP2 (p=0.04) and SNAI2 (p=0.04) genes. Tobacco history was associated with increased expression of EGFR (p<0.01), ITGAV (p=0.05), SPP1 (p<0.01) and WNT5A (p=0.02). NSCLC presented similar levels of EMT genes evaluated. Tumors from SCLC and NSCLC in advanced N and M stage expressed significant high levels of genes related to cellular membrane [EGFR (p=0.03), ILK (p<0.01), FR11 (p=0.05), ITGAV (p=0.02), ITGB1 (p<0.01), DSP (p=0.04)], extracellular matrix [COL5A2 (p=0.04), COL1A2 (p=0.04)], cytoplasm [GSK3B (p=0.01), VPS13A (p=0.02), MAP1B (p=0.01)] and nucleus SNAI2 (p=0.04). Interestingly, SCLC tumors expressed higher levels of FR11 (p=0.02), GSK3B (p=0.04), ILK (p<0.01), ITGB1 (p=0.01), JAG1 (p<0.01) and MAP1B (p=0.01) indicating more aggressiveness than NSCLC. A mathematical model controlled for N and M stage, histologic type and the gene expression showed that patients with SCLC expressing high levels of MMP2 and SPARC presented significant high risk of death (OR 5.41 and 4.94, respectively) compared to those with lower expression. Patients with NSCLC with low levels of ILK, SPP1, COL1A2, ITGB1 presented a low risk of death (OR -7.02, -0.4, -1.3 and -3.02, respectively). **Conclusion:** Different expression of EMT genes in SCLC and NSCLC, its relationship with histologic types, advanced stage, lymph node metastasis and death suggest a possible role of these markers in their malignancy, but more importantly provide a potential biomolecular marker to predict outcome. **Keywords:** lung cancer, metastasis, epithelial to mesenchymal transition

P3.15-007
A Retrospective Review of Small Cell Lung Cancer (SCLC) Patients Treated at Marmara University Hospital

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Background: SCLC accounts for 15%-20% of all lung cancer, and has poor prognosis. The aims of this study were to evaluate the patient characteristics and depict prognostic factors in a series of SCLC patients treated at Marmara University Hospital (MUH) Istanbul. **Method:** Among SCLC patients who were admitted to MUH since 01 January 2010, 154 had satisfactory data to analyze. Demographic data, pathology & radiology reports, lab investigations, information regarding local & systemic therapies were noted from written & electronic patient records. Patient and tumor characteristics were reported descriptively. OS difference between subgroups were analyzed with Log-rank & factors that had independent effect on survival detected with Cox regression tests. OS data were calculated with Kaplan-Meier estimator. A p value <.05 was accepted as significant unless reported otherwise. **Result:** The median follow-up time was 17 (min-max; 3-84) months. Median survival time of all patients was 10 months; 1 year, 2 & 3 years survival rates were 41%, 22%, and 12%, respectively. Median survival of patients with limited stage and extension stage SCLC were; 22,6 Ms (9,9-35,3), and 9 Ms (7,2-10,8), respectively. On univariate analysis patient with low initial serum hemoglobin (<12 gr/dl), abnormal sodium or ALT (> 40 IU/l) levels, poor ECOG PS (2-3), advanced VA stage, having brain, liver, bone or adrenal mets, and having a paraneoplastic syndrome (PNS) had worse survival estimates. Whereas only ECOG PS (p=0.007, HR 2.2 [1.2-4]), and having a PNS (p=0.04, HR 1.66 [1.02-2.7]) maintained independent prognostic effect on survival in Cox analysis. **Conclusion:** Results of our small retrospective SCLC series showed that median survival of extensive stage SCLC patients is poor (< 1 year) which underlies the need of novel anticancer therapeutics for this group of patients. Our multivariate model pointed out well known prognostic factors but not the VA stage. This may be explained with the small population size of our study. **Keywords:** paraneoplastic syndrome, small cell lung cancer

P3.15-008
[F18]PARPi PET as an In Vivo Pharmacodynamic Biomarker of PARP Inhibitor Therapy in Patient-Derived Xenografts of Small Cell Lung Cancer

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Background: Inadequate drug delivered to target tumors contributes to ineffective treatment. However, the delivered drug concentration is difficult to assess in patients in a timely and clinically-relevant manner. To address this barrier to PARP inhibitor (PARPi) therapy, we evaluated a radiolabeled PARP inhibitor ([F18]PARPi) as a pharmacodynamic biomarker. We hypothesized that [F18]PARPi PET imaging can measure PARP inhibitor concentration and activity intratumorally, thereby, predicting therapeutic efficacy. Here, we applied this approach to patient-derived xenografts (PDX) of small cell lung cancer (SCLC). **Method:** To study [F18]PARPi PET as a biomarker of talazoparib (TAL), SCRX-Lu149 PDXs were orally gauged with different doses of TAL. Mice were injected with [F18]PARPi and imaged with PET, with the expectation that TAL would competitively block [F18]PARPi binding to PARP. Organ retrieval and gamma counting was performed for drug and radiotracer biodistribution. Ex vivo PARP enzymatic activity was measured by ELISA of PAR levels. Differences in PET uptake and the tumor volumetric endpoint (time to reach 1000 mm^3) were analyzed by student t-test and the log-rank test, respectively. **Result:** In PK PET imaging with 0.2 mg/kg TAL, greatest blocking of the radiotracer was noted at 1 hour after gavage with less blocking as time from dosing was extended (avg of 3 mice: 4.5, 2.2, 2.7, 3.1, and 3.4% max injected dose per gram [ID/g] for untreated, 1, 3, 6, and 24 h after drug, respectively). [F18]PARPi PET differentiated between doses of 0.1 and 0.3 mg/kg TAL at 3 h after dosing (3.9 vs 2.1% ID/g or 13% vs 53% relative blocking, respectively; p=0.003). No differences were noted in heart, lung, esophagus, muscle, or bone. PET uptake correlated with ex vivo enzymatic inhibition/PAR levels (p=0.0009). PET measured