European Respiratory Society
Annual Congress 2013

Abstract Number: 2710

Publication Number: P547

Abstract Group: 3.1. Molecular Pathology and Functional Genomics

Keyword 1: Lung cancer / Oncology **Keyword 2:** Biomarkers **Keyword 3:** Molecular pathology

Title: Plasma cell-free DNA concentration and integrity analysis in patients with chest radiological findings: NSCLC versus non-malignant pathologies

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Body: The quantification of cell-free DNA in plasma (cfDNA) has been repeatedly shown to accurately differentiate NSCLC patients from healthy individuals and indicate the increased cancer risk. However, to be of clinical value, such quantitative assay should also discriminate between lung cancer and non-malignant pathologies presenting similar radiological image. Recently, we demonstrated that increased cfDNA levels in NSCLC patients resulted from complicated tumor-host interactions, but not from chronic respiratory inflammation itself. In present study we determine cfDNA levels in resectable NSCLC versus non-malignant lung tumors to evaluate the factual clinical utility of cfDNA quantification for early NSCLC detection. To date, we measured cfDNA levels and integrity index (DII) using real-time PCR in 66 NSCLC patients (stage I-IIIA), 15 patients with non-malignant tumors (hamartoma, fibrosis, tuberculoma, etc) and 40 healthy controls. Mean cfDNA level of 21,5 ng/ml in NSCLC group was significantly higher than 4,5 ng/ml in controls (p=0.000). There was no significant associations between cfDNA levels and TNM stages or histological types in NSCLC. The cfDNA levels in NSCLC did not differ significantly from values observed in patients with non-malignant tumors (23,4 ng/ml; p=0,45). Similarily, the mean DII in NSCLC (4,0) significantly differed from control values (1.0; p=0.000), but not from DII observed in non-malignant group (4,0). Our preliminary data suggest the intensified cell death processes might be a key factor regulating cfDNA levels in NSCLC and non-malignant tumors. The group numbers are to be equalized for fully elucidative results.