METABOLOMICS STUDIES IN THE DIAGNOSIS OF LUNG CANCER: A PRELIMINARY REPORT

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Background: Lung cancer is most often diagnosed neoplasm and a leading cause of death from cancer. In 2008 lung cancer was diagnosed in 1,6 mln patients worldwide and 1,4 mln people died from this disease. The very poor prognosis in lung cancer did not change for many years despite progress in diagnostic methods, molecular biology achievements and clinical trials. The reason of this high mortality is that most cases are diagnosed in advance stage of the disease. Metabolomics, which employs nuclear magnetic resonance (NMR) combined with chemometric discriminant analysis, allows to trace metabolic pathways by measurement and analysis of low molecular compounds fraction MW <1000 Da in various biofluids. **Aim:** The aim of the study was to investigate if it is possible to discriminate patients with lung cancer from healthy subjects with the use of metabolomic measurements. **Material and methods:** Serum was collected from 30 patients with cancer and 4 healthy volunteers. The patients group comprises 4 patients with adenocarcinoma, 5 with squamous cell carcinoma, 5 with small cell carcinoma and 16 with non-small cell carcinoma. Data were evaluated by advance statistical analysis supported by supervised chemometric PLS-DA and OPLS-DA tools. **Results:** The applied metabolomic methods allow to discriminate patients with cancer from healthy volunteers and additionally permit to distinguish between cancer subgroups. **Conclusions:** Our preliminary results indicate that applying for cancer diagnostics only serum NMR-based metabolomics studies allow to distinguish not only between sick and healthy individuals but also can be useful in determination of subgroup of lung cancer! This findings may shed a light into molecular mechanisms of cancer development and after validation on greater group of individuals can be used as the supporting tool in lung cancer diagnostics.