

as markers of carcinogenesis of various types and localizations, including lung cancer, and most studies were simulated on smokers. This article presents the results of the survey of the respondents of main professions of coal miners. The obtained results indicate the existence of a link between certain DNA repair alleles with the risk of bronchopulmonary disease developing under the influence of industrial aerosols. For the first time the results were obtained on the association of allelic polymorphisms of the DNA repair genes with predisposition or resistance to the development of bronchopulmonary disease in coal miners.

Conclusions. The polymorphism of XPD (rs13181) were considered by researchers as marker of carcinogenesis of various types and localizations, including lung cancer. The obtained results indicate a connection between certain alleles of DNA repair genes with the risk of developing bronchopulmonary pathology under the exposure to industrial aerosols.

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Key words: bronchopulmonary disease, SNP, DNA repair, coal miners.

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VASCULAR ENDOTHELIAL GROWTH FACTOR: AN IMPORTANT BIOMARKER IN PEDIATRIC ISCHEMIC STROKE

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Vascular endothelial growth factor (VEGF) is recently considered to be an important biomarker in the stroke. VEGF has been shown to be involved in atherosclerotic processes, arteriogenesis, cerebral edema, neuroprotection, neurogenesis, angiogenesis, in processes after cerebral ischemia and in the regeneration of vessels, as well as in the effects of transplanted stem cells and in experimental stroke. Assessment of vascular endothelial growth factor (VEGF) serum values in children with ischemic stroke to evaluate the role of this biomarker in brain metabolic processes.

Materials and Methods. 52 children with ischemic stroke aged from 4 weeks to 10 years of age were investigated. The diagnosis was established on the basis of imaging investigations. VEGF was determined in samples of blood serum collected in the first 3 days after admission. For comparing VEGF values, it was determined also in 30 practically healthy children.

Results: Serum VEGF levels were elevated in patients with ischemic stroke, i. e., mean value was 626 pg/mL, compared to healthy children, mean value was 211 pg/mL. Higher levels of VEGF were associated with cases of ischemic stroke with more

severe clinical manifestations, such as paresis, paralysis, impaired consciousness, and epilepsy. Conclusions: During acute period of pediatric ischemic stroke, elevated serum levels of VEGF were found, suggesting the active involvement of this biomarker in increasing of oxygen supply to brain tissues and the trend to generation of new blood vessels ensuring the collateral perfusion in the affected tissues.

Key words: stroke, ischemic, pediatric, VEGF.

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AMINO ACIDS SPECTRUM FEATURES DURING ATRIAL FIBRILLATION PAROXISM IN PATIENTS WITH CORONARY ARTERY DISEASE

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Atrial fibrillation (AF) is the most common arrhythmia in the world. AF presence is linked with higher coronary artery disease (CAD) severity [1]. Amino acids are one of the important groups of myocardial metabolites. Today metabolomic analysis has become an essential tool for understanding the pathophysiology of cardiovascular disorders [2].

Materials and Methods: 64 patients with stable CAD (SCAD) with (38 patients) or without (26 patients) paroxysmal AF and 15 normal controls were observed. Statistically all groups were compatible by the main clinical features (age, sex, concomitant disorders, etc.). Blood samples for metabolomics were collected in the early morning after fasting for 8 hours at the first day after hospitalization. For normal controls and patients with SCAD without arrhythmia, blood samples for metabolomics analysis were collected at enrollment. Plasma was analyzed by metabolomics workflow. Amino acid spectrum was studied by ion exchange liquid column gas chromatography.

Results: During AF paroxysm in SCAD patients decreasing plasma ornithine by 17,79% and alanine by 11,31% respectively were obtained comparable with SCAD patients without arrhythmia ($p < 0,05$). There were no discovered significant changes between SCAD and control groups results of these acids ($p > 0,05$). Also during AF paroxysm in SCAD patients increasing threonine and valine plasma content was checked comparable with SCAD patients without arrhythmia (20.89% for threonine; 17.93% for valine; $p < 0,05$) and also with control group (30.17% for threonine; 27.96% for valine; $p < 0,05$). Moreover in SCAD patients during AF paroxysm increased total content of sulfur containing by 16.14% was observed, decreased neutral by 14.98% and non-essential by 9,91% respectively plasma amino acids comparable with SCAD group without AF paroxysm ($p < 0,05$).

Conclusion: We obtained reliable changes in essential (ornithine and alanine) and non-essential (threonine and valine) plasma amino acid concentration in SCAD patients with AF paroxysm comparing with SCAD patients without arrhythmia. Reliable changes in total content of sulfur containing were studied, neutral and non-essential amino acids presence in this group also.

Prospects for further research: Metabolomic analysis has contributed to the discovery of previously unappreciated metabolites or metabolic pathways involved in the CAD and AF pathogenesis. Deeper investigation of amino acid spectrum in CAD patients can help to find metabolites that may be candidate biomarkers for predicting AF paroxysm occurrence. There is no doubt that further cardiac metabolism investigation may lead to breakthroughs in next-generation therapies for this disorders.