

Stężenie wybranych biomarkerów toksyczności dymu tytoniowego u osób palących tytoń chorych na raka krtani

The concentration of the chosen smoke toxicity biomarkers among smokers suffering from larynx cancer

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Summary

Introduction: An incidence of laryngeal cancer is strongly connected with exposure to tobacco smoke containing dozens of carcinogens. Genotoxic agents such as poly cyclic aromatic hydrocarbons present in tobacco smoke are responsible for lesions of structure DNA and formation of DNA adducts by metabolically activated intermediates. Detecting the presence of DNA adducts in human tissues is therefore, a tool for studies of cancer. An evidence demonstrates that DNA adducts are useful markers of carcinogen exposure. The aim of this work was estimation of relationship between cigarette smoke exposure, determined as urinary cotinine and urinary 1-hydroxypyrene concentration, and number of aromatic-DNA adducts in blood lymphocytes. **Material and methods:** The study group consisted of 60 men at the age of 45 up to 65 years — 20 healthy non-smokers, 20 healthy current smokers and 20 current smokers with primary larynx cancer, which was classified histopathologically as squamous cell carcinoma. The cotinine and 1-hydroxypyrene were determined in the urine with high performance liquid chromatography. Analysis of DNA adducts was performed by the ^{32}P — postlabelling method. **Results:** Urinary cotinine concentration in healthy smokers and cancer subjects in comparison with non-smokers was significant higher than in non-smokers, respectively, 29- and 31-fold higher but differences between healthy and sick smokers were insignificant. Concentration of 1-hydroxypyrene in urine of healthy and cancer subjects was significantly higher (9- and 10-fold higher, respectively) compared with non-smokers. The highest level of aromatic-DNA adducts was found in lymphocytes of healthy smokers but differences between number of adducts in healthy smokers compared with non-smokers (+35%) and cancer subjects (+7,1%) were insignificant. The Pearson's coefficient (r) for the correlation between aromatic-DNA level and urinary cotinine or 1-hydroxypyrene concentration were significant only in cancer subjects group ($r = 0,676$, $p = 0,011$ and $r = 0,465$, $p = 0,039$, respectively). **Conclusions:** The results suggest that cotinine and 1-hydroxypyrene concentration in urine are useful biomarkers of the tobacco smoke exposure. In contrast the levels of aromatic-DNA adducts in lymphocytes are not suitable for that purpose. It seems that none of investigated compounds are the risk predictor of larynx cancer.