

Kynurenic acid concentration in non-small cell lung cancer tissue negatively correlates with peripheral blood leukocytes count in patients undergoing lobectomy

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Background:

Kynurenine transamination metabolic pathway resulting in synthesis of kynurenic acid (KYNA) exerts anti-proliferative effect against cancer cells in vitro, and appears to play an important role in control over specific anti-tumor immune response. In this study we aimed to determine the levels of kynurenic acid in tumour tissues in non-small cell lung cancer (NSCLC) and analyzed correlation with leukocytes peripheral blood count (WBC).

Patients and methods:

Sixty seven patients undergoing lobectomy due to NSCLC were enrolled in the study. Tumour tissue samples were collected from fresh specimens immediately after the operation. Kynurenic acid were measured with use of cation exchange resin, C18 reverse-phase high performance liquid chromatography and fluorescence detector. WBC was determined by routine blood test.

Results:

Concentration of KYNA in tumour tissues did not differ statistically significantly between squamous cell, adenocarcinoma and large cell lung cancer (median 167,26 pmol/g, 214,90 pmol/g and 218,75 pmol/g respectively; $p=0,72$ ANOVA rang Kruskal-Wallis). Peripheral WBC negatively correlated with KYNA concentration in tumour tissues ($R = -0,2065$; $p = 0,0364$; Spearman test).

Conclusions:

Our results indicate significant correlation between low WBC and elevated activity of kynurenine transamination pathway in NSCLC. It suggests that this metabolic route may be involved in pathogenesis and development of lung cancer, possibly through its immunosuppressive effect leading to an escape of tumor cells from immune surveillance. It may facilitate development of new therapeutic strategies aimed to enhance host's immune response against cancer cells through kynurenine pathway inhibition, which may improve results of surgical resection in NSCLC patients.

Słowa kluczowe: Lung cancer, lobectomy, kynurenic acid, KYNA