

Oncology of the chest

Clinical significance of dimeric form of pyruvate kinase as a diagnostic and prognostic biomarker in adenocarcinoma and squamous cell lung cancer.

A. Rzechonek¹, A. Kaminska¹, W. Budzynski², A. Drapiewski¹, P. Cierpikowski¹, *M. Majchrzak¹

¹Medical University Wroclaw, Department of Thoracic Surgery (Wroclaw, Poland)

²Wroclaw Research Centre EIT (Wroclaw Stablowicka Str. 147, Poland)

Goal:

The metabolism of the tumor tissue differs from the normal by intensity of processes of protein synthesis, nucleic acids, and the process of glycolysis. The specific enzyme for cancers glycolysis is the dimeric form of pyruvate kinase (PKM2).

The aim of this study was to determine the relationship between the activity of PKM2, and the type and stage of planoepitheliale and adenoid lung cancer (NSCLC). The second objective was to compare the expression of PKM2 with the disease progression and prognosis.

Material and Methods:

We studied 47 patients: study group - 37 patients with NSCLC, the control group - 20 without cancer. The study was performed by a spectrophotometer Hewlett-Packard diode 8900. Percentage changes of PKM2 activity were examined before and after activation of fructose-1, 6-bisphosphonate.

Results: The activity of pyruvate kinase (PKM2) has increased an average of 136% for adenocarcinoma, and for squamous 126%. Growth of PKM2 activity correlated only with stage III of cancer ($p < 0, 001$). The sensitivity of the test was for both forms of cancer were 80% (79% in adenocarcinoma cancer and 81% in squamous cell carcinoma). The specificity of the test was 50%.

Conclusion: The activity of pyruvate kinase PKM2 in patients with adenocarcinoma and squamous cell lung higher than in healthy subjects.

PKM2 correlates only with a high degree of cancer. The sensitivity and low specificity of the test determine a small utility in the diagnosis of the both forms of lung cancer.