

Prognostic Significance of Positron Emission Tomography with ¹⁸F-FDG in Combination with Immunohistochemical Data in non-Hodgkins Lymphoma Patients

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Abstract

The treatment of non-Hodgkin's lymphoma is based on the disease biological characteristics and response to treatment. We have determined the ability of positron emission tomography (PET) with ¹⁸F-FDG, performed at various stages of chemotherapeutic treatment, in combination with immunohistochemical data: marker of apoptosis bcl-2 and proliferation index Ki-67, to assess the efficacy of treatment and prediction of disease prognosis. The results of PET and immunohistochemical study of 71 patients with different histological types of NHL were analyzed. PET with ¹⁸F-FDG was performed at several stages: before initiation of therapy, at midtreatment, after the 1st line of the chemotherapy, and at different stages in distant periods. Molecular-biological characteristics of tumor cells were determined by immunomorphological method with assessing marker of apoptosis bcl-2 and the proliferation index Ki-67. According to the midtreatment PET data all patients were divided into PET-positive group (disease progression or stable disease) and PET-negative group with good response to therapy (complete remission): 36 (50,7 %) and 35 (49,3 %) patients respectively. Comparison between groups indicated a statistically significant association between PET findings and progression free survival (PFS), $p = 0,0002$. In multivariate analysis, midtreatment PET and marker of apoptosis bcl-2 were stronger prognostic factors for PFS ($p = 0,007$ and $p = 0,01$ respectively) than the proliferation index Ki-67 ($p = 0,8$). Early interim ¹⁸F-FDG-PET is an accurate and independent predictor of PFS. The combined application of PET and immunohistochemistry with the assessment of the expression of above mentioned markers (bcl-2 and Ki-67) significantly improves the accuracy of prognosis of NHL.

Key words: Positron Emission Tomography, Immunohistochemistry, Marker of Apoptosis bcl-2, Proliferation index Ki-67.

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