

SUMMARY

Lung cancer is currently the leading cause of cancer deaths in Poland and in the world. Over 80% of the histopathological diagnoses are non-small cell lung cancer (NSCLC). Only 15-20% of patients in the early stages of the disease are eligible for surgical treatment. In locally advanced or metastatic NSCLC, classical chemotherapy does not bring satisfactory results. Targeted therapy is only applicable to patients with a defined mutation profile in the cell. The anti-cancer effect of immunotherapy is based on inhibition of the so-called immune response control points which are programmed death receptor 1 (PD-1) and its ligand PD-L1 (PD-L1 ligand).

The aim of the study is to evaluate PD-L1 expression in primary tumor cells of the lung cancer and in mediastinal metastases, and to compare PD-L1 expression in primary and metastatic tumors depending on the selected clinical and pathological parameters of patients and the type of material studied.

PD-L1 determinations were carried out on material obtained from 31 patients with primary NSCLC treated surgically at the Department of Thoracic Surgery, Medical University of Bialystok (UMB) in 2012-2018, with postoperative changes in the mediastinum. The study was approved by the Bioethics Committee of the Medical University of Bialystok no: R-I-002/201/2019. All patients gave written informed consent for the use of clinical data, PD-L1 determination in primary tumor, mediastinal lesions and participation in follow-up studies. Evaluation of PD-L1 expression was performed in tumor sections and cytological material using an immunohistochemical method. Statistical analysis was performed with the Fisher exact test for small groups or the chi-square test.

PD-L1 expression in primary lung cancer tumor cells was demonstrated in 45% of patients, and in mediastinal metastases in 42% of patients. PD-L1 expression in adenocarcinoma was visualized in 29% of cases, in metastases of adenocarcinoma in 50% of cases, in squamous cell carcinoma in 60% of cases and in metastases of squamous cell carcinoma in 40% of cases. No statistical significance was obtained in the comparisons. Consistency of the biomarker expression in lung cancer metastases to the mediastinal lymph nodes with that in the primary tumor was found in 77% of patients with a sensitivity of 65%, a specificity of 91%, a positive predictive value of 93% and a negative predictive value of 65%.

A high agreement of PD-L1 expression in the primary tumor of non-small cell lung cancer and PD-L1 expression in metastases of this tumor to the mediastinum was found. The

assessment of PD-L1 in the material obtained by transbronchial biopsy (EBUS-TBNA) is analogous to the assessment in the primary tumor and constitutes a reliable material for the assessment of this marker in patients with advanced non-small cell lung cancer. The assessment of PD-L1 expression in the cytological material is comparable to the assessment of PD-L1 in the tissue material in patients with non-small cell lung cancer. There was no relationship between PD-L1 expression and age, smoking, histopathological diagnosis, pathological stage, tumor size and lymph node metastases in patients with non-small cell lung cancer.