Streszczenie w języku angielskim

Breast cancer is one of the most common malignancies in the female population while being characterized by high heterogeneity, which translates into increased difficulty in the diagnosis of this disease. Clinical practice, however, lacks fast and non-invasive methods that can speed the diagnostic process and allow the detection of non-metastatic primary breast cancer, which will then translate directly into earlier treatment initiation and improvement of patient survival. Determination of tumor markers from peripheral blood is postulated as a quick and minimally invasive method for the diagnosis of cancer, with both prognostic and diagnostic significance. As potential markers, a number of bioactive compounds are currently being considered among which chemokines can be included.

The objective of this doctoral dissertation was to determine selected chemokines (CXCL1, CXCL8, CXCL12) and receptor (CXCR4) as potential early tumor markers in the most common molecular subtypes of breast cancer - luminal A and luminal B breast cancer.

A total of 100 patients with early-stage luminal subtype A and luminal subtype B breast cancer, 50 women with benign lesions and 50 healthy women were classified for the studies. Materials for the study include platelet-poor plasma. The concentrations of CXCL1, CXCL8, CXCL12 and CXCR4 were determined by immunoenzymatic assay (ELISA), the comparative marker CA 15-3 - by chemiluminescent microparticle immunoassay (CMIA) or electrochemiluminescence method (ECLIA). The diagnostic reliability of the studied parameters was determined by diagnostic sensitivity, diagnostic specificity, positive predictive value, negative predictive value, while diagnostic power of the test by ROC-AUC function.

The studies showed significantly higher plasma concentrations of CXCL8, CXCR4 and CA 15-3 and significantly lower plasma CXCL12 concentration (negative marker) in a group of women with early breast cancer, in both luminal A and luminal B subtypes, compared to healthy women, which may indicate their importance in the process of breast tumorigenesis.

Significantly higher concentrations of CXCL8 and CXCR4 in the entire group of patients with early breast cancer and in luminal subtype B breast cancer in relation to the comparison group of women with benign breast lesions may be the basis for creating a diagnostic tool for differential evaluation of breast cancer.

The highest diagnostic utility of the tests, estimated by diagnostic sensitivity and specificity, positive and negative predictive value, and diagnostic power of the tests, was characterized by CXCL12, thus surpassing the values obtained for the comparative marker CA 15-3. The combined analysis of the tested parameters increased the sensitivity, negative predictive value

and diagnostic power of the test, and the highest values were obtained for the CXCL12+CXCR4+CA15-3 combination.

Based on the results, the diagnostic utility of chemokines CXCL8, CXCL12 and the CXCR4 receptor as potential tumor biomarkers of early breast cancer with luminal A or luminal B subtypes is suggested, especially in the combined three-parametric analysis of CXCL12+CXCR4+CA15-3 as a new diagnostic panel.