

ABSTRACT

Cancer is the second leading cause of death in the Czech Republic. Breast cancer and colorectal cancer have relatively high mortality rate. One of the areas of current clinical research in oncology is the study of prognostic biomarkers, which aims to optimize the decision-making process for a patient. Immune response and processes in the tumor microenvironment have been shown to influence to a large extent the biological nature of the tumor in terms of its aggressiveness and ability to metastasize in the host's body. There are certain tumors that could induce a strong immune response, while others do not. The ability to induce an anti-tumor cell response and to attract specific lymphocyte subpopulations directly into tumor tissue has been shown to be very closely related to the prognosis of cancer patients. There is evidence and correlation of the presence of so-called tumor infiltrating lymphocytes in tumor tissue and overall patient survival. Stratification of cancer patients based on immuno-predictors both in the plasma and directly in the tumor microenvironment makes it possible to identify suitable candidates for rediscovered modern anti-tumor immunotherapy, which can already be considered a standard therapeutic modality. In our projects, we focused on the identification of biomarkers that will allow patients to be stratified according to their ability to produce a qualitatively and quantitatively potentially successful anti-tumor immune response. In patients with locally advanced colorectal carcinomas, we participated in the analysis and evaluation of the presence of tumor infiltrating lymphocytes (Immunoscore), which is an important prognostic indicator of estimating the risk of disease relapse (PAGES, F. et. al., 2018). In patients with hormone-dependent breast cancer and patients with locally advanced colorectal cancer, we evaluated the overall state of the immune system and the individual cytokines involved in its regulation. The aim was to identify potential biomarkers that correlate with the ability of the patient to create a high-quality antitumor cell response and thus a favorable clinical development of cancer.

Keywords: breast cancer, colorectal cancer, immunotherapy, predictive biomarkers, T lymphocytes, Immunoscore