ABSTRACT

Prostate cancer is one of the most common types of cancer in men, in developed countries. The treatment options for the advanced and relapsed stage of this disease are very limited. Immunotherapy seems to be a potential new alternative in the treatment of cancer. According to the theory of immune surveillance, the immune system recognizes and eliminates tumor cells by various of mechanisms in the early stages of the disease. Immunotherapy is a treatment method using both innate and adaptive immune mechanisms to activate anti-tumor immunity.

Several clinical and preclinical studies of tumour immunotherapy illustrate several promising immunological principles to treat cancer. This is expecially relevant in the case of prostate cancer, as recent approval of sipuleucel-T by the US Food and Drug Administration marks the first antigen-specific immunotherapy approved for cancer treatment.

Scientific team at department of Immunology, 2nd Medical school, hospital Motol and biotechnology company SOTIO is developing a next generation Active Cellular Immunotherapy based on activated dendritic cells, focusing on the treatment of prostate cancer.

The aim of my thesis was to evaluate the presence of antigen specific immune response induced by immunotherapy by DCVAC/PCa in I./II. phase of clinical trial in two groups of prostate cancer patients. In both groups of patients, we noted higher percentage of antigen specific T-cells against tumor antigens PSA, MAGE-A1 and MAGE-A3 compare to healthy donor group. Only percentage of antigen- specific T-cells against tumor antigen PSA was significantly increased during the treatment in tested patients group. We have also recorded the presence of antibodies against tumor antigens PSA and MAGE-A3 in serum samples of several patients, which in both groups correlates with a better prognosis. Monitoring of immunological parameters in patients treated by DCVAC/PCa shows very promising data on antigen-specific cellular and humoral response. However, the study was performed in a small cohort of patients without control group. For this reason, it is necessary to verify the data in the ongoing II and III phases of the clinical trials.