DYNAMICS OF PLASMA CYTOKINES IN PATIENTS WITH BLADDER CANCER DEPENDS ON TUMORIGENESIS STAGES

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Urinary bladder cancer (UBC) is a common disease worldwide. UBC appears to be the ninth most frequently-diagnosed cancer worldwide[1]. Cancer often involves inflammatory processes. Cytokines may be secreted not only by inflammatory cells, but also by the tumor cells and stroma cells, together establishing a network of factors that significantly affects bladder cancer[2]. The aim of this study is to investigate the levels of IL-4, IFN-γ, IL-10 and IL-6 in patients with UBC in the diagnosis and prognosis of the disease.

Materials and Methods: This study enrolled 29 patients with UBC aged from 52-76 years. All patients were in the preoperative phase examined with the standards oncology survey (general clinical blood and urine, immunogram, computer tomography). To characterize the tumor used TNM clinical classification 7 review (2009), which all patients were determined by the stage of tumor - 1, 2, 3 or 4. The control group consisted of 15 healthy. Plasma levels of IL-4, IL-6, IL-10 and IFN-γ were determined by ELISA. Data analysis was conducted using Microsoft Excel 2010.

Results: In our study, the levels of plasma cytokines, IL-10, IL-4, and IL-6 were higher in patients of UBC. It was shown increased levels of IL-4 in patients with cancer stage 3 and 4 by 1.1 and 1.2 times respectively. The levels of IL-6 were also increased by 1.2 and 1.4 in patients with stage 3 and 4 bladder cancer. High levels of IL-10 were only in patients with stage 4 stage of bladder cancer and associated with
poor prognosis. We demonstrated that lower plasma IFN-γ levels correlate with more advanced tumor stage. As tumor growth progresses, the immunosuppressive environment counterbalances the antitumor immunity and suppresses effector cells, resulting in decreased secretion of IFN-γ.

Our studies have revealed that patients with bladder cancer develop a Th2 dominant status with a deficient Th1 immune response. Increased levels of IL-10 and other Th2 cytokines IL-4, IL-6, along with decreased levels of Th1 cytokines (IFN-γ), have been observed in the plasma of bladder cancer patients. In conclusion, IFN-γ, IL-4, IL-6 and IL-10 can’t be used as diagnostic biomarkers for urinary bladder cancer but have shown a potential for clinical applications.

References:


Key words: bladder cancer, cytokines, plasma biomarkers

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