



Effects of the balance between type 1 and type 2 T helper cells on ovarian cancer

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ABSTRACT. The balance between type 1 and type 2 T helper cells (the Th1-Th2 balance) is closely correlated with cancer, but the correlation in ovarian cancer remains unconfirmed. We investigated the Th1-Th2 balance for the diagnosis, treatment, and prognostic evaluation of ovarian cancer. Fifty healthy subjects and 50 ovarian cancer patients were recruited. The levels of various cytokines were determined in sera and ovarian cancer tissues using a Th1-Th2 human cytokine array. The usefulness of TNF α , IFN γ , TNF α /IL-4, and IFN γ /IL-4 for ovarian cancer diagnosis was assessed based on receiver operating characteristic (ROC) curves. The relationship between the TNF α /IL-4 level and survival time was investigated based on a survival curve. In the ovarian cancer patients, the levels of Th1 factors (IL-2, IFN γ ,

TNF α , and IL-13) increased significantly in the sera, and IFN γ and TNF α increased significantly in the ovarian cancer tissues. The levels of Th2 factors (IL-5 and IL-6) increased in the sera, but the level of IL-6 decreased significantly in the ovarian cancer tissues. Serum TNF α /IL-4 and IFN γ /IL-4 levels increased significantly in the peripheral blood of the ovarian cancer patients. ROC curve analysis revealed that TNF α , IFN γ , TNF α /IL-4, and IFN γ /IL-4 levels are useful for ovarian cancer diagnosis, with area under the curve values of 0.831, 0.753, 0.846, and 0.803, respectively. The TNF α /IL-4 level in the ovarian cancer patients was positively correlated with survival time, and the Th1-Th2 balance shifted toward Th1 in the ovarian cancer patients. The TNF α /IL-4 ratio might be useful for the diagnosis and prognosis of ovarian cancer.

Key words: Ovarian cancer; Th1-Th2 balance; Survival curve; Cytokine array