

Study of Indoleamine 2,3-dioxygenase Expression in Patients of Breast Cancer

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Background

Indoleamine 2,3-dioxygenase (IDO) is activated by interferon- γ and is the rate-limiting enzyme for tryptophan catabolism-mediated immune regulation. The up-regulation of and expression and production of the Th1-type cytokine, interferon- γ , by T-cell can result in increased expression of IDO by non-T-cells. IDO production by syncytiotrophoblasts, macrophages, and dendritic cells has recently been demonstrated to result in the inhibition of T cell proliferation due to tryptophan depletion by this enzyme.

Objective

To investigate the role of IDO in cancer patients, we evaluated the clinical significance of IDO in breast cancer patients.

Methods

Operative specimens obtained from 30 patients with breast cancers were investigated by semiquantitative RT-PCR with specific primers against IDO. The correlations among IDO expression, clinicopathologic factors and prognosis were studied.

Results

The expression of IDO was observed in 100%, both of the cancer specimens and the non-cancer specimens. The IDO expression of the cancer specimens were higher than the non-cancer specimens. The expression of IDO did not correlate to histologic classification, tumor size, lymphatic invasion, venous invasion, lymph nodes metastasis, but correlated to clinical stage. But the expression of IDO levels were correlated with the serum level of immunosuppressive acidic protein (IAP). There were no correlation for survival rate after surgery between the high IDO level group and the low one. The serum IDO levels of cancer patients were higher than that of healthy volunteer measured by semiquantitative RT-PCR and HPLC.

Conclusions

It is suggested that the expression of IDO in breast cancer patients may play critical role for immunosuppression of those patients.