The expression intensity of IL-21 in T cells shows reverse correlation with lymph node metastasis and cancer stage in breast cancer

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As a pleiotropic cytokine, Interleukin-21 (IL-21) can exert various anti-tumor and pro-tumorigenic effects through binding to its receptor (IL21receptor or IL21R). This cytokine plays an important role in the interconnection between T and B cells in the tumor-draining lymph nodes (TDLNs). As it has been shown that the immune profile of the TDLNs is influenced by the tumor, herein, we investigated the changes in the expression of IL21 and its receptor respectively on CD4⁺ and CD19⁺ lymphocytes in 45 breast TDLNs during cancer progression. To evaluate IL21 production in CD4⁺ T cells, we shortly stimulated cells with PMA/Ionomycin, whereas unstimulated cells were used to assess IL21R expression on B cells. Results showed that the frequency of IL-21+CD4⁺ T cells was 4.2±3.1%, without significant associations with disease parameters. However, the expression intensity of this cytokine was higher in patients with lower grades (I+II) compared with higher grade (grade III, P=0.042), and showed a reverse correlation with the number of involved LNs. Moreover, IL21 was more intense in the non-metastatic lymph nodes of patients with stage II than stage III (P=0.038). The frequency of IL21R+CD19⁺ cells was 41.2±20.4%, and showed association with higher grade (P=0.037). In conclusion, the more intense expression of IL-21 in CD4⁺ T cells showed associations with good prognostic markers such as lower grades and stages as well as less involved lymph nodes. Therefore, it may play a positive role in immunity against breast cancer. However, the higher frequency of IL21R-expressing B cells had an association with a poor prognosticator. More investigation is required to understand the role of IL-21 in immunity against breast cancer.

Keywords: IL-21, IL-21R, Tumor-draining lymph node, Breast cancer

Biography:

Atri Ghods is a research assistant at Shiraz Institute for Cancer Research, where she works in a lab supervised by Prof. Abbas Ghaderi and Dr. Fereshteh Mehdipour. She was graduated from university with a master's degree in Medical Immunology. Her main research area is the characterization of adaptive immune responses formed in tumor-draining lymph nodes, and their changes during cancer progression. She has gained expertise in various cellular and molecular biology techniques, and as a young researcher, she is interested to expand her knowledge in different areas of tumor immunology.