

Understanding the molecular mechanism that regulate inflammation and tumor progression

ABSTRACT

The study was dedicated toward the investigating and characterizing the immunosuppressive T cell especially T Regulatory cells (Tregs). These specialized subpopulation of the T cells are found to suppress immune response by maintain the immune homeostasis. High levels of Tregs in the tumor microenvironment are associated with poor prognosis in various cancers indicating that Tregs suppress T-effector cells and hinder the body immune system against the cancer. We investigated the effects of Tregs associated markers and its allied soluble factors on the cancer cells conditioned media (CM) from cancer cell lines on human peripheral blood mononuclear cells (PBMCs) and further examined the head and neck carcinoma patient samples and breast carcinoma patient samples (blood and tissue). We analysed the Tregs associated markers such as, Foxp3, Helios, Neuropilin-1 (Nrp-1), Glycoprotein A repetitions predominant (GARP), CD127, IL-2, IL-6, IL-10, TNF- α , IFN- γ , and TGF- β . The soluble factors in CM of cancer cells could have triggered a systematic immune response in the immune cells. Further analysed upon the head and neck carcinoma (HNC) patient's and breast carcinoma patient's samples. Our findings emphasize that the Helios and Neuropilin-1 could be potent markers in elucidating the subsets of Tregs and to identify the specific Tregs subsets. The association of these soluble factors play a major role in defining the role of Tregs in the immune microenvironment. Expression of Tregs in HNC patients were high compared to the expression levels found in breast carcinoma samples suggesting high infiltration of Tregs associated factors. Inflammation also elicits specific response by attracting soluble factors. Tregs are found high in circulatory blood and infiltrate into tumor tissues associated with poor prognosis in cancer patients. This can be achieved by further understanding the molecular mechanism and decoding the subsets of Tregs could help further in unveiling the potential strategy for targeting human cancers.