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Clinical relevance of CD70-CD27 axis in tumor microenvironment of patients with colorectal cancer

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Immune checkpoint molecules like CD70 provide a better knowledge of the tumor microenvironment. Some of the B and T lymphocytes express CD70 and it has a co-stimulatory factor on immune cells. When CD27 binds to its ligand (CD70), tumor cells can avoid detection by the immune system. We aimed to analyze the expression profiles of CD70, CD27, CD3, and FOXP3 molecules in the tumor microenvironment of colorectal cancer patients and the recruitment of tumor-infiltrating lymphocytes. We also investigated if soluble CD27 has any predictive diagnostic value for tracking cancer. A western blot wet transfer technique was used to examine the expression profile. ELISA was used to determine the amount of soluble CD27 protein in the patient's sera. CD70 expression was found to be low (15.15%) in tumoral tissue, whereas CD27 was abundant (84.80%). Tumoral tissues had high recruitment of CD3+ lymphocytes (81,80%) and FOXP3+ Tregs (48.50%). According to our findings, the level of sCD27 in patient's serum was high (P<0.0001), and there clear correlations between high sCD27 serum levels with CD70 positive and CD27 negativity in tumoral tissues. Distant organ metastases were found to be significantly correlated with high sCD27 serum levels (P=0.05). Dysregulation of the CD70-CD27 axis within the tumor and its microenvironment is associated with tumor progression and immunosuppression. Tightly controlled expression of CD70 and CD27 plays a role in co-stimulation in immune responses.

Keywords: Cancer immunology, ELISA assay, Immune checkpoints, Immunosuppressive mechanisms, Tumor-infiltrating lymphocytes, Western blot analysis