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Harnessing the immune system for the treatment of breast cancer

乳腺癌的免疫调节治疗

Key words: Breast cancer, Chronic inflammation, Protumorigenic immune cells, Therapeutic vaccines, Immunotherapy

关键词： 乳腺癌；慢性炎症；促癌免疫细胞；治疗性疫苗；免疫治疗

1. The immune system can kill breast cancer cells by immunosurveillance

2. The immune system can also promote breast tumor growth by establishing an immunosuppressive tumor microenvironment

3. Main immunosuppressive cells found in breast tumors include macrophages, T regulatory (Treg) cells, myeloid-derived suppressor cells (MDSCs) and Th17 cells.

4. Chronic inflammation of the breast tumor is promoted by proinflammatory cytokines and chemokines such as IL-6, IL-1, IL-8, TNF-α, MCP-1, CCL5 and CXCL12; and immunosuppressive molecules such as TGF-β, IL-10 and PGE2.

4. Protumorigenic chronic inflammation enhances breast tumor growth and metastasis by directly acting on tumor cells, facilitating recruitment and activation of suppressive immune cells and suppressing antitumor effector cells

6. The ultimate goal of an effective immunotherapy is to boost the antitumor immunity of effector cells and to neutralize tumor-promoting chronic inflammation

7. Novel targets for breast cancer immunotherapies include: depletion or reprogramming of suppressive immune cells, neutralization of proinflammatory mediators, inhibition of immune checkpoints and immunosuppressive factors, and therapeutic vaccines

中文概要：

* 本文题目：乳腺癌的免疫调节治疗

Harnessing the immune system for the treatment of breast cancer

* **研究目的：**这篇综述主要阐述了免疫系统在乳腺癌发生、发展和转移过程中的双向作用，以及乳腺癌的最新免疫治疗方法。

* **重要结论：**免疫系统能够杀灭肿瘤细胞，但是由于肿瘤导致的慢性炎症反应却可以促进肿瘤生长和转移。因此，乳腺癌免疫调节治疗包括增强抗肿瘤免疫细胞功能、肿瘤疫苗、去除抑制性免疫细胞或者抑制性细胞因子、抑制免疫抑制信号。

* **关键词组：**乳腺癌；慢性炎症反应；促肿瘤发展免疫细胞；肿瘤疫苗；免疫治疗