Cross-talk between tumor microenvironment and the immune system

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The tumor microenvironment affects angiogenesis by interfering with signaling pathways required for adequate construction. The abnormal microvasculature requires production of VEGF and MMPs, and these secreted in excess mediate the production of Pericytes. TGF-β, secreted by the tumor, inhibits function and induces function or expression of EGFR. Adhesion molecules such as ICAM and VCAM are upregulated by VEGF and MMPs.

Activated fibroblasts promote angiogenesis via expression of SDF-1. Tumor cells also express CXCR4, the receptor for SDF-1, allowing for tumor cell recruitment and proliferation. These fibroblasts secrete growth factors and cytokines that produce oncogenic signals.

Fibroblasts and myofibroblasts are stromal cells that are abnormal, but not malignant, and promote angiogenesis and extracellular matrix composition. Stromal cells generate both tumor enhancing and suppressing signals. CAF’s and TAMs are involved in differentiating between pro-inflammatory and anti-inflammatory signaling pathways.

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