

The Impact of Adipose Tissue on Tumor Progression

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Abstract

The past few years have provided substantial evidence for the vital role of the local tumor microenvironment for various aspects of tumor progression. With obesity and its pathophysiological sequelae still on the rise, the adipocyte is increasingly moving center stage in the context of tumor stroma-related studies. To date, we have limited insight into how the systemic metabolic changes associated with obesity and the concomitant modification of the paracrine and endocrine panel of stromal adipocyte-derived secretory products (“adipokines”) influence the incidence and progression of obesity-related cancers. This talk focuses on the role of FAM3 metabolism-regulating signaling molecule C (FAM3C), produced by cancer-associated adipocytes (CAAs), as a key regulator of tumor progression. Elevated FAM3C levels in CAAs contribute to the formation of tumor-supportive niches and are tightly associated with metastatic growth, indicating that inhibiting FAM3C could be beneficial for treating patients with breast cancer. Additionally, we discuss the role of adipose tissue extracellular matrix proteins, Type VI collagen and its cleavage peptide endotrophin, associated with obesity and its potential impact on endometrial cancer biology- one of the cancers most strongly linked to obesity. In summary, understanding the integrative molecular mechanisms to unravel the mystery behind a tight association of obesity with cancer risk is crucial to develop better therapeutic strategies to treat patients with metabolic disease and cancer.