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"Cartilage oligomeric matrix protein and colorectal cancer"

Cartilage oligomeric matrix protein, a member of the thrombospondin family of proteins, has been shown to be elevated in several types of cancer, including colorectal. Serum levels of the protein have been found to be positively correlated to the stage and differentiation of colorectal cancer tumors. Several studies have explored the mechanisms by which this cancer-associated fibroblast product impacts the progression of the disease. This review summarizes the relevant findings on the effect of the protein on proliferation, apoptosis, the epithelial-mesenchymal transition, and the immune system in colorectal cancer.

Cartilage oligomeric matrix protein overexpression has been found to be positively correlated to the rate of growth of colorectal cancer cells. The increase in growth has been found to be increased due to aberrant stimulation of the PI3K/Akt axis, which results in increased signaling for growth in colorectal cancer. The protein has also been found to decrease rates of apoptosis in colorectal cancer cells, though the exact mechanism in colorectal cancer remains unclarified. Cartilage oligomeric matrix protein has also been found to enhance the epithelial-mesenchymal transition in colorectal cancer by increasing the expression of the protein TAGLN, along with several other markers of a mesenchymal phenotype, and of several matrix metalloproteinases, which are essential for remodeling the extracellular matrix. Further, the protein has been shown to aid in immune suppression in colorectal cancer by increasing the M2 macrophage phenotype and decreasing T cell entrance into the tumor microenvironment. Further studies should focus on clarifying the molecular mechanisms by which cartilage oligomeric matrix protein influences colorectal cancer and investigate mechanisms confirmed in other cancers to promote malignancy.