Co-Expression of CD34, ERß, and GPER in Breast Cancer: An Immunofluorescence Analysis of Tumor–Vascular Interactions

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Breast cancer progression is influenced by estrogen receptor signaling and tumor angiogenesis, yet the biological association between these pathways remains incompletely understood. The purpose of this study was to evaluate the co-expression of CD34, ERß, and GPER in human breast cancer tissue specimens. By examining these markers concurrently, this study aimed to explore whether hormonal signaling components are associated with angiogenic activity within tumor samples. Formalin-fixed, paraffin-embedded breast cancer specimens (n = 6) were processed for triple immunofluorescence staining. Sections were incubated with primary antibodies against CD34, ERß, and GPER, followed by species-specific fluorescent secondary antibodies. Slides were mounted and examined using fluorescence microscopy. Expression patterns were evaluated based on staining presence, relative intensity, and observable co-expression within tumor regions. All six specimens demonstrated detectable CD34-positive microvascular structures. Four specimens showed moderate to high CD34 expression, whereas two showed low CD34 expression. GPER expression was observed in the majority of samples, with moderate to strong staining in tumor cells in five specimens. ERß expression showed consistent medium to high expression among all the specimens. Unusually high co-expression of medium to high ER beta and GPER was noticed in 5 out of 6 specimens. These findings suggest that estrogen receptor signaling components may be biologically associated with angiogenic features in breast cancer. The observed co-expression patterns support further investigation into the interaction between endocrine pathways and tumor vascular biology, with potential implications for combined therapeutic targeting strategies.

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