Differential Expressions of Wnt Pathway Proteins of Colorectal Carcinoma Metastases to Liver versus Lung

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Isolated liver and lung metastases in colorectal carcinoma are both stage IVA. However, not all stage IV tumors are the same. The lungs act as a waypoint for further metastatic spread, suggesting more aggressive progress, so it is important to differentiate them. This study investigates the relationship between Beta Catenin and E-cadherin, two proteins from the Wnt signaling pathway, and the site of metastasis of colorectal carcinomas. Formalin-fixed paraffin-embedded tissue from 27 colon carcinomas, 15 that metastasized to the liver and 12 that metastasized to the lung, were collected. Protein was extracted from the tissue for Western blot evaluation, but protein yields were insufficient. Next, slides of each case were immunohistochemically stained with beta-catenin and e-cadherin and evaluated for staining distribution and intensity. The average staining intensity for the beta-catenin in cases of the liver and lung metastases was 2.58 and 2.79, respectively (p-value 0.2597). The average staining intensity of the E-cadherin in cases of the liver and lung metastases was 2.0 and 1.77, respectively (p-value 0.1344). Neither was statistically significant. However, there was a statistically significant relationship of the proportion of cases with abundant nuclear staining to the site of metastasis. (p-value of 0.0211). There is a clear relationship between the presence of abundant nuclear staining and metastasis to the lung over the liver. This suggests that beta-catenin's appearance in the nucleus could be promoting a more aggressive behavior. Beta-catenin could be used as a biomarker when diagnosing these cancers.

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