SOX2 expression correlates with lymph-node metastases and distant spread in right-sided colon cancer.

The transcription factor SOX2, which is involved in the induction of pluripotent stem cells and contributes to colorectal carcinogenesis, is associated with a poor prognosis in colon cancer (CC). Furthermore, SOX2 is a repressor of the transcriptional activity of β-catenin in vitro. Since the majority of CC develop via an activation of the Wnt/β-catenin signalling pathway, indicated by nuclear expression of β-catenin, we wanted to investigate the expression patterns of SOX2 and β-catenin and correlate them with the occurrence of lymph node and distant metastases as indicators of malignant progression. The expression of SOX2 and β-catenin was investigated in a case control study utilizing a matched pair collection (N = 114) of right-sided CCs with either corresponding distant metastases (N = 57) or without distant spread (N = 57) by applying immunohistochemistry. Elevated protein expression of SOX2 significantly correlated with the presence of lymph node- (p = 0.006) and distant metastases (p = 0.022). Nuclear β-catenin expression correlated significantly only with distant metastases (p = 0.001). Less than 10% of cases showed a coexpression of high levels of β-catenin and SOX2. The positivity for both markers was also associated with a very high risk for lymph-node metastases (p = 0.007) and distant spread (p = 0.028). We demonstrated that increased expression of either
SOX2 or nuclear β-catenin are associated with distant metastases in right-sided CC. Additionally, SOX2 is also associated with lymph-node metastases. These data underline the importance of stemness-associated markers for the identification of CC with high risk for distant spread.