Nucleostemin immunohistochemical expression is associated with more aggressive phenotypes of invasive breast cancer

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Cancer stem cells (CSCs) are postulated to play significant role in the pathogenesis and progression of breast cancer, among several other cancers, and might contribute to resistance to chemotherapy and/or radiotherapy. Nucleostemin (NS) is thought to be a key molecule for stemness, and the clinical impact of NS immunoreactivity in breast cancer can indicate its actual role and future therapeutic potentials. In the current study, NS immunohistochemistry was performed on purchased TMA sections of 102 patients in addition to a series of 50 archival specimens of invasive breast cancer diagnosed in Al Baraha Hospital, Dubai, UAE. Ns expression was predominantly exhibited in patients <50 years (p=0.047), in infiltrating duct carcinoma, tumors >2 cm (74.8%) (P=0.0005), those with lymph node metastasis (79%) (p=0.018) and stage III tumors (83%) (p=0.0004). Notably, NS expression was significantly correlated to ER negative (75%) and P53 positive (78%) status. Moreover, HER2 – enriched tumors significantly displayed the highest NS expression, followed by TNBC, Luminal B and Luminal A (80%, 73%, 60% and 51% respectively) (p=0.048). In conclusion, the significant correlation between NS expression and the more aggressive clinicopathological attributes of invasive breast cancer implies that NS may be a potential target for CSC-associated breast cancer management.

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