

Association of SPARC gene polymorphisms rs3210714 and rs7719521 with VEGF expression and utility of Nottingham Prognostic Index scoring in breast cancer in a sample of Egyptian women

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Abstract

Breast cancer is the most common malignancy in women. To our knowledge, there is no single study conducted on the role of secreted protein acidic and rich in cysteine (SPARC) gene polymorphism in breast cancer risk or prognosis. The present study aims to investigate the probable role of SPARC genetic polymorphisms in development of breast cancer; their correlation with immunohistochemical expression of VEGF; and their association with breast cancer prognosis in the Egyptian population. The study sample included 238 Egyptian females who were divided into two groups: breast cancer group (118 patients) and healthy control group (120 subjects). SPARC gene single nucleotide polymorphisms rs3210714 and rs7719521 were genotyped. Allelic and genotypic frequencies were determined in both groups and association with ductal breast carcinoma, clinicopathological and prognostic characters were determined. For SPARC rs3210714, a significant difference was observed in the codominant model and both A and G alleles' frequencies between breast cancer patients and control group ($P < 0.001$). For rs7719521, a significant difference in codominant and dominant models as well as in both A and C alleles' frequencies between breast cancer and control groups ($P < 0.001$) was observed. A significant relation was found between SPARC rs3210714 and rs7719521, and immunohistochemical expression of VEGF ($P = 0.046$ and $P = 0.027$, respectively). SPARC rs7719521 showed a significant association with Nottingham Prognostic Index (NPI) ($P = 0.032$). The present study revealed that SPARC rs3210714 and rs7719521 polymorphisms are

associated with breast cancer risk and its prognosis. Therefore, these SNPs may be useful in predicting the increased risk of breast cancer.