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Role of osteopontin and its rs11730582 gene polymorphism in breast cancer

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Abstract

Background: Osteopontin (OPN) is an extracellular matrix protein of the integrin family that is involved in several biological pathways. Genetic polymorphisms in OPN gene has been found associated with many types of cancer.

Aims: In this investigation, we aimed to study the possible role of OPN and its rs11730582 C/T single nucleotide polymorphism (SNP) in patients with breast cancer.

Methods: OPN plasma levels were measured by ELIZA and OPN rs11730582 was genotyped by Taqman genotyping assay in 60 breast cancer patients and 60 healthy controls.

Results: Obtained results revealed a significant increase in plasma OPN levels in the patients compared to the controls (mean ± SD was 194.8 ± 43 in patients *versus* 80.6 ± 34.7 in controls, $P < 0.0001$). OPN plasma level was affected by rs11730582 genotype and the hormones receptors status of the tumor ($P < 0.05$), while, no effect of the stage, grade or histological type of the tumor on OPN plasma level was found. The distribution of OPN rs11730582 genotypes differed significantly in the patients compared to controls, TT-genotype was significantly higher in breast cancer patients ($P < 0.05$) and was associated with elevated OPN levels. In addition, rs11730582 genotypes distribution was associated with tumor grade and hormones receptors status. Multivariate analysis revealed that plasma OPN levels and OPN rs11730582 C/T SNP genotypes distribution were associated with breast cancer after adjustment of other variables. ***Conclusion:*** In conclusion, OPN and its rs11730582 SNP were implicated in breast cancer in our study.

Key words: breast cancer, gene polymorphism, osteopontin

1. Introduction

Breast cancer is the most common cancer in women. Breast cancer has been found to occur in about 15% of women during their lifetime (Xiaoxian et a1, 2017). Genome-wide association studies (GWAS) have identified several SNPs that contribute in breast cancer risk (Bayraktar et al, 2013).