Gene polymorphism of matrix metalloproteinases 3 and 9 in breast cancer

Naglaa Raafat AbdRaboh, Fatehia Ali Bayoumi

PII: S2452-0144(16)30085-1
DOI: doi: 10.1016/j.genrep.2016.10.007
Reference: GENREP 86

To appear in: *Gene Reports*

Received date: 21 June 2016
Revised date: 10 October 2016
Accepted date: 17 October 2016

Please cite this article as: AbdRaboh, Naglaa Raafat, Bayoumi, Fatehia Ali, Gene polymorphism of matrix metalloproteinases 3 and 9 in breast cancer, *Gene Reports* (2016), doi: 10.1016/j.genrep.2016.10.007

Gene Polymorphism of Matrix Metalloproteinases 3 and 9 in Breast Cancer

Naglaa Raafat AbdRaboh[1, 3], Fatehia Ali Bayoumi[2].
[1]Biochemistry, 2Pathology, Dubai Medical College, Dubai, United Arab Emirates,
[3]Department of Medical Biochemistry, Ain Shams Faculty of Medicine, Cairo, Egypt

Abstract:

Background: Genetic factors have a considerable influence on the development and progress of malignancy. Matrix metallo-proteinases (MMPs) are a group of proteolytic enzymes which are proved to be involved in pathogenesis of breast cancer. Some functional single nucleotide polymorphisms (SNPs) affect the transcriptional activity of genes of MMPs. We aimed to investigate the possible association of 2 SNPs, C/T polymorphism of MMP9 gene, and 5A/6A polymorphism of MMP3 gene, with the occurrence and pathological criteria of breast cancer. **Subjects and methods**: The present case control study included 59 breast cancer female patients, and 77 tumor free age matched control females. The SNPs were genotyped using polymerase chain reaction - restriction fragment length polymorphism assay. **Results:** The results have shown higher frequency of T allele of C/T MMP9 and 5A of A5/A6 MMP3 in breast cancer patients as compared to control subjects with odd ratio (OR) of 1.8 (95% CI1.02 – 3.26) and 1.2 (0.71 – 1.89), respectively. Moreover, combined 5A and T alleles had a higher risk with OR of 2.3 (1.17 – 4.57). When the frequency of both alleles was analyzed in comparison to prognostic pathological parameters of the disease , there was a significant association of T allele of C/T MMP9 with advanced tumor size and histological grade with OR (95%CI) 2.5 (1.12 – 5.64) and 1.8 (0.78 – 4.17) respectively. **Conclusion**: the results suggested that T allele of C/T MMP9 gene polymorphism is strongly linked to the incidence, growth and differentiation of breast cancer.