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Molecular Highlighting Analysis of Mutational BRCA1- and BRCA2- Gene Products in Association with Human Mammary Tumor Virus Infection in Tissues from Iraqi Women with Breast Carcinomas

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Abstract:Background: The most common cancer worldwide among women is breast cancer.Both internal and external factors have resulted in initiation, promotion, and progression, among themrace and, to an even greater extent, viruses are influencing development of this complex multifactorial genetic-breast disease. Unsurprisingly, mutations in brca1 and 2 genes and complete loss of the function of their either proteins leads to a dramatic increase in genomic instability and a significant increase in the lifetime risk of developing breast cancer.The higher detection of hormone response elements in the HMTV Long-Terminal-Repeat (LTR) in gestational breast cancers suggests a mechanism for association of HMTV with this hormonally- responding tissues.

Objective: To analyze the impact of concordant BRCA 1& BRCA 2 expression as well as HMTV infection on breast tissues from a group of Iraqi patients diagnosed with different breast lesions.

Patients and Methods: A total number of 60 tissue specimens were examined for HMTV-envelope and BRCA 1&2 genes expression. Those samples belonged to 30 patients diagnosed with breast cancer (BC) . The remaining specimens were obtained from healthy breast tissues of 30 females. Detection of HMTV was done by ultrasensitive version of in situ hybridization method whereas immunohistochemistry detection system was used to demonstrate the expression of BRCA 1&2 genes.

Results: Detection of HMTV envelope gene-ISH reaction in tissues with BC was observed in 13 out of 30 (43.3%). No HMTV envelope gene -positive ISH reaction was detected among all the examined healthy breast tissues in the control group. The difference between the percentages of HMTV detection in tissues BC and control groups was statistically highly significant (P value = <0.0001).

Positive BRCA- 1& BRCA-2-immunohistochemical (IHC) reactions were observed in 56.7 % and 46.7% in BC tissues, respectively.

Conclusions: The significant detection of HMTV along with BRCA- 1& BRCA-2genes expression production breast cancer patients are supporting the hypothesis of an etiologic roles for that virus along with mutated and / or defected BRCA 1&2 genes in breast cancer development.

Key words: Breast Cancer, HMTV,in situ hybridization, BRCA 1&2 ,immunohistochemistry.

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