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ASSOCIATION OF TUMOR SUPPRESSOR GENE CHEK2 1100DELC MUTATION WITH BREAST CANCER IN IRAQI WOMEN

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ABSTRACT : CHEK2 a tumor suppressor gene it promotion of malignancy when loss its function. They are generally adverse director of growth or other roles that might affect metastatic and invasive potential, such as regulation of protease activity and cell adhesion. These germ-line mutations occur in tumor suppressor genes. Such genes can harbor sporadic acquired somatic mutations, in spite of hereditary deformities counting for a smaller of breast cancer cases. Present Study included two groups of samples, The first group contained blood samples that acquired from 16 women distinctly healthy women who were relatives to the breast cancer patients. The second group contained control blood samples acquired from 34 apparently healthy women. The ages of relatives group were (34.81± 15.02) years with a range of 19-70 years, while the age of control group blood samples were (38.77 ± 18.22) years with a range 21-91years. CHEK2 1100delC tumor suppressor gene mutations were examined, was valued by mutagenically isolated, polymerase chain reaction and analyzed by RFLP.

The results show that CHEK2 1100delC mutation valuation demonstrated an amplicon of 116 bp size, exhibited 2 fragments with sizes of 92 bp and 24 bp for the wild type by digestion of this amplicon with Sca I enzyme.Data analysis showed that there is no 1100delC mutation in CHEK2 tumor suppressor gene in both groups relatives and control. There is no risk factor for breast cancer of 1100delC mutation in CHEK2 tumor suppressor gene in Iraqi women.

Key words : 1100delC, breast cancer, CHEK2 tumor suppressor gene, RFLP.

INTRODUCTION

Breast cancer begins in the cells of the breast after develop uncontrolled that is a malignant tumor, which is a collection of cancer cells that can invade neighboring tissues or extent to far regions of the body. The disease occurs totally in females, but males may develop it, else (ACS, 2011).

Worldwide, breast cancer is the maximal communal cancer among women, cover around twenty-three percent of the female cancers. Moreover, it is the significant reason of cancer- related deaths in little-origin kingdoms (Anderson Benjamin *et al*, 2008; IARC, 2010). While large enhancement in the life from this disease has been stated in height- issue republics, the threat proceeds to rise and mortality rates in mid- and little-income countries remain high (IARC, 2010). Expecting that the major growth in cancer rate in the following fifteen years international is possible to be in the Eastern Mediterranean Region (EMR), anywhere breast cancer is stated as the public kind of woman malignancy in most of national cancer records (IARC, 2010; Rastogi *et al*, 2004).

In Iraq, the breast cancer is counting for nearly 1/3 of the recorded woman cancers agreeing to the newest Iraqi Cancer Registry which demonstrated a development of the disease to affect younger women and breast cancer rating the first amongst the public malignancies amongst all the people (ICB, 2010).

The increasing problem of breast cancer in the EMR in over-all and Iraq in specific, highlights the critical requirement to institute complete national cancer control programs, like those advanced by the World Health Organization (WHO), hope to improve the management programs and lower the rate of death (WHO, 2010).

CHEK2 gene (tumor suppressor gene) is located on the chromosome 22 at position 12.1 (NLM, 2015). The expression of *CHEK2* gene yield a tumor suppressor protein [checkpoint kinase 2 (CHK2)] which is serine threonine kinase, this protein composed from 543 amino acids (Cai *et al*, 2009). The main function of *CHEK2* gene is DNA repair. If the DNA is damaged, the *CHEK2* gene act as DNA repairer through activates apoptosis