

Cyclin D1 gene polymorphism in Egyptian breast cancer women

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ABSTRACT:**Background:**

Cyclin D1, a key regulator of G1 to S phase progression of the cell cycle, is strongly established as an oncogene with an important pathogenetic role in many human tumors; therefore any genetic variations that disturb the normal function of this gene product is ultimately a target for association with cancer risk and survival. Cyclin D1 silent mutation (G870A) in the splicing region of exon-4 enhances alternative splicing, resulting two CCND1 mRNA transcripts variant [a] and [b], in which transcript b has a longer half-life. It has been deduced that G870A polymorphism of the CCND1 gene may play a role in tumorigenesis. The aim of our study was to investigate the influence of CCND1 genotypes on the genetic susceptibility to breast cancer in Egyptian population.

Patients and Methods:

80 newly diagnosed females representing Egyptian population confirmed breast cancer patients and 40 healthy controls were included in the study. Single nucleotide polymorphism (SNP) in CCND1 (G870A) was determined in these samples by polymerase chain reaction- restriction fragment length polymorphism (PCR-RFLP).

Results:

The frequencies of AG, AA genotypes between patients group and the healthy control group have shown a significant difference at ($p=0,009$). Subjects less than 45 years of age with AA genotype were at decreased risk (odds ratio 0.438, 95% confidence interval 0.251-0.763) and postmenopausal subjects with AA genotype were at increased risk of developing breast cancer (odds ratio 5.056, 95% confidence interval 1.239-20.626). We found that breast cancer females carrying A allele had longer DFS than did patients with GG genotype ($p=0,001$).

Conclusion:

This study provides the first indication that CCND1 870A alleles (AA/AG genotypes) are risk factors for breast cancer susceptibility in Egyptian women. Thus analysis of CCND1 G870A polymorphism may be useful for identifying females with higher risk to develop breast cancer.

Keywords:

Breast Cancer, Cyclin D1, Polymorphism, Egypt