Association of the tumor necrosis factor-alpha -308G>A polymorphism with breast cancer in Mexican women

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Received November 24, 2012
Accepted February 4, 2013
Published November 18, 2013
DOI http://dx.doi.org/10.4238/2013.November.18.17
ABSTRACT. The tumor necrosis factor-alpha (TNF-α) gene plays an important role in cell proliferation, differentiation, apoptosis, lipid metabolism, coagulation, insulin resistance, and endothelial function. Polymorphisms of TNF-α have been associated with cancer. We examined the role of the -308G>A polymorphism in this gene by comparing the genotypes of 294 healthy Mexican women with those of 465 Mexican women with breast cancer. The observed genotype frequencies for controls and breast cancer patients were 1 and 14% for AA, 13 and 21% for GA, and 86 and 65% for GG, respectively. We found that the odds ratio (OR) for AA genotype was 2.4, with a 95% confidence interval (95%CI) of 5.9-101.1 (P = 0.0001). The association was also evident when comparing the distribution of the AA-GA genotype in patients in the following categories: 1) premenopause and obesity I (OR = 3.5, 95%CI = 1.3-9.3, P = 0.008), 2) Her-2 neu and tumor stage I-II (OR = 2.5, 95%CI = 1.31-4.8, P = 0.004), 3) premenopause and tumor stage III-IV (OR = 1.7, 95%CI = 1.0-2.9, P = 0.034), 4) chemotherapy non-response and abnormal hematocrit (OR = 2.4, 95%CI = 1.2-4.8, P = 0.015), 5) body mass index and Her-2 neu and III-IV tumor stage (OR = 2.8, 95%CI = 1.2-6.6, P = 0.016), and 6) nodule metastasis and K-I67 (OR = 4.0, 95%CI = 1.01-15.7, P = 0.038). We concluded that the genotypes AA-GA of the -308G>A polymorphism in TNF-α significantly contribute to breast cancer susceptibility in the analyzed sample from the Mexican population.

Key words: -308G>A; Tumor necrosis factor alpha; Risk factor; Obesity; Breast cancer; Mexican population