

Association between EGF and VEGF functional polymorphisms and sporadic colorectal cancer in the Malaysian population

Abstract

Growth factors are polypeptides that are critical for the initiation, progression, and metastasis of cancer. Most tumor cells are capable of synthesizing particular growth factors leading to constitutive pathway activation in these cells through autocrine signaling. Epidermal growth factor (EGF) is a potent mitogenic peptide that exerts direct effects on the proliferation and differentiation of tumor cells in carcinogenesis. By contrast, vascular endothelial growth factor (VEGF) is vital for the invasion and metastasis of neoplasms through the formation of new blood vessels from mature endothelial cells. In this study, we investigated the association between functional polymorphisms of both the EGF and VEGF genes and colorectal cancer (CRC) susceptibility. A total of 130 CRC patients and 212 healthy controls were recruited for this case-control study. Genotyping of genetic variants was conducted via real-time polymerase chain reaction (PCR) amplification with allele specific TaqMan probes. None of the genotypes of the EGF +61 A>G and VEGF +936 C>T variants was significantly associated with CRC susceptibility among the Malaysian subjects evaluated ($P > 0.05$). The observed frequency distributions of the EGF +61 A>G polymorphism genotypes showed ethnic heterogeneity, which was not the case for the VEGF +936 C>T genotypes. In conclusion, no positive correlation between these functional polymorphisms and CRC risk was found in this Malaysian population. Studies of the EGF and VEGF genes and CRC susceptibility are scarce, and the results reported thus far differ from one population to another. Hence, more replication studies are warranted before any firm conclusions can be made.