

Mutation in *CNR1* gene and VEGF expression in esophageal cancer

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ABSTRACT

Aims and background. Cannabinoid receptors have an impact on gastrointestinal function, but it remains unknown whether mutations may affect tumor susceptibility in patients with esophageal carcinoma. The aim of this study was to determine mutation in the cannabinoid receptor-1 (*CNR1*) gene and its relation to vascular endothelial growth factor (VEGF) expression as an angiogenic and poor prognostic factor.

Methods. 179 esophageal tissue samples from 69 patients (29 with esophageal cancer and 40 controls) were studied. *CNR1* gene mutation (1359 G → A in codon 453) was detected with PCR, using the *MspI* restriction enzyme. VEGF was determined by immunoassay.

Results. Genotyping in control patients' samples revealed that 24/40 were G/G wild type and 16/40 were G/A; no samples were A/A. Of the 139 tissue samples from the 29 esophageal cancer patients, 15 were G/G homozygous, 85 G/A heterozygous, 11 had an A/A genotype and 28 were without amplification. In the normal tissue adjacent to tumor, some mutations were observed. The overall survival time was reduced in patients with the A/A type in all their 5 samples, in comparison to G/G type ($P = 0.04$, chi-square: 4.26). VEGF expression was higher in tumor than nontumor areas ($P < 0.025$). VEGF expression was not correlated with survival time.

Conclusions. Our preliminary findings in esophageal tissue showed a high frequency of G → A mutation in the *CNR1* gene. No correlation between VEGF expression and gene receptor mutation was found. Patients with mutation in all their samples had a reduced survival time.

Key words: esophageal cancer, cannabinoid receptor-1 gene, mutation, vascular endothelial growth factor.

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