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C3435T polymorphism of the *ABCB1* gene: impact on genetic susceptibility to peptic ulcers

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Abstract:
The functional single nucleotide polymorphism (SNP) C3435T in exon 26 of the *ABCB1* gene encoding the xenobiotic transporter P-glycoprotein (P-gp) may influence susceptibility to several diseases, as well as the clinical outcome of treatment with P-gp substrates. Exposure to environmental chemicals is thought to be involved in peptic ulcer pathogenesis and then later in stomach cancer development. About 80% of ulcers are associated with *Helicobacter pylori* infection, one of the risk factors of stomach cancer. P-gp-transported drugs are used in treatment of *H. pylori*. Therefore, a lack of effectiveness in eradication therapy can lead to chronic stomach inflammation and promote cancerogenesis.
In this study, 196 patients with peptic ulcers divided into two groups with and without *H. pylori* infection and combined with 96 healthy controls were genotyped for the *ABCB1* C3435T SNP. A trend towards higher incidence of the 3435TT genotype among peptic ulcer patients than in controls ($p = 0.0983$) was observed. Likewise, the 3435T allele was more frequent in groups suffering from peptic ulcers. The association was near to statistical significance ($p = 0.0538$). Between analyzed genotypes and *H. pylori* infection, statistically significant dependence was found ($p = 0.0372$). In addition, the CT genotype was associated with 1.56 times and the TT with 2.45 times higher prevalence of infection compared to the CC genotype. A similar association was present in a subgroup of peptic ulcer men ($p = 0.0090$).
The isolated C*3435T ABCB1* SNP is not a major factor for genetic susceptibility to peptic ulcer, but in a group of men who suffered from peptic ulcer, this polymorphism seemed to be a risk factor for *H. pylori* infection development.

Key words:
P-glycoprotein, *ABCB1,* single nucleotide polymorphism, peptic ulcer, *Helicobacter pylori*, susceptibility