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Genetic and morphological aspects of intestinal anastomotic leak development

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ABSTRACT

Aim: To analyze the frequency of polymorphic variants of genes MMP-2 (C^{-1306}→T) and TIMP-2 (G^{303}→ A) in patients with intestinal anastomotic leak and establish the correlation with morphological changes. *Materials and methods*: The object of the study comprises 17 patients with anastomotic leak, who were treated in the Shalimov National Institute of Surgery and Transplantology during 2017-2019. Laboratory, genetic, histological, immunohistochemical studies and statistical analysis were performed. *Results*: As a result of genetic and statistical analysis of matrix metalloproteinase-2 (C^{-1306}→ T) and tissue inhibitors of metalloproteinase-2 (G^{303}→ A) genetic polymorphisms, genotype variants have been identified that are associated with the risk of intestinal anastomotic leak development. Significant differences in the distribution of genotypes in the studied groups were revealed. In immunohistochemical study of tissues with monoclonal antibodies to α-smooth muscle actin revealed uneven focal expression in smooth muscle cells and fibroblast; with monoclonal antibodies to Collagen IV there is a moderate positive expression in the basement membrane of blood vessels, in smooth muscle cells of the muscular layer of the vascular wall, in areas of connective tissue. *Conclusions*: Intestinal anastomotic leak is 1.36 times more common in carriers of homozygous CC genotype of the matrix