

Relevance

It is known that all mechanisms of the wound process have genetic determination. The expression of each reaction depends on variants of the gene structure that regulate this reaction. The individual feature of the gene structure causes differences in the course of the wound process and requires a personalized approach to the choice of treatment tactics



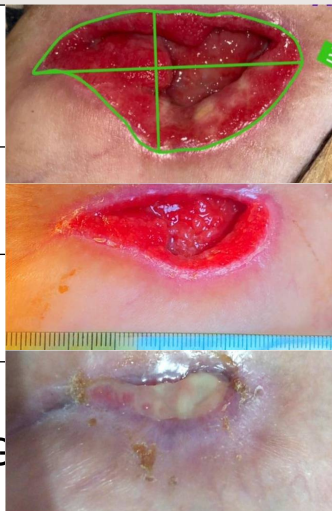
Objective To analyze the association of the 1G/2G-1607 polymorphism of the MMP-1 gene with the nature of wound healing in patients with lower extremity wound

Material and methods

20 patients with lower extremity wounds were examined.

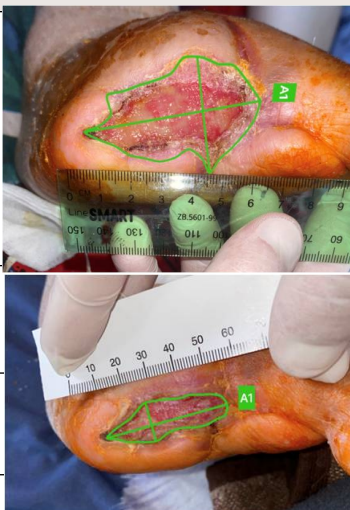
Peroxide oxidation was studied by biochemical and spectrophotometric methods, and the fibrinolytic and proteolytic activity of blood plasma was evaluated. Variants of MMP1 rs1799750 2G/2G, 1G/2G and 1G/1G genotypes were studied using real-time polymerase chain reaction.

The measurement of the wound area was carried out using the "ImitoMeasure" program.



Research results.

Analysis of the association of the 1G/2G-1607 polymorphism of the MMP-1 gene proved that the 2G/2G-11 genotype was most often detected in the examined patients. 1G/1G- 6 patients:, somewhat less often - 1G/2G-3 patients and most rarely - When analyzing the parameters of peroxide oxidation (according to the levels of malonaldehyde, dienes conjugates) it was established that they are most expressed in patients with the 2G/2G genotype, the least with the 1G/2G.



Results 2

The activity of antioxidant protection (according to the parameters of ceruloplasmin) was the lowest in patients with the 2G/2G genotype. This indicates pronounced imbalance between the pro- and antioxidant systems in carriers of this genotype, which contributes to the progression of inflammatory and destructive processes in the wound.



When analyzing fibrinolytic activity, it was found that it was the highest in patients with the 2G/2G genotype, and it was mainly due to non-enzymatic fibrinolysis, which is caused by excessive

activity of matrix metalloproteinases - a complex of enzymes that perform hydrolytic splitting of connective tissue components.



When evaluating the proteolytic activity, cyclical changes in its components at different phases of the wound process were revealed. Thus, in the inflammatory phase, the activity of proteolysis of low- and medium-molecular peptides was the highest in carriers of 1G/1G 1G/2G genotypes. It was the lowest in carriers of the 2G/2G genotype, which leads to a violation of the wound cleaning process and delays the regeneration process. The activity of proteolysis of collagen structures in the regeneration phase in carriers of the 2G/2G genotype was the highest, which contributes to the delay in the formation of fibrous elements of connective tissue and can lead to distortion of its structure. Analysis of the dynamics of the area of the wound surface shows that it was the worst in carriers of the 2G/2G genotype.

Conclusions.

1. One of the leading causes of impaired wound healing is the genetic determination of severity damaging and reparative processes depending on variants of the 1G/2G-1607 polymorphism of the MMP-1 gene.
2. The results of genetic studies can be used to predict the probability of developing wound complications and to develop personalized treatment for such patients.



mito measure Measurement Report

