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NEW METHOD OF TREATMENT OF PURE-HEALING CHRONIC WOUNDS

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The problem of treatment patients with pure-healing chronic wound of different localization remains one of the major one in modern surgery. To improve the treatment of chronic wounds we investigated the effect of microbial biofilms of different density on the main pathogenic links of wounds, since the ability to form the film is an additional factor of pathogenicity of various kinds of microorganisms.

Objective – to study the ability of bacteria excreted from pure-healing chronic wounds to form the biofilm of different density; to determine current density possessing an optimal bactericidal effect on bacteria and able to destruct microbial biofilms.

Qualitative and quantitative microflora content of 148 pure-healing chronic wounds was determined, and inoculation was made no later than 1-2 hours after taking the material. The ability of microorganisms to form pathologic biofilm a on the surface of chronic wounds and biofilm density were examined. Electronic-microscopic examinations of biofilms were performed by means of electrons canning microscope with the energy-dispersing microanalysis system with voltage of 20 000 V and from 20 000 to 30 000 times magnification.

The bacteria isolated from chronic wounds in monoculture were *Escherichia coli* and *Pseudomonas aeruginosa*, in 100% of cases they formed thick microbial biofilms. Bacteria in a mixed composition formed high density biofilms – from 50% to 83,3%, moderate density – from 16,7% to 50,0%, low density – from 10,0% to 13,3%. Bacteria colonizing chronic wounds and excreting from the min monoculture manifest stronger adhesive properties and their exopolysaccharide matrix biofilm is denser, that obviously better protects microbial cells against environmental factors and antimicrobial medicines. The action of direct current electric field with the density of 0,025 mA/cm² did not produce bactericidal effect on cells in the biofilm, although it ruined the biofilm matrix which density became in an average 1,5 times lower. With increase of density to 0.05-0,1 mA/cm² the biofilm matrix was ruined more intensively, its density decreased from high to middle and low. It caused bacterial death due to which their number decreased in a ruined biofilm from 10,7 to 56,4 times ($p < 0,05$).

Ability of microorganisms to form biofilm complicates antimicrobial therapy and determines chronic character of wound process duration. Therefore, treatment of chronic wounds non-healing for a long time should include not only antibacterial therapy directed against infection directly found in the wound defect, but new methods of etiopathogenic influence on the biofilm of an appropriate density formed by microorganisms in the wound. In a comprehensive treatment of chronic wounds intra-tissue electrophoresis with the current density of 0,05-0,1 mA/cm² with antiseptic is recommended to be performed, and antibacterial therapy should be indicated with preliminary detected sensitivity of microorganisms isolated from the wound biofilm to antibiotics and antiseptics.

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PREDICTION AND PRECONDITIONS OF COMPLICATED COURSE OF TRAUMATIC INJURY OF THE LIVER

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Liver injury remains an important and urgent problem of surgery, because it remains a large percentage of cases in the structure of the injury and the development of complications in the postoperative period. Damage of the liver in abdominal trauma is 13,7-25,9% of cases and mortality can reach 28%. Complications after liver injury can reach 14,8-42%.

The study included 40 victims with dominant liver injury (ISS > 16 points), including 29 men (72.5%) and 11 women (27.5%). The average age was 37 ± 8 years. All patients were operated.

Special places in the structure of social problems are traumatic injury, especially polytrauma. This is explained by many factors, among which a special place takes age and gender features. Also note the steady increase in mortality, which is 26% depending on the severity of the injury and mainly 80% are men. A particularly adverse course of traumatic liver injury occupied among the elderly. Also, according to research Major Trauma Outcome Study, found that mortality due to injury among older people three times higher than in people under the age of 55 years, which is associated with plenty complications of abdominal trauma.

Nonspecific immune defense were determined not only to confirm the effectiveness of the proposed algorithm, but also for the analysis of complications depending on the amount and character of damage. So for the damaged of liver the indicators of phagocytosis and CIC had the following character (tabl.).

In complicated traumatic liver injury observed increase in long (more than 72 hours) of middle mass molecules and had multiorgan failure in the postoperative period. Unfavorable factor was the increase in the average molecular weight of more than 210 conventional units over 3 days in patients with liver injury and the development of multiple organ failure was complicated course in 60.5% of cases. Also with prolonged duration of multiple organ failure syndrome (more than 48 hours) were observed changes in nonspecific level of immune defense: index of phagocytic index decreased by (17.9%) and was in the control group (51,88 ± 2,42), the second main group (46,51 ± 3,68).



Table

Dynamic growth and nonspecific resistance of blood and circulating immune complexes in patients with liver injury

Indices	Control group n=15	Postoperative Day				
		1-st n=40	2-nd n=40	5-th n=40	7-th n=40	14-th n=40
Phagocytic index. %	65.14 ±3.48	54.50±4.22 p>0.05	63.65±3.17 p>0.7	64.88±2.86 p>0.9	42.00±2.13 p<0.001	24.08±1.14 p<0.001
Phagocytic number	3.26±0.12	3.00±0.26 p>0.3	2.95±0.23 p>0.2	2.84±0.21 p>0.07	2.42±0.20 p<0.001	1.96±0.10 p<0.001
Index completion of phagocytosis	1.17±0.06	1.59±0.20 p<0.05	1.44±0.20 p>0.1	1.46±0.19 p>0.1	1.29±0.17 p>0.4	0.65±0.17 p<0.01
Circulating immune complexes, units	74.98±2.59	53.60±4.76 p<0.001	93.76±5.57 p<0.01	76.04±6.95 p>0.8	221.60±8.26 p<0.001	189.51±6.81 p<0.001

Thus, as a result of the analysis was performed between the reduction of nonspecific protection and complication after traumatic injury of the liver. Joining postoperative multi organ failure syndrome increases to 35.72% incidence of complicated course of liver trauma. The proposed algorithm allows to improve the prediction of postoperative course and to detect preclinical stage of formation of complicated course.

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POLYMORPHISM N34S OF THE SPINK1 GENE IN UKRAINIAN PATIENTS WITH DIFFERENT FORMS OF ACUTE PANCREATITIS

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The course of acute pancreatitis, whose onset is stipulated by one and the same factor, may be of quite an opposite nature in different patients - from the edematous form to pancreatonecrosis. An important role, hereat, is played by genetically determined defence mechanisms aimed at preventing an intrapancreatic activation of enzymes.

The research involved 37 persons with different forms of acute pancreatitis. Among them: 25 (67.6%) men and 12 (34.2%) women. The mean age of the patients made up 48 ± 14.4 years. The patients were divided into 2 groups. The first group was made up of 17 patients with acute edematous pancreatitis. The second group comprised 20 patients with acute destructive pancreatitis.

The presence of the favourable "wild - type" N - allele ("wild - type", Wt) - 73,0% (27) of the persons was detected in the majority of the subjects. The pathological "mutant" S - variant was identified in 27,0% (10) of the persons. Hereat, there were 45.9% (17) of the cases of homozygous carriers of the "wild" NN - genotype (N34), NS - heterozygotes (N34S) - 51,4% (19) of the cases. One (2,7%) patient was a homozygous carrier of the mutant S - allele (SS - genotype, 34S) (Fig. 1 - 2). A distribution of the genotypes according to the polymorphic N34S variant of the SPINK1 gene among the examinees corresponded to expected Hardy - Weinberg's equilibrium ($p > 0,05$).

On distributing all the patients according to the etiological agent it was found out that the frequency of the NN - and NS - genotypes in patients with biliary pancreatitis made up 52,6% (10) and 47,7% (9), respectively and did not differ statistically from that in patients with pancreatitis of nonbiliary genesis - 33,3% (6) and 61,1% (11) respectively ($\chi^2 = 0,003$, $p = 0,95$ and $\chi^2 = 0,68$, $p = 0,4$ respectively).

While analyzing the group of patients with acute edematous biliary pancreatitis, it was established that the homozygous carriers of the favourable "wild" N - allele and heterozygotes occurred with the same frequency - 50% (5) and 50% (5), respectively. However, a tendency towards a domination of the NS - genotype was established in patients with edematous pancreatitis of nonbiliary genesis as compared with the NN - genotype whose frequency of detection made up 85,7% (6) and 14,3% (1), respectively. However, such differences were not statistically significant ($\chi^2 = 2,00$, $p = 0,16$). No homozygous carriers of the mutant S - allele were detected in patients with acute edematous pancreatitis.

In patients with acute destructive pancreatitis of biliary and nonbiliary genesis the frequency of detecting genotypes NN - (N34) and NS - (N34S) did not differ significantly: 55,5% (5) and 44,5% (4) versus 45,5% (5) and 45,5% (5) respectively ($\chi^2 = 0,001$, $p = 0,97$ and $\chi^2 = 0,114$, $p = 0,74$ respectively). The homozygous mutation SS - genotype was detected in one person of the said group. It should be noted at that the initiation of the disease was associated with the nonbiliary factor in a female patient with the SS - genotype. The course of the disease was characterized by particular "aggressiveness" with the development of acute suppurative subtotal pancreatonecrosis which became complicated by the formation of abscesses of the omental bursa and the right subdiaphragmatic space, retroperitoneal phlegmon, external pancreatic and duodenal fistulae, left - side exudative pleuresy and toxicobacterial shock. The length of the hospital stay of the patient made up 118 bed days 10 step - by - step surgical interferences, having been performed during this period.

Thus, the frequency of the NN - and NS - genotypes of the SPINK1 gene in the patients examined by us, did not differ significantly in patients with various forms of acute pancreatitis. The carriage of the unfavourable SS - genotype, in our opinion, may be a contributory factor for the onset of the disease and a potentiation of its further progression, as well as a prognostic marker of a severe clinical course of acute pancreatitis with the development of necrotic lesions of the pancreas.