Prognosis of infection complications in patients with pancreatic cavernous formations.

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Introduction. Acute pancreatitis is one of the most challenging issuer of abdominal surgery. Despite achievements of modern medicine, mortality in this disease still remains very high (45-70%). The most common cause of death is pancreatic infection. However, prognostic score for infectious complications is still not perfect.

The Aim of the study is to develop a predicting score for infection complications of the pancreatic collection.

Materials and methods. 231 patients with a cavernous formations in acute pancreatitis were treated at the Kharkov Regional Hospital sins 2008 year. Based on analysis of 91 clinical, laboratory and instrumental signs were developed two different predicting mathematical models for complications of cavity formation in pancreatitis.

Results and discussion. Decision tree method allowed to present complicated and uncomplicated cases of fluid formations as a simple hierarchic structure. At each level the algorithm has two choices that lead to decision of probability of complications. Method is a simple test with specificity and sensitivity 95.9% and 97.3%.

The other model, which is based on a discriminant analysis, is more mathematically stable and accurate. It allows to predict the development of complications in patients using the formula:

I=1,8892 •χ_1 +1,9120 •χ_2+1,3883 •χ_3+1,1147 •χ_4+1,2292 •χ_5+0,8608 •χ_6–8,0504

where χ_1 - 0 for procalcitonin <0.5 ng/ml, 1 – in the concentration of 0.5-2 ng/ml, 2 - in ≥ 2 ng/mL, and 3 - in ≥ 10 ng/ml, χ_2 - fever (0 - no, 1 - yes), χ_3 - localization (intraorganic – 1, extraorganic - 2), χ_4 - neutrophilia (0 - no, 1 - yes), χ_5 – serum amylase level (0 - not increased, 1 - increased) , χ_6 – shape of a cavity (1 - round, 2 - oval, 3 - oblong). Likelihood of complication of cavity formation high in value of the index I> 0. Specificity is 85.9%, sensitivity - 71.2%.

Conclusion. A forecasting model can predict the development of complications in patients with cavernous formations at different times after the onset of acute pancreatitis with probability 79,5-96,5% and it can be recommended to use in practice.