ABCDDV/920

ABCD Arq Bras Cir Dig
2013;26(2):133-135

Original Article

PROGNOSIS OF ACUTE PANCREATITIS BY PANC 3 SCORE

Prognóstico dos casos de pancreatite aguda pelo escore de PANC 3

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HEADINGS - Acute pancreatitis, PANC 3, Prognosis.

ABSTRACT – ***Background*** **-** Acute pancreatitis is a disease of great importance in clinical practice, defined as an inflammatory process of the pancreas that may involve local tissues or affect other organs in a systemic manner, requiring, in such cases, an intensive care. ***Aim*** - To analyze the simplified stratification system of the PANC 3 score, correlating it with the Ranson score, for the prognostic definition of cases of acute pancreatitis. ***Method*** – Was conducted a prospective, observational study in which were evaluated 65 patients who were diagnosed with acute pancreatitis. ***Results*** - PANC 3 showed sensitivity, 31.25%; specificity,100%; positive predictive value, 100%; negative predictive value, 81.66% and accuracy, 83.07%. ***Conclusions*** - The PANC 3 criteria are applicable to define the severity and the prognosis of acute pancreatitis, and are not a substitute method, but rather a method to be associated with the Ranson criteria, mainly due to its high accuracy, positive predictive value and specificity.

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Financial source: none
Conflicts of interest: none

Received for publication: 17/12/2012
Accepted for publication: 05/02/2013

DESCRITORES - Pancreatite aguda. PANC 3. Prognóstico.

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INTRODUCTION

Acute pancreatitis is a serious disease of great importance in the clinical practice, defined as an inflammatory process of the pancreas that may involve local tissues or affect other organs in a systemic manner, requiring, in such cases, an intensive care.[1] The most severe form of the disease is present in up to 30% of the cases. The mortality rates vary from 1% in the mild form to 20-30% in the severe form[2], corresponding to the 14th main cause of death of gastrointestinal origin[3].

The correct, early detected diagnosis and the determination of its severity are of fundamental importance for the appropriate therapeutic management of such patients[4]. Therefore, several classifications and criteria were developed with the objective of defining the prognosis. Most of these criteria are of difficult memorization (Apache-II) or require more than 48 hour evolution for severity stratification (Ranson, CT Balthazar grading system) or depend on diagnostic tests not widely available (C-reactive protein and interleukin-6)[5].

Based on the fact that acute pancreatitis is difficult to cover, including the diagnosis, therapeutics and definition of prognosis, the objective of the present study is to analyze the simplified stratification system of PANC 3, correlating it with Ranson score to establish the prognostic definition of acute pancreatitis cases.

METHOD

An observational, prospective study was conducted in that 65 patients were evaluated and diagnosed with acute pancreatitis, and were assisted at the Surgical Department of Hospital Regional de São José Dr. Homero de Miranda Gomes, São José, SC, Brazil, from May 2011 to September 2012.

In order to determine the diagnosis of acute pancreatitis the following criteria were used[2,6]: 1) characteristic abdominal pain in the epigastrium spreading to the back associated with nausea and vomits; 2) serum amylase and/or lipase above three times the normal limits; 3) tomography results related to acute pancreatitis.

The patients were submitted to laboratorial tests at admission to the hospital with diagnosis of acute pancreatitis and during the following 48 hours in order to determine the Ranson score, including chest x-ray and height and weight measurements necessary to calculate the body mass index.

Were excluded from this study the patients diagnosed with acute pancreatitis in other institutions who were not submitted to tests at the moment of admission to hospital and within the subsequent 48 hours or submitted to tests in an inappropriate or incomplete manner.

The presence of three or more criteria of Ranson score was considered as the determinant of the severity of the disease, and a comparative study was conducted with PANC 3 score (Figure 1) for purposes of correlation between prognoses.

Hematocrit > 44%
BMI > 30 kg/m^2
Chest x-ray: pleural effusion

FIGURE 1 - PANC 3 criteria

The collection of data was carried out according to procedures previously approved by the Ethics Committee (Protocol CEP No. 08/11 of Resolution 196/96). All the patients signed a non-compulsory and explanatory term of consent. The data obtained were maintained under confidentiality terms and stored by the researchers according to ethical confidentiality standards.

RESULTS

Sixty five patients were diagnosed with acute pancreatitis and had their Ranson and PANC 3 scores measured. Of them, 32 patients were men and 33 were women, with ages ranging from 16 to 83 years old and average age of 55. Sixteen patients (24.6%) presented a severe acute pancreatitis condition established by the Ranson criteria (Table 1). The incidence of Ranson criteria are demonstrated in Figure 2.

TABELA 1 - Pancreatite aguda grave estabelecida pelos critérios de Ranson

Ranson (alcoholic etiology or other)	Ranson (biliar etiology)
At admission Age > 55 years Leukocytes > 16 000/mm3 LDH > 350 U/l AST > 250 U/l Glicemia > 200 mg/dl	**At admission** Age > 70 years Leukocytes > 18 000/mm3 LDH > 250 U/l AST > 250 U/l Glicemia > 220 mg/dl
After 48 hours Reduction in hematocrit > 10% Increase in BUN > 5 mg/dl Calcium < 8 mg/dl PO2 < 60 mmHg Base excess> 4 mEq/l Fluid leakage > 6L	**After 48 hours** Reduction in hematocrit > 10% Increase in BUN > 2 mg/dl Calcium < 8 mg/dl PO2 < 60 mmHg Base excess > 5 mEq/l Fluid leakage > 4L

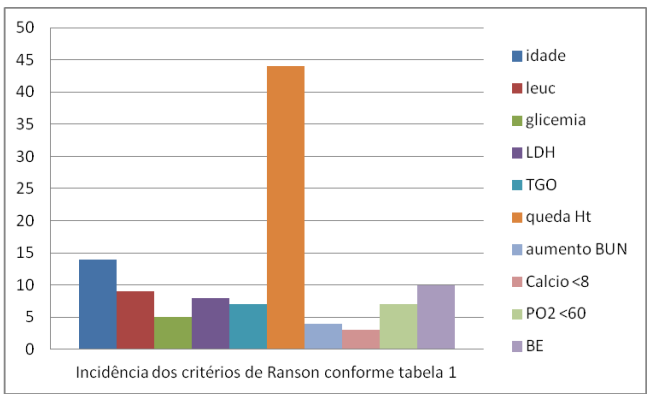

FIGURE 2 - Incidence of Ranson criteria (express in number of cases)

PANC 3 criteria were applied to 31.25% of the patients with severe acute pancreatitis (five cases).

The hematocrit average presented by the patients was 40.8% at the admission. Eighteen patients (27.69%) had hematocrit levels greater than 44%. Pleural effusion was evidenced by chest x-ray in 14 patients (21.53%). The average body mass index of the patients studied was 27.51 kg/m^2 and revealed to be greater than 30 kg/m^2 in 12 patients (18.46%). (Table 2).

TABLE 2 - Incidence of PANC 3 criteria

Ht > 44%	18	27,69%
PE	14	21,53%
BMI > 30	12	18,46%

Ht hematocrit, PE pleural effusion, BMI body mass index

DISCUSSION

According to Atlanta 1992 criteria, severe pancreatitis forms are those that fall under the following criteria: Ranson score ≥ 3, Apache II ≥ 8, organic

dysfunction (shock, SBP < 90 mmHg, renal failure, creatinine > 2 mg/dl after hydration), local complication (necrosis, pseudocyst or abscess), systemic complication (DIC, platelets <100,000/mm^3, fibrinogen <100 mg/dl, degradation fibrinogen products > 80 mcg/ml, calcium < 7,5 mg/dl)[7-10].

Some authors recommend a review of the Atlanta criteria, suggesting the addition of concept of moderately severe acute pancreatitis that identifies the patients currently classified as having severe acute pancreatitis due to the presence of local complications, but with no organ failure.[11]

Other reviews published indicate new definitions for the classification of severity of acute pancreatitis, introducing concepts of mild acute pancreatitis which is characterized by the absence of pancreatic necrosis and organ failure, moderate acute pancreatitis characterized by the presence of sterile pancreatic necrosis and/or transitory organ failure, severe acute pancreatitis characterized by the presence of infected pancreatic necrosis or with persistent organ failure and the critical acute pancreatitis when the infected pancreatic necrosis and the persistent failure of organs are present.[12] (Figure 3).

	Mild AP	Moderate AP	Severe AP	Critical AP
Peripancreatic necrosis	Absent	Sterile	Infected	Infected
	and	and/or	or	and
Organs Failure	Absent	Transitory	Persistent	Persistent

FIGURE 3 - Classification of severity of acute pancreatitis[12]

Several authors propose a number of criteria for severity stratification and acute pancreatitis prognosis, with the purpose of trying to facilitate and obtain the definition of an earlier form after the disease has been diagnosed.

PANC 3 score is easy to measure, with strict accuracy, to predict a severe acute pancreatitis condition, and the hematocrit level is the main criterion. This criterion is defined by the following parameters: hematocrit level greater than 44%, body mass index greater than 30 kg/m^2, and pleural effusion evidenced by chest x-ray[5,13]. The presence of the three components was proposed in other studies as the predictors of severity with a 99% post-test probability [3].

A comparative study was conducted between PANC 3 criteria and Ranson criteria. PANC 3 results showed 31.25% sensibility; 100% specificity; 100% positive predictive value; 81.66% negative predictive value and 83.07% accuracy.

Whenever PANC 3 was positive the patient presented severe acute pancreatitis according to Ranson criteria. Therefore, there was no event of false positive case for PANC 3 criteria in the current study. And, PANC 3 was easy to measure, of low cost, easy to reproduce and it is a test that may be helpful to define the severity and predict acute pancreatitis thus allowing adequate management of the severe cases of this disease in an earlier manner.

CONCLUSION

PANC 3 criteria can be used to define the severity and predict the acute pancreatitis, not as a substitutive method but as a method to be used in combination with the Ranson criteria, mainly because of its high accuracy, positive predictive value and specificity.

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