

# THE SIGNIFICANCE OF LAPAROSCOPY IN THE PROGNOSIS AND TREATMENT OF ACUTE PANCREATITIS

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## Abstract

A study was conducted on 102 patients with acute destructive pancreatitis and enzymatic peritonitis, who underwent laparoscopy within the first 72 hours after the onset of the disease. The results of this study led to the development of a scoring system for assessing pathological changes in the abdominal cavity, which allows predicting the severity of the disease. It turned out that the results of laparoscopy with a scoring of changes in the abdominal cavity largely coincide with the assessment of the severity of acute pancreatitis performed using computed tomography using the Balthazar scale (the sensitivity of the method was 84.0% and 86.3%, respectively).

**Keywords** Acute pancreatitis, laparoscopy.

## INTRODUCTION

Acute pancreatitis is a serious health problem both in Uzbekistan and worldwide because of its prevalence and severity. The high mortality rate in the development of pancreonecrosis, which can range from 20 to 40%, emphasizes the importance of early diagnosis and improved treatment of acute pancreatitis. Many cases go undetected in the early stages, especially fatal cases, making them difficult

to identify and assess severity. Thus, the main priority in this field is the development of new methods to assess the degree of pancreatic tissue damage at early stages.

**The aim of the study** is to create new indicators for predicting the severity of acute pancreatitis based on data obtained during laparoscopy.

## **METHODS**

102 patients with acute destructive pancreatitis complicated by fermentative peritonitis were treated in surgical departments of the multidisciplinary clinic of Samarkand State Medical University in 2018-2023. All these patients underwent laparoscopy within the first 72 hours of onset. For comparison, 42 patients with acute pancreatitis with tumors also participated in the study. The total number of patients was 144, including 90 men and 54 women, with ages ranging from 53.6 to 3.4 years.

An international working group on the subject developed a classification system for acute pancreatitis in 2012.

Indications for laparoscopy were: the presence of more than 200 ml of fluid in the abdominal cavity, which is confirmed by ultrasound or CT data; and the need for differential diagnosis of this disease in other urgent abdominal pathology.

According to clinical examination and history, the most frequent causes of acute pancreatitis were: alcohol abuse and dietary disorders in 49 patients; intrahepatic and extrahepatic bile duct diseases in 36 patients, including choledocholithiasis and cholelithiasis; and other mixed or unclear causes in 17 patients. Each patient was hospitalized during the first three days of illness.

The most common complaints were: severe epigastric pain, often of a cingulate nature, in all 102 patients (100%); nausea, vomiting, flatulence, and stool disturbances and dyspeptic changes in 77 patients (75.4%); and general weakness, tachycardia, and unstable hemodynamic changes in 45 patients (44.1%).

Subfebrile fever was reported in 24 patients, or 23.5% of the total number.

Peripheral blood analysis revealed leukocytosis with a leftward shift of leukoform in 89 patients (87.2%). Biochemical studies showed an increased level of amylase in blood and urine in 91 patients (89.2%). In 28 patients (27.4%) there was an increase in the level of bilirubin above 30 mmol/l, in 33 patients (32.4%) there was an increase in the

level of transaminases (ALT, AST).

In 36 patients (35,3%) gallstones were detected at ultrasound examination of abdominal cavity organs. Total dilation of bile ducts was found in 11 cases (10.8%). Increased pancreatic volume and increased tissue echogenicity were found in a preliminary study involving 32 patients (31.4%). In 46 cases (45.1%), the pancreas was not described or was seen fragmentarily due to obvious flatulence.

Esophagogastroduodenoscopy (EGDS) was performed in 67 patients (65.7%) within the first three days of onset.

Computed tomography of the pancreas is usually performed within 5-7 days of admission and to evaluate the pancreatic parenchyma, parapancreatic changes, and to detect fluid in the abdomen and retroperitoneum.

Diagnostic laparoscopy was performed using equipment developed by the German company Karl Storz and standard technique A laparoscope with a diameter of 5 millimeters and a viewing angle of 30 degrees was introduced through paraumbilical access. A drainage tube was inserted to collect fluid for later analysis after exudate was detected in the abdominal cavity. The drain was used for several days until the exudate from the abdominal cavity was stopped.

Depending on the laparoscopic picture, all patients with symptoms of destructive pancreatitis were divided into two groups. Evaluation of pathologic changes revealed the following subgroups:

1) in Group M (moderate severity), 71 patients (69.6%) had minor pancreatogenic exudative changes in the abdominal cavity;

2) Group G included 31 patients (30.4%) with more severe pathologic changes in the abdomen, which means "severe Gravis".

Figure 1 shows the results of laparoscopy in 102 patients.

We developed a system for evaluating pathologic signs of acute pancreatitis based on laparoscopy findings. This system consists of five main

elements:

1) Exudate composition: a small amount (up to 300 mL) receives one score in one anatomic region, a medium amount (300-1000 mL) receives two scores in two or three anatomic regions, and a large amount (more than 1000 mL) receives three scores in different abdominal regions

2) clear fluid: clear fluid has one point, incomplete clear fluid two points, and clear fluid three points.

3) exudate type is scored as serous with one point, serous-hemorrhagic with two points and hemorrhagic with three points.

4) for the absence of foci of steatonecrosis receive 0 points; for single foci-1 point (up to 5 in the field of view); for multiple foci-2 points (more than 5 in the field of view).

5) Abdominal hyperemia: none - 0 points; focal - 1 point; diffuse - 2 points.

Results and their discussion. Depending on the severity of symptoms of acute destructive pancreatitis, all patients are divided into two subgroups:

Patients up to 6 points are in group M (mild to moderate). This subgroup includes patients with moderate symptoms of acute destructive pancreatitis. This group consisted of 71 patients.

Patients with a score of 7 or higher are classified as group G (severe). This subgroup includes patients who have more severe symptoms of acute destructive pancreatitis. This group consisted of 31 patients.

We checked amylase activity in both urine and peritoneal fluid. The  $\alpha$ -amylase activity was well above normal in both peripheral blood and peritoneal fluid.

From the data presented, it is evident that in each medium studied, the activity of  $\alpha$ -amylase was much higher than the normal level. The activity of  $\alpha$ -amylase in peripheral blood was 5-7 times higher than in healthy subjects. A similar trend was observed in urine analysis. However, no significant changes in  $\alpha$ -amylase activity in blood and urine were found depending on the severity of the

laparoscopic picture. The  $\alpha$ -amylase activity in abdominal fluid was ten to fifteen times higher than normal, and the concentration of the enzyme in abdominal fluid was two to three times higher than that in blood. The  $\alpha$ -amylase activity was significantly higher in group M with more severe laparoscopic manifestation, i.e., group G

Was. In acute destructive pancreatitis,  $\alpha$ -amylase activity in peritoneal fluid is significantly higher than the level of this enzyme.

Primary computed tomography of abdominal organs in patients with tumor pancreatitis (N = 42) showed:

- 12 patients (28.6%) showed no changes in the abdomen or retroperitoneum.

- 22 patients (52.4%) had an increase in pancreatic size, and 4 of them (9.5%) had inflammation of the parapancreatic clitoris. - In the group with tumor pancreatitis, the Balthasar scale changes ranged from 0 to 3 points.

CT scans performed in group M patients (n=71) showed increased pancreatic volume in 64 of them (90.1%), infiltration of the parapancreatic clitoris in all patients (100%) and equalization of the pancreatic contour in 53 (74.6%). In addition, intra-abdominal fluids were observed in 68 (95.7%) patients and pancreatic tissue necrosis of various sizes was observed in 32 (45.1%) patients. In this group, the Balthasar scale ranged from 2 to 8 points.

In 25 patients in group G (N = 31), computed tomography showed enlargement of the pancreas (80.6%). All cases also showed fluid accumulation and infiltration of the parapancreatic pincer. In 27 (87.1%) patients, intravenous contrast study revealed more than 30% pancreatic necrosis. In this group, the Balthasar scale ranged from 5 to 10 points. 21 cases were beyond the prognosis.

Based on the data from the above formula, the sensitivity of our proposed method of assessing the course and severity of acute pancreatitis was 86.3% for moderately severe and severe course of the disease. Table 2 shows the comparison of the Balthasar scale and the evaluation scale based on

the results of laparoscopy performed within 1-3 days after the onset of the disease.

Thus, based on the data of laparoscopy, laboratory data and CT scan results showing the severity of acute pancreatitis, we were able to establish a correlation between the degree of pathologic changes in the abdominal cavity.

Conservative methods of treatment of tumor pancreatitis include fasting, aspiration of gastric contents and local hypothermia, infusion therapy with analgesics, antispasmodics and increased diuresis.

Conservative therapy of moderate acute pancreatitis included pancreatic secretion inhibitors, drugs to improve blood rheological properties, antioxidants and antihypoxants.

In severe acute pancreatitis In addition to the treatment described above, hypovolemic disorders are corrected, supplemented with antithrombotic therapy and epidural blockade. Antibacterial therapy of the parapancreatic infiltrate includes the use of cephalosporins, fluoroquinolones and other drugs depending on the condition.

Drainage of the abdominal cavity during diagnostic laparoscopy of 61 patients out of 71 patients of group m was performed in 85.9% of the total number of cases. Of these, 32 (45.1%) underwent only one operation.

In addition to diagnosis, patients who received conservative treatment underwent minimally invasive drainage of the abdominal cavity within the first 1-3 days of onset. This decision was based on the presence of a small amount of clear serous or serous hemorrhagic exudate. The procedure involves blocking the round longitudinal liver and draining the abdominal cavity through a paraumbilical puncture. The drain was directed into the subhepatic cavity. After insertion of the drain, the patients underwent conservative therapy, which included monitoring the volume of secretions and analyzing the collected fluid. If necessary, 29 patients (45.1%) underwent repeated operations aimed at ensuring adequate drainage of the abdominal cavity.

Relaparoscopy with extended drainage was performed from one to three times at different times within three to fifteen days of patient hospitalization. These procedures were performed when there was significant fluid accumulation in the charvi sac and elsewhere in the abdominal cavity. Relaparoscopy under endotracheal anesthesia consisted of removing fluid from the abdominal cavity. The subhepatic cavity and iliac regions were then drained through additional drains.

Ten patients, or 14.1%, underwent laparotomy with subsequent drainage and purging of purulent foci. The operations were performed from 11 to 19 days.

The volume of treatment procedures in group G: As mentioned above, in this group of 31 patients, laparoscopy revealed significantly more serious pathologic signs of acute destructive pancreatitis. All had laparoscopy for diagnosis and drainage of the abdominal cavity.

Against the background of conservative therapy, 21 patients (67.7%) underwent relaparoscopy with extended drainage of the abdominal cavity. Ten patients (32.3%) underwent laparotomy with purging and drainage of purulent foci. The total number of open interventions in patients ranged from one to four. Figure 3 shows the details of the therapeutic interventions performed in each group.

Out of 102 cases of acute destructive pancreatitis, 9 died. The mortality rate was 8.8%. No deaths were observed in patients with swollen pancreatitis. In group G, 9 of 31 patients (29.1%) died, and in group M-4 of 71 patients (5.6%) died.

Evaluation of the severity of the course of acute pancreatitis compared with the grading criteria showed that the incidence of complications and mortality was significantly reduced in the group predicted to have moderately Severe pancreatitis (23.9% vs. 5.6%) compared to the group predicted to have severe pancreatitis (74.2% vs. 29.1%, respectively), confirming its informative value.

## **CONCLUSIONS**

1. Assessment of pathologic changes in acute pancreatitis based on the results of laparoscopy shows high accuracy of disease severity assessment. In the group with moderate pancreatitis, the frequency of relaparoscopy and open interventions to clean the foci decreased 1.5-2 times compared to the group with severe pancreatitis.

2. The results of evaluation of pathologic changes at laparoscopy (sensitivity of the method 86,3%) and Balthazar CT severity assessment scale of acute pancreatitis (sensitivity of the method 91,2%) show that both methods can be effective in diagnosing and evaluating the severity of the disease. This allows more accurate prognosis and selection of the most appropriate course of treatment for each patient.

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