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DIFFERENTIATED TREATMENT AND DIAGNOSTIC TACTICS IN ACUTE DESTRUCTIVE PANCREATITIS

A.N.Afanasiev, A.V.Kirillin, O.E.Selivanova, A.B.Shalygin

First MSMU of I.M.Sechenov, Department of General Surgery, Tos-hik@yandex.ru

Acute pancreatitis for several years consistently ranks second, and in some regions - first place in the structure of the urgent surgical pathology, ahead of acute appendicitis and acute cholecystitis. The most common cause of disease is alcohol abuse and gallstone disease in 10-30% of patients the etiology of acute pancreatitis remains unclear. Basis of the study were the results of examination and treatment of 136 patients with destructive forms of acute pancreatitis, enrolling for treatment at the Clinical Hospital Ne 23 them. «Medsantrud» in the period from 2008 to 2010 for acute pancreatitis. In the studied group did not include the postoperative biliary and infected pancreatic necrosis because of features of pathogenesis. Differentiated approach to surgical treatment in patients with destructive pancreatitis depending on the scale of the initial lesion of the pancreas has allowed an average reduction in the number of purulent complications per patient in 4 times (from 9,8% to 2,2%), lower letalnost of purulent complications 3 times (from 15,3% to 5,5%).

Keywords: acute pancreatitis, destructive pancreatitis, surgical treatment

Острый панкреатит в течение нескольких лет стабильно занимает второе, а по некоторым регионам — первое место в структуре неотложной хирургической патологии, опережая острый аппендицит и острый холецистит. Наиболее частой причиной заболевания является злоупотребление алкоголем и желчнокаменная болезнь, у 10-30% больных этиология острого панкреатита остается не выясненной. Основу исследования составили результаты обследования и лечения 136 больных с деструктивными формами острого панкреатита, поступивших на лечение в городскую клиническую больницу №23 им. «Медсантруд» в период с 2008 до 2010 гг. по поводу острого панкреатита. В изучаемую группу не включали билиарный и послеоперационный панкреонекрозы из-за особенностей патогенеза и клинического течения. Дифференцированный подход к хирургической тактике лечения больных деструктивным панкреатитом, в зависимости от объема первоначального поражения поджелудочной железы, позволил в среднем уменьшить число гнойных осложнений на одного больного в 4 раза (с 9,8% до 2,2%), снизить послеоперационную летальность от гнойных осложнений в 3 раза (с 15,3% до 5,5%).

Ключевые слова: острый панкреатит, деструктивный панкреатит, хирургическое лечение

Acute pancreatitis during the past few years steadily takes the second place and the first place in emergency surgical pathology in some regions being ahead of acute appendicitis and acute cholecystitis. The most frequent cause of disease is alcohol abuse and gallstone disease; in 10-30% of patients the etiology of acute pancreatitis remains unclear.

Over the past 20 years incidence of acute pancreatitis has steadily increased on 15-20% (Ermolov A.S., 2006; Halperin E.N., 2005; Saveliev V.S., 2006; Jonson C., Imrie C., 2002) According to Russo et al (2004) each year about 21,000 patients with acute pancreatitis are hospitalized in the U.S. In the Russian Federation acute pancreatitis is the cause of surgical admissions to hospitals in 5-10%. In 10-15% of cases acute pancreatitis is destructive, of which 40-70% of cases become infected of necrotic foci of destruction. According to S. Dervenis et al (1999) this category of patients with severe acute pancreatitis presents the greatest challenges in diagnostic, therapeutic, and economic aspects. Analysis of mortality from severe acute pancreatitis carried out by S. Bank et al (2002) showed that over the past 20 years big step in understanding of natural history of disease and evaluation of new therapeutic approaches had been done. However in the opinion of Tolstoy A.D. et al (2002) for 30 years of studying and development of treatment methods for pancreatic necrosis only a redistribution of deaths from «premature death» from organ dysfunction in group of «late death» from purulent and septic complications occurred instead of radical improvement of results.

Basing on analysis of treatment of patients with acute pancreatitis the most effective methods of various drainage operations in order to reduce complications, decrease mortality and improve outcome has been identified.

Basis of research was formed by survey of results and treatment of 136 patients with destructive forms of acute pancreatitis admitted to «Medsantrud» Clinical Hospital N23 in period from 2008 to 2010. Patients with biliary and pancreatic necrosis after surgery were not included to study group due to nature of pathogenesis and clinical course. Age of patients ranged from 18 to 90 years and averaged 51.0 \pm 15.2. Patients with over 60 years were 27.4%, they were with severe concomitant diseases, among which pathology of cardiovascular (66.3%) and respiratory systems (37.4%) prevailed significantly burdening their condition and course of postoperative period.

All patients admitted with acute pancreatitis (verified by instrumental and laboratory studies) were performed «closed» drainage methods such as puncture and drainage of fluid in projection of pancreas, omental and retroperitoneal space and it was independent on prevalence of process. When size of destruction of pancreas was to 30% these methods of drainage have been final treatment option. When destruction was more than 30% «closed» methods of drainage were accessorial and used as preoperative preparation before performing «open» method of drainage.

Over the entire period from 2008 to 2010 basic complex conservative therapy was the same, it included antisecretory, infusion, antiulcerous, antibacterial corrective therapy.

On admission condition of 36.3% of patients was assessed as moderate, 34.2% — heavy, 24.5% — very heavy.

Modified classification accepted in Atlanta has been used taking into account clinical and morphological characteristics of disease, based on assessment of initial size of pancreas destruction pancreas and evolution of organ dysfunction. It looks like this:

1. Edematous form (interstitial pancreatitis).

2. Acute pancreatic necrosis:

- Focal (necrosis to 30% of pancreatic tissue)

— Massive (30-60% of pancreatic tissue)

— Total-subtotal (more than 60% of pancreatic tissue).

3. Biliary pancreatitis (due to pathology of terminal part of choledochous duct).

Using common integrated clinical and laboratory scale parameters of physiological condition of patient we performed assessment of severity, degree of organ dysfunction, defined prognostic criteria.

To assess severity of patients we used scale of severity of physiological processes: SAPS — Simplified Acute Physiology Score (Le Gall J.R. / et al., 1983); the most common scale that takes into account chronic diseases — Acute Physiology and Chronic Health Evaluation: APACHE II (Knaus W.A. et al., 1985); and its extensive modification — APACHE-III (Knaus W.A. et al., 1991). Severity scores of physiological indicators were calculated by summing points received in assessment of physiological and laboratory parameters of body and also nervous system assessed by Glasgow coma scale. Total score of APACHE scales has been obtained by summing scores of physiological indicators with scores of patients' age and presence of chronic diseases.

The degree of organ dysfunction was determined by MODS scale — Multiple Organ Dysfunction Syndrome (Marshall J.C. et. al., 1995) and Sofa-Seguential Organ Failure Assessment (Vincent J.L. et. al., 1996). Disorders of cardiovascular, respiratory, central nervous systems, liver, kidney and blood system were taken into account. These scores of dysfunction of systems have been summarized.

Prognostic criteria for acute pancreatitis are traditionally defined by mutually correlated scales of Ranson J.H. (1974) and Glasgow (Imprie C.W. et.al.,

1984). J.H. Ranson's criteria have been taken into account at patient's admission to hospital and after treatment in 48 hours, C. Imprie's criteria — only in 48 hours.

Using data from computerized tomography we assessed lesion of pancreas and surrounding tissue by E.Balthazar scale (1985). Considering size of pancreatonecrosis we calculated CT index of severity — CTSI, Computed Tomography Severity Index (Balthazar E.J. et / al., 1990) by adding score of E. Balthazar scale and score of pancreatonecrosis. The degree of extrapancreatic manifestation of acute pancreatitis was determined according to T. Schroder (1985).

Assessment of SIRS — Systemic Inflammatory Response Syndrome (Bone R.C. et. al., 1989) was obligatory.

All patients with acute pancreatitis were performed ultrasound of abdomen which allowed us to estimate size of pancreas, to identify foci of destruction in it and parapancreatic tissue, to determine presence of fluid in omental, abdominal and pleural cavities, to visualize the main pancreatic duct, intra- and extrahepatic bile ducts, to determine level of block, to identify enlarged lymph nodes, stenosis of pyloroduodenal transition.

When echoscanning of pancreas in power Doppler mode zones of lesions appeared as areas depleted of vasculature. However ultrasound does not always allow accurately judging prevalence of inflammation in pancreas, surrounding tissues and organs, retroperitoneal fat. This was due to presence of pneumatosis in colon against the background of dynamic ileum, presence of expressed subcutaneous and intraabdominal fat, scars on skin and adhesions in abdominal cavity, «overlapping» of ultrasound picture of adjacent organs on target organ.

The most reliable method for diagnosis of acute destructive pancreatitis and its purulent destructive complications was computed tomography. The advantage of CT is high resolution of the method (particularly when contrasted) and possibility of integrated assessment of hepatoduodenal zone, chest, abdominal cavity and retroperitoneal.

Analyzed period (2008-2010) was characterized by significant expansion of complex of conservative measures, most important of which is wider use of products derived from somatostatin, early administration of broad-spectrum antibiotics. Certain changes have taken place in diagnostic program of acute destructive pancreatitis, principal among which were widespread implementation of TV-laparoscopy, CT and MRI. TV-laparoscopy was not only for diagnostic but also therapeutic aims.

No less important changes were noted in surgical approach. Operative intervention in early stages of disease which served as indication for spread forms of pancreatic necrosis with severe endogenous intoxication and growing, non-corrected multiple organ failure, began to be more advanced. It consisted of wide opening of omental sac, mobilization of transverse colon, wide necrectomy of pancreatic tissue and its surrounding, parapancreatic necrotic fatty tissue. The choice of method for finishing of operation, unlike previous years when surgical intervention is usually ended by imposing of omentobursostoma with following stepped endoscopic sanitations of omental sac, began to be strictly differentiated. Along with imposing of omentobursostoma which in some cases was unable to create adequate conditions for performing of necrosequestrectomy in postoperative period to control pathological changes in pancreas and its surrounding fatty spaces, in cases of spread forms of pancreatic necrosis with extensive areas of necrosis in retroperitoneal fat, laparostomy with stepped sanitations of abdominal and omental sac has been used. Simultaneously with implementation of extended laparotomy in patients with spread forms of pancreatic minimally invasive techniques, such as: puncture and drainage of fluid under ultrasound control and formation of omentobursostoma from miniaccess under control of TV-laparoscopy has been increasingly used necrosis in this period in cases of limited forms of pancreatic necrosis. For stepped endoscopic sanitations apparatus of hydropressive dissection of tissues has been used.

Later implementation of minimally invasive drainage, treatment and diagnostic laparoscopy led to development of purulent complications in 23.6% of cases.

Distinctive feature of purulent complications of focal pancreatic necrosis (after minimally invasive drainage) was that they were local and had limited character. Purulent complications usually develop on 18-20th day. Signs of limited fluid formations in area of pancreas, retroperitoneal or abdominal cavity have been shown during dynamic ultrasound and CT scan showed.

Limited local complications did not require traditional surgery. Sanitation of abscesses has been performed by minimally invasive methods of puncture and drainage under ultrasound or CT control. Dual-channel tubes were used as drainage allowing sanitizing purulent cavity by flow-suction method.

When size of necrosis of pancreas was 30%-60% large sequestrate always forms being confined in complex closed cavity and maintaining high level of tissue toxicity. There is real threat of severe septic complications with its ultimate manifestation in the form of pancreatogenic sepsis and arrosive profuse bleeding in such situation.

Treatment program was composed according to regularity of evolution of pathological process in pancreas and surrounding tissues. Intensive multi-component therapy combined with minimally invasive «closed» drainage methods was inadequate for reduction of pathological process in massive pancreatonecrosis that dictated necessity of sanitation of extensive purulent-necrotic foci surgically by laparotomy. However due to reduction of intoxication on the background of conservative measures undertaken in conjunction with minimally invasive drainage severity of patients' condition according to scales decreased. This fact improved outcomes with destruction of 30-60% by reducing number of postoperative complications and mortality rate in this group of patients.

In patients with destruction of pancreas more than 60% severe acute destructive pancreatitis was accompanied by peritoneal symptoms and in 73.5% of patients it was indication for early surgical intervention. Severe acute destructive pancreatitis in period of early postnecrotic aseptic complications, as well as in mild and moderate severity of disease, is indication to complex conservative treatment, which was supplemented with laparoscopic sanitation and drainage of abdominal cavity or drainage of omental sac and foci of destruction under ultrasound control in 84.7% of patients. Laparoscopic sanitation of abdominal cavity in 13.0% of cases was combined with closed omentobursopancreatoscopy which in 9.8% of cases was supplemented by formation of omentobursostoma from mini-access with further stepped endoscopic drainage.

Nevertheless performing of these minimally invasive manipulations was accompanied by only some short-term improvement of patients and was in fact one of preparatory stages of complex treatment which is due to inefficiency of the latter served as indication for early implementation of advanced surgical interventions.

Inefficiency of conservative therapy was treated as indication for early surgical interventions (1-3 days after carrying out of basic therapy with the use of minimally invasive drainage).

These surgeries were forced and were considered not only as surgical method of detoxification, but also as method of preventing development of severe septic complications.

Delayed operative intervention in case of severe ARF (acute respiratory failure) was the most common type of surgery and was performed in 63.0% of patients, both during development of early aseptic complications in patients with advanced endogenous intoxication and in patients with early septic complications caused by secondary infection process.

Significantly smaller percentage of patients with severe disease has undergone late surgical intervention that was associated with active surgical tactics in early period of development both aseptic (by means of minimally invasive drainage) and septic postnecrotic complications, surgical interventions in which were prevention of development of late septic complications.

The choice of surgical method is determined by features postnecrotic complications, and in each case it had individual character that was determined by prevalence of pathological process in pancreas and its surrounding fatty spaces.

In patients with severe acute destructive pancreatitis in period of development both early aseptic and early and late spread postnecrotic septic complications common stages of operation were the following:

1. Wide dissection of gastrocolic ligament.

2. Mobilization of transverse colon (total,

right or left flank depending on the localization process). 3. Mobilization of duodenum by Kocher in

case of process localization in pancreatic head.

4. Mobilization of pancreas along the top and bottom.

5. Necrectomy of pancreatic tissue, parapancreatic and retroperitoneal fat (see Figure 1).

6. Lumbotomy (left, right or bilateral depending on localization process).

7. Omentobursostomy in cases of isolated aseptic necrosis or infected parapancreatic fat.

8. Laparostomy in cases of widespread process with necrosis of mesentery of transverse colon and extensive areas of necrosis in parapancreatic and retroperitoneal fat.

9. Drainage of retroperitoneal, omental and abdominal cavity with gauze tampon and silicone drainage tubes.

10. Stepped postoperative sanitation of omental and abdominal cavity using the apparatus of hydropressive dissection.

Conclusion

1. Acute destructive pancreatitis in 45% of cases develops within pancreas and parapancreatic fat and has focal character. Massive destruction with the spread to retroperitoneal fat was observed in 37.7% of patients. Peracute disease with total-subtotal destruction of pancreas and involving of all organs and systems occurs in 17.3% of patients.

2. Therapeutic and diagnostic laparoscopy and minimally invasive methods of investigation followed by «closed» drainage of foci of destruction reduces expression of endogenous intoxication in patients with acute pancreatitis. When focal necrotizing pancreatitis medical diagnostic laparoscopy and minimally invasive methods of drainage are finishing type of surgical treatment; it reduces rate of septic complications to 11.1%, somatic — to 6.6% and postoperative mortality rate to 1.1%.

3. Lesion of pancreas more than 30% is accompanied with spread purulent complications that require laparotomy with following «open» drainage of foci of destruction using minimally invasive drainage as preoperative preparation.

4. When massive pancreatic necrosis laparotomy on the 12-14th days laparotomy with following stepped sanitations by means of apparatus of hydropressive dissection reduced rate of septic complications to 37.7% and reduce postoperative mortality to 11.4%.

5. When total-subtotal pancreatic necrosis early (2-4 days) laparotomy with wide opening of foci of destruction and following «open» flow-aspiration lavage and stepped sanitations by means of apparatus of hydropressive dissection can reduce mortality from endogenous intoxication to 13.7%, from septic complications — to 20.6%, while the total — to 34.4%.

6. Differentiated approach to surgical treatment in patients with pancreatitis depending on size of initial lesion of pancreas and parapancreatic fat allowed to reduce rate of purulent complications per patient in 4 times (from 9.8% to 2.2%), postoperative lethality from septic complications in 3 times (from 15.3% to 5.5%) and as a result

reduce overall postoperative lethality in 2.5 times (from 25.0% to 9.8%).

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