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## **MEDICINE**

## **PANCREATIC INJURY**

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**Abstract.** The results of surgical treatment of 226 victims with traumatic injuries of pancreas were analyzed. It is shown that the tactics of surgical treatment of pancreatic injuries depends on the severity of trauma and severity of the condition of the victim, the absence or presence of concomitant injuries anatomical and functional areas. In doubtful diagnostic situations should be more widely used videolaparoscopy, which avoids unnecessary laparotomy and is accompanied by low numbers of complications and mortality. Of the 126 patients with Stage I pancreatic injury severity died 55 (43,7 %) of 38 with severity II - 23 (60,5 %) of 34 with III degree - 18 (52,9 %) out of 28 with the IV degree of severity - 14 (50 %). Thus, the proposed concept of providing care to patients with injuries of pancreas based on the individualization of diagnostic and therapeutic-tactical campaign, allowed to reduce the fatality rate and development of septic complications.

Keywords: trauma, pancreas, treatment, acute posttraumatic pancreatitis

**Introduction.** According to the World Health Organization, the incidence of pancreatic injury is 1-3 % with closed and 6-8 % with open injuries of the abdominal cavity [1,2,3]. Pancreatic injuries, like injuries of other organs, tend to increase in wartime, which is why this group of patients in Ukraine has increased in recent years. The relevance of this issue is also related to the severity of the condition of the victims, the difficulties in recognizing the trauma and its treatment.

In the group of isolated injuries of the pancreatoduodenal zone, lethality ranges from 5 to 7 %, and in case of combined and multiple injuries it is 20-30 % [4,5]. Mortality with a combined pancreatic injury is 12.2-63.4 %, tends to increase and depends on its cause, localization and severity of damage to the pancreas, the amount and severity of the associated complications, as well as the severity of traumatic and hemorrhagic shock (Berger P. Et al, 2006).

According to modern authors, pancreas injuries are accompanied by severe complications in 36.8-75.5 % of cases and lead to consequences - acute posttraumatic pancreatitis and multiple organ dysfunction syndrome.

**Materials and methods of research.** The results of surgical treatment of 226 patients with pancreatic trauma from 1990 to 2017 were analyzed, of which 162 men (71.55%) were men, 64 (28.45%) women. The analysis of clinical material was carried out in accordance with the improved classification of Pancreas Injury Scale.

Victims with a pancreas injury of the 1st degree had 126 (55.8%), II - 38 (16.8%), III -34 (15.1 %), IV – 28 (12.3 %). In 101 patients, traumatic injury was localized in the body of the pancreas, 41 (18.1 %) in the tail, 33 (14.4 %) in the head, 11 (4.9 %) in the isthmus. Polyfocal damage to the pancreas occurred in 40 (17.7 %) of the affected. All patients were examined. Such diagnostic measures were carried out: general clinical methods of blood and urine testing, biochemical and bacteriological studies, determination of endotoxicosis markers, immunological and immunoenzymatic studies, morphological and instrumental studies (abdominal and thoracic cavity Xultrasound, dopplerography of the portal vein. spiral computed tomography, ray, esophagogastroduodenoscopy, endoscopic retrograde cholangiopancreatography).

**Results of the research and their discussion.** Closed injuries of the pancreas were found during revision of the abdominal cavity with mandatory opening of the omentum bag and revision of the organ and retroperitoneal space. Pancreatic damage was indicated by retroperitoneal and pancreatic hemorrhage, hemorrhages in the omentum bag and pancreas, injuries of the pancreas of various localization and severity. When examining the pancreas, there were hematomas, a rupture of the parenchyma (various depths, up to a complete detachment of the part of the organ), sites of crushing parenchyma of the organ, foci of stethonecrosis. Indirect signs of damage to the pancreas with closed injuries included - hematomas in the region of the small omentum, mesocolon, gastric collateral ligament, retroperitoneal space, the presence of hemorrhagic effusion.

At the 1st degree of severity of injuries and stable condition of the injured, the operation was supplemented by various variants of hemostasis (electrocoagulation, the use of haemostatic materials, sutures on the peritoneum covering the pancreas) with drainage of the omentum bag, and in the later operation, draining parapancreatic fiber in 80 patients. At the same time, non-viable fragments of the gland tissue were removed, transnasal intubation of the small intestine, draining and sanitation of the abdominal cavity were performed according to indications. Videolaparoscopy was performed when there was evidence of a specific mechanism of injury, dubious peritoneal symptoms were present, the patient was inadequate, and the results of non-invasive research methods did not completely exclude pancreatic damage in 24 patients. It should be noted that in 32 patients the choice of surgical tactics was carried out according to the clinic's methodology, the essence of which was that the intraabdominal pressure was previously measured indirectly using the Foley catheter and with stability of the injured and intra-abdominal pressure up to 1.47 kPa without association with organ dysfunction. carried out a primary correction of the revealed lesions; at an intraperitoneal pressure of 1.47-2.45 kPa without association with organ dysfunction and with patient stability, performed primary correction of the revealed lesions and decompression of retroperitoneal space. At an intraperitoneal pressure of more than 2.45 kPa and the presence of a syndrome of multiple organ dysfunction due to intraabdominal bleeding and shock, the 3 injured patients with grade I pancreatic injury were treated using the "damage control surgery" ("DCS") strategy (second study period) because of the presence multiple injuries of the abdominal cavity, in particular - severe damage to the liver and other organs, with the development of decompensated vasodilator shock and coagulopathy [6].

The choice of the method of surgical treatment of victims with pancreatic injury of the 2nd degree of severity was carried out in each case individually and depended on the nature of the trauma and severity of the patient's condition at the time of the operation. Draining and resectional surgical interventions were used with flowing drainage of the omentum bag and drainage of the abdominal cavity. Damage to the main pancreatic duct was observed in 6 (33.3%) of the affected. Intraoperatively, there were reliable signs of damage to the main pancreatic duct: rupture, crushing and wounds of the pancreas by more than 1/2 diameter, when localized in the body of the pancreas. In 14 patients with grade II severity of pancreatic trauma, the distal transection of the gland was diagnosed before the operation, in others - during laparotomy. And, 6 of them performed a distal resection of the pancreas with a spleen, and in 2 - with preservation of the spleen.

Out of 133 patients with I and II severity of pancreatic damage, 71 (53.4 %) underwent surgical correction of other accompanying lesions. Of the 12 patients with grade II pancreas who were operated in the I clinical group, 11 (91.7 %) died in different terms after the operation, in the II clinical group - 4 (28.6 %).

At the third degree of severity, 9 patients underwent laparotomy, suture of the head of the pancreas, tamponade and through draining of the omentum bag with the formation of omentobursostomy. Pancreatoduodenal resection was performed in 1 patient. Laparotomy, suturing of the duodenum, cholecystostomy, through drainage of the omentum bag were performed in 9 patients with grade IV damage of the pancreas. Emergency pancreatoduodenal resection was performed in 2 patients with grade IV pancreatic damage combined with significant damage to both the head of the pancreas and surrounding organs and structures.

Penetrating wounds of the pancreas were found during the revision of the abdominal cavity with mandatory opening of the omentum bag and visual revision of the gland and retroperitoneal space. Pancreas damage was indicated by retroperitoneal and pancreatic hemorrhages, hemorrhages in the omentum bag, hemorrhages to the parenchyma of the gland, its wounds of various severity and localization. Intraoperative direct signs of pancreatic injury were noted in 18 (29 %) of the victims, indirect – in 41 (66.1 %), no signs were found in 3 (4.9 %) of the victims. The examination of the pancreas was characterized by: the presence of hematomas with or without disturbance, the integrity of the peritoneum covering the pancreas; ruptures of the parenchyma of various depths, patch

fragmentation sites of the gland, foci of stethonecrosis. Indirect signs of pancreatic injury with stab-cut wounds were: through wounds to the stomach, colon, duodenum, gastric collateral ligament.

It should be noted that of the 62 patients I the severity of pancreatic injury was diagnosed in 19 cases and isolated injuries and in 6 patients with multiple injuries of the abdominal organs. Due to the presence of multiple injuries of the abdominal cavity, with the development of decompensated vasodilator shock and coagulopathy in 2 patients with I degree of severity of the trauma of the gland, the tactic "DCS" was used according to the methods of the clinic.

In the patients with II degree of severity of pancreatic injury, the problem was solved individually in each specific case and its solution depended on the nature of the lesions detected and the severity of the patient's condition at the time of the operation. Draining and resectional operating procedures were used with flow draining of the omentum bag and drainage of the abdominal cavity. In the I clinical group, preference was given to drainage operative interventions (5 patients) with a tamponade of the omentum bag and the correction of the combined lesions. In the second clinical group, all 6 patients underwent distal resection of the pancreas.

Laparotomy, suture of the head of the pancreas, tamponade and through draining of the omentum bag was performed only in the comparison group of the victims with grade III severity (6 patients). In the main group, these operations were not performed – 6 patients underwent laparotomy, hemostasis, tamponade and through drainage of the omentum bag with omentobursostomy according to the methods of the clinic. Of the 14 patients with grade III severity of pancreatic trauma, 5 (83.3 %) in the I clinical group died early in the postoperative period, and 2 (25 %) in the second group. In 14 patients acute posttraumatic pancreatitis developed and in 4 of them it was the reason wich caused death in connection with the development of the septic phase of the disease.

In 5 patients with IV severity of pancreatic injury, the tactic "DCS" was used. And the decision concerning its application was made in cases of penetrating stab-cut wounds of the stomach against a systolic blood pressure less than 80 mm. Hg (4 victims), as well as gunshot and mine-explosive wounds (1 patient).

Laparotomy, duodenum suturing, cholecystostomy, through draining of the omentum bag were performed by 13 patients with IV degree of severity of pancreatic injury.

The following complications occurred in the operated patients: infected pancreatic necrosis, pancreatic abscess, infected pancreatic pseudocyst, intra-abdominal abscess, adhesive intestinal obstruction, diffuse postoperative peritonitis, and arrosive bleeding.

**Conclusions.** Acute post-traumatic pancreatitis, as a rule, is caused by any damage to the pancreas, and the prevalence and severity of pancreatic necrosis does not directly depend on the traumatic factor.

Use of the developed surgical tactics of treatment of victims with pancreatic injury allowed to minimize or exclude the possibility of postoperative complications development, as well as to increase the effectiveness of surgical correction, to reduce the mortality rate in the first period of traumatic illness by 1.8 times and from the developed purulent-septic complications.

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