Prediction of complications in the postoperative period in patients with multiple traumas of the gastrointestinal tract

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ABSTRACT

The paper presents the developed methods for the early diagnosis of complications in the postoperative period in 180 patients with multiple trauma of the gastrointestinal tract, who were treated in the Department of Emergency Abdominal Surgery of the Fergana branch of the Republican Scientific Center for Medical Emergencies. .

Keywords:	Multiple Traumas, Peritonitis, Diagnostic Laparoscopy, Gastrointestinal Tract.

Introduction.

In recent decades, the number of victims with multiple injuries of the abdominal organs has increased by 2.5 times in comparison with the previous period . Along with this, the number of complications and mortality increased (from 6.5 to 12.5%) in the postoperative period. One of the reasons for the increase in mortality in this category of victims is the untimely diagnosis of complications in the postoperative period, the number of which reaches 23.2%.

Purpose of the study

Retrospective analysis of surgical treatment of patients with multiple trauma of the gastrointestinal tract.

Materials and methods of research

In the Department of Emergency Abdominal Surgery of the Fergana branch of the RSCEMC for the period 2015–2021. were treated in 180 patients with multiple injuries of the gastrointestinal tract (GIT). Of these, 16 patients had complications in the postoperative period, which amounted to 6.1%. All patients were divided into three groups: group I (control) — 160 patients with concomitant gastrointestinal trauma, in whom no complications were observed in the postoperative period; Group II (comparison) — 9 patients with complications in the postoperative period. They conducted studies to identify early symptoms indicating the development of complications from the gastrointestinal tract; Group III (main) — 11 patients who had early symptoms underwent programmed laparotomy or diagnostic laparoscopy. In the presented groups, the majority of the victims (55%) received an intentional injury, 26.7% of the victims suffered a domestic injury, and 18.3% of the victims were injured for the purpose of a suicide attempt. According to the nature of the injuring object, stab wounds are in the first place - 61.9%, in the second place - a closed injury - 32.4%, and in the third place - a gunshot or mine-explosive injury - 5.7%. By the number of open wounds on the anterior abdominal wall, we divided single wounds 50.3%, two wounds 38.4% and multiple wounds 11.3%. The main number of victims was delivered up to 1 hour from the moment of

injury 89%, from 1 to 2 hours - 7.2% of the victims, from 2 to 6 hours - 2.3% of the victims and more than 6 hours - 1.5% of the victims. Upon admission, the condition of the wounded was assessed as extremely severe in 65.6% of the victims, severe in 17.6% of the victims, and moderate in 16.8% of the victims. All the victims were urgently operated on, during the operation grade I hemoperitoneum was detected in 13% of the wounded, grade II — in 21.4% of the wounded, and grade III — in 65.6% of the wounded. During the operation, multiple damage to the gastrointestinal tract with parenchymal organs was noted in 60 (23%) patients. Combined damage to the gastrointestinal tract and liver was diagnosed in 107 (66.5%) people, damage to the spleen - 54 (33.5%) people. The volume of surgical treatment for all the wounded was aimed at eliminating those injuries of the abdominal organs that were identified, and suturing of the gastrointestinal tract wounds was performed in 182 patients, resection of the segment of the small intestine in 38 patients and resection of the large intestine in 42 patients. In case of liver damage, suturing of the liver wound was performed in 48 patients, resection of a segment of the liver in 30 patients, atypical re liver section in 29 patients. When damaged in the spleen, suturing the wound with the application of a hemostatic sponge was performed in 19 patients, suturing the wound with suturing a strand of the greater omentum in 17 patients, and splenectomy was performed in 18 patients. In the postoperative period, all the victims were monitored by a clinical blood test for the 1st; 3rd–5th; 7th–8th and 10th–11th days of the postoperative period. In 86 patients of group I and the entire group III, the small intestine was intubated with a specially designed intubation probe, which, in addition to decompression, recorded intra-intestinal pressure (IAP) with parallel measurement of intra-abdominal pressure (IAP).

Research results and discussion

Complications that were observed in the postoperative period in patients of group II were distributed as follows; failure of sutures was observed in 3 people, with failure of small bowel plasty — in 1 person, large bowel plasty — in 2 people; ongoing peritonitis against the background of consistency of intestinal sutures - in 2 people; 2 people with combined damage to the gastrointestinal tract and pancreas developed acute destructive pancreatitis in the postoperative period; early adhesive intestinal obstruction - in 1 person. During the analysis of complications in patients of group II, I would like to note that the failure of the sutures applied during plastic surgery occurred in patients with blood loss of II and III degrees, and the number of wounds in the gastrointestinal tract detected during the operation varied from three to seven. Moreover, the wounds were located both nearby and in different segments of both the small and large intestines. When analyzing the causes of unrecognized purulent-septic complications in the abdominal organs in the postoperative period, special attention was paid to the indicators of the leukocyte formula, especially the severity of the neutrophilic shift. Along with this, in groups I and III, the dynamics of changes in intra-intestinal and intra-abdominal pressure was studied. Intra-intestinal pressure, as described above, was measured using a 4-lumen intubation probe developed by us, where three channels were used to measure intra-intestinal pressure, and the fourth channel was used for decompression or for enteral tube feeding. Moreover, the measuring balloons were located so that the first balloon was in the terminal section of the small intestine, the second balloon was located in the middle section of the small intestine, and the third balloon was in the initial section immediately behind the ligament of Treitz. Patients of group II were given indications for relaparotomy only when peritoneal symptoms appeared or when intestinal discharge began to be released through the drainage from the abdominal cavity. In the victims of group II, local penitonitis was detected only in 1 person, in the rest, penitonitis was diffuse or widespread. The volume of surgical treatment during the reoperation in patients of group II consisted in suturing the defect of failure of previously applied sutures on the wound of the gastrointestinal tract, followed by intestinal

intubation, debridement and drainage of the abdominal cavity. After repeated surgery in patients of group II, complications were observed in 5 people (failure — 3; general purulent-septic complications — 1; pneumonia — 1), postoperative mortality was 1.1%. The main cause of death was multiple organ failure. Based on the analysis of adverse treatment outcomes in this group of victims, a diagnostic and therapeutic algorithm for managing patients of groups I and III was developed. The victims of group III and 86 victims of group I, along with the study of IS parameters, were measured intra-intestinal and intra-abdominal pressure. The dynamics of IS changes in group III is similar to that in group II. When studying the dynamics of IAP and IAP in group III, a parallel increase in IAP (from 5.5 to 15 mm Hg) and IAP (from 1.5 to 14 mm Hg) was noted, while stable indicators were noted in group I ECP ((5.5±0.2) mmHg) and IAP ((1.8±0.2) mmHg). In 109 patients of group I and all patients of group III, the drainage discharge from the abdominal cavity was monitored, both in quantitative and qualitative (microscopy and biochemical examination) composition. Thus, in the first two days of the victims of group I, the volume of drainage from the abdominal cavity did not exceed 200 ml per day of serous or serous- hemorrhagic discharge, in the next day there was a decrease in volume by 25 ml / day. According to the quantitative composition of the discharge in this group, I would like to note the remaining leukocytosis of 10-12 ×109 / l until 3 days of the postoperative period, followed by a sharp decrease to 3-5 ×109 / l. At the same time, in group III, the flow rate of discharge from the abdominal cavity remained high and kept 250-300 ml/day, and in 3 victims of the same group there was a tendency to increase the flow rate of drainage from the abdominal cavity by 25 ml/day after 3 days postoperative period. During an objective examination in this group of patients, there was pain in the abdomen along the flanks; it was not possible to clearly identify peritoneal symptoms against the background of the administration of analgesics. Therefore, taking into account the clinical, laboratory and instrumental data, videoscopic monitoring of the state of the abdominal organs was performed through the counter-opening. During the performance of videoscopic control, the nature of the discharge, the presence of fibrin plaque in the area of wound suturing and obvious signs of a defect in the area of plastic surgery of the sutured wound of the gastrointestinal tract were assessed. Based on the obtained data of videoscopic control of the state of the gastrointestinal tract, the patients of group I were given indications for relaparotomy, at the same time, the victims of group III were given indications for relaparotomy, and in 4 patients during relaparotomy there were no signs of peritonitis, and the remaining patients had local peritonitis. In case of failure of previously applied sutures on the gastrointestinal tract, we completely excised the plasty zone at a distance of 0.2 cm from it, followed by suturing the defect with interrupted intraluminal sutures. Next, decompression of the newly reconstructed plasty was necessarily performed by inserting a probe transnasally or through the cecostomy if the defect was located closer to the ileocecal angle. Using the proposed tactics for predicting and treating postoperative complications in patients of group III, we did not observe suture failure of reconstructed plastics in any of the patients. In the postoperative period, one patient died from acute cardiovascular failure, we observed general purulent-septic complications in 2 patients (postoperative pneumonia in 1 case and suppuration of the postoperative wound in 1 case). Based on the results of prediction and treatment of postoperative complications in patients with multiple trauma of the gastrointestinal tract, the following conclusions can be drawn.

Conclusions

1. Violation of the integrity of the previously imposed intestinal plasty in patients with multiple trauma to the gastrointestinal tract is accompanied by a parallel increase in intra-intestinal and intra-abdominal pressure.
2. The risk of failure of the sutures of the sutured wound on the gastrointestinal tract is higher in patients with multiple injuries of the

abdominal organs and hemoperitonium II and III stage.

3. The volume of surgical intervention in case of failure of previously applied sutures on the wound of the gastrointestinal tract should include; re-creation of the plasty zone with obligatory decompression of the gastrointestinal tract.

4. The developed tactics of monitoring the state of the abdominal organs in the postoperative period allowed in patients of group III to reduce postoperative mortality by 0.7%, and complications by 1.2%.

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