

Kurbaniyazov Bobojon Zafarjonovich¹, Khaidarov Numona Bozor ugli²

1 - Samarkand State Medical University, Republic of Uzbekistan, Samarkand;

2 - Samarkand branch of the Republican Scientific Center for Emergency Medical Care, Republic of Uzbekistan, Samarkand

ЎТКИР ХОЛЕЦИСТОПАНКРЕАТИТДА ДИФФЕРЕНЦИАЛ ЖАРРОҲЛИК ТАКТИКАКурбаниязов Бобожон Зафаржоновиш¹, Хайдаров Нумона Бозор ўғли²

1 – Самарқанд давлат тиббиёт университети, Ўзбекистон Республикаси, Самарқанд ш.;

2 - Республика тез тиббий ёрдам илмий маркази Самарқанд филиали, Ўзбекистон Республикаси, Самарқанд ш.

ДИФФЕРЕНЦИРОВАННАЯ ХИРУРГИЧЕСКАЯ ТАКТИКА ПРИ ОСТРОМ ХОЛЕЦИСТОПАНКРЕАТИТЕКурбаниязов Бобожон Зафаржоновиш¹, Хайдаров Нумона Бозор ўғли²

1 – Самарқандский государственный медицинский университет, Республика Узбекистан, г. Самарқанд;

2 - Самарқандский филиал Республиканского научного центра экстренной медицинской помощи, Республика Узбекистан, г. Самарқанд

e-mail: info@sammu.uz

Резюме. Ушбу тадқиқотда ўткир холецистопанкреатитни (ЎХП) даволашнинг кам инвазив жарроҳлик усуллари билан самарадорлиги баҳоланади. Анъанавий очик жарроҳлик аралашувлари билан таққослаганда, кам инвазив усуллар, шу жумладан лапароскопик холецистэктомия эндоскопик аралашувлар ва навигация тизими билан пункцион дренажлаш билан биргаликда операциядан кейинги асоратлар ва ўлим даражасини сезиларли даражада камайтирди. Препаратларни юмалоқ боғлам орқали юборишга янгича ёндашув яллигланишни маҳаллий назорат қилишни яхшилади. Эндотоксемия ва яллигланиш биомаркерларини эрта баҳолаш жарроҳлик тактикасини аниқлашга ва беморларни даволаш натижаларини яхшилашга ёрдам берди. Умуман олганда, олинган маълумотлар ЎХПни даволашнинг кам инвазив усуллари хавфсизроқ ва самаралироқ эканлигини тасдиқлайди.

Калим сўзлар: Ўткир холецистопанкреатит, кам инвазив жарроҳлик, лапароскопик холецистэктомия, яллигланиш биомаркерлари.

Abstract. This study evaluates the effectiveness of minimally invasive surgical techniques in treating acute cholecystopancreatitis (ACP). Compared to traditional open surgery, minimally invasive methods, including laparoscopic cholecystectomy combined with endoscopic interventions and navigation-assisted puncture drainage, significantly reduced postoperative complications and mortality. The novel approach of administering drugs via the round ligament improved local inflammation control. Early assessment of endotoxemia and inflammatory biomarkers helped guide surgical tactics and improve patient outcomes. Overall, the findings support minimally invasive strategies as safer and more effective for managing ACP.

Keywords. Acute cholecystopancreatitis, minimally invasive surgery, laparoscopic cholecystectomy, inflammatory biomarkers.

Introduction. Acute cholecystopancreatitis (ACP) represents one of the most complex and challenging problems in modern abdominal surgery. The incidence of pancreatitis in patients with acute cholecystitis reaches 15-20%, significantly complicating the course of the primary disease and requiring a special approach to the selection of surgical tactics.

In recent years, there has been a steady increase in the incidence of ACP, associated with an increase in the number of patients with cholelithiasis, changes in modern dietary patterns, and improved diagnostic capabilities [4, 9, 16, 23].

Traditional open surgical interventions in ACP are accompanied by a high frequency of postopera-

tive complications (up to 25-30%) and mortality rates reaching 5-7%. This is due to significant surgical trauma, development of severe endotoxemia, activation of pro-inflammatory cytokines, and intensification of lipid peroxidation processes. The introduction of minimally invasive technologies opens new perspectives in the treatment of this category of patients, allowing significant reduction of surgical trauma and improvement of treatment outcomes [7, 10, 15, 25].

However, to date, there is no unified concept for the application of minimally invasive interventions in ACP. Clear indications for choosing one or another method of surgical treatment depending on the severity of pancreatitis, presence of complications, and the patient's general condition have not been developed. The question of the feasibility and safety of performing simultaneous interventions on the biliary tract and pancreas requires further study. The role of biochemical markers of inflammation and endotoxemia in selecting optimal surgical tactics has been insufficiently studied [13, 18, 29].

The development of a differentiated approach to the treatment of ACP, taking into account the severity of the patient's condition, the severity of inflammatory changes in the pancreas, and the presence of comorbidities, is of particular relevance. The use of navigation-assisted puncture interventions under ultrasound and computed tomography control allows decompression of the biliary tract and drainage of fluid collections with minimal trauma, which is especially important in patients with severe somatic status [1, 4, 7, 8, 11, 19, 32, 35].

The pathogenesis of ACP involves complex interactions between biliary obstruction, pancreatic enzyme activation, and systemic inflammatory response. Recent advances in understanding these mechanisms have led to the development of targeted therapeutic approaches. The role of early intervention versus conservative management remains controversial, necessitating evidence-based protocols for patient selection and timing of interventions [13, 16, 24, 31, 34].

Aim of the study. To improve the results of surgical treatment of acute cholecystopancreatitis through the application of minimally invasive technologies.

Materials and methods. The study included 103 patients with acute cholecystopancreatitis (ACP) who underwent examination and surgery in the surgical departments of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care from 2019 to 2024. All patients were divided into 2 groups. The control group (Group I) consisted of 48 (46.6%) patients who underwent traditional open surgical interventions. The remaining 55 (53.4%) patients, comprising the main group (Group II), underwent minimally invasive surgical interventions.

The total number of male patients among all observed patients was 42 (40.8%), and female patients numbered 61 (59.2%). It was established that in 64 (62.1%) cases, the patients' age was of working age, i.e., under 60 years. In the remaining 39 (37.8%) patients, the age exceeded 60 years. Forty-seven patients had comorbid pathology of the cardiovascular, respiratory, and endocrine systems, which affected their overall health status. Most patients with ACP were admitted to the hospital 24 hours after the onset of the disease in moderate condition, which also has a significant impact on their treatment results.

The diagnosis of ACP was based on a comprehensive assessment of clinical data, laboratory results, and instrumental examination methods. All patients underwent general clinical blood and urine tests upon admission, biochemical blood tests to determine levels of bilirubin, transaminases, amylase, lipase, glucose, urea, and creatinine. Special attention was paid to determining markers of endotoxemia and systemic inflammatory response.

To assess the severity of endotoxemia, the level of medium molecular weight molecules (MMM) was determined by spectrophotometric method at wavelengths of 254 and 280 nm. The study of the cytokine profile included determination of concentrations of interleukin-1 β (IL-1 β), interleukin-6 (IL-6), interleukin-8 (IL-8), and tumor necrosis factor- α (TNF- α) by enzyme-linked immunosorbent assay. The state of the lipid peroxidation system was assessed by the level of malondialdehyde (MDA) and diene conjugates (DC), and antioxidant protection was evaluated by the activity of superoxide dismutase (SOD) and catalase.

Instrumental diagnostics included ultrasound examination of the abdominal organs, which was performed for all patients upon admission and dynamically. Ultrasound allowed assessment of the size and structure of the pancreas, presence of fluid collections, condition of the gallbladder and extrahepatic bile ducts. When necessary, contrast-enhanced computed tomography was performed for more detailed assessment of the extent of the inflammatory process and detection of complications.

Endoscopic retrograde cholangiopancreatography (ERCP) was performed according to strict indications in the presence of signs of biliary hypertension and choledocholithiasis. Magnetic resonance cholangiopancreatography (MRCP) was used as a non-invasive method of visualizing biliary and pancreatic ducts when ERCP was not possible or contraindicated.

The severity of acute pancreatitis was assessed using the Ranson score upon admission and after 48 hours, as well as the APACHE II score. Mild severity was established with a Ranson score of less than 3 points, moderate - 3-5 points, severe - more than 5

points. Additionally, the modified Balthazar scale was used to assess CT signs of pancreatitis severity.

In the control group, traditional open surgical interventions were used: cholecystectomy from an upper midline or subcostal approach, choledocholithotomy when necessary, drainage of the common bile duct according to Kehr or Vishnevsky. In the presence of pronounced inflammatory changes in the pancreas, drainage of the omental bursa and parapancreatic tissue was performed.

In the main group, various options for minimally invasive interventions were used. Laparoscopic cholecystectomy (LC) was performed using the standard four-port technique. In the presence of choledocholithiasis, endoscopic papillosphincterotomy (EPST) with stone extraction was performed. A technique of LC with assisted EPST was developed, in which both interventions were performed within a single operation.

Statistical analysis was performed using SPSS version 25.0 (IBM Corp., USA). Continuous variables were expressed as mean $\pm$ standard deviation and compared using Student's t-test for normally distributed data or Mann-Whitney U test for non-normally distributed data. Categorical variables were expressed as frequencies and percentages and compared using chi-square test or Fisher's exact test. A p-value of less than 0.05 was considered statistically significant.

Results and discussion. Analysis of the clinical picture showed that in most patients (78.6%), the disease began acutely with the appearance of intense pain in the epigastric region and right hypochondrium with radiation to the back. Girdle-like pain was noted in 42 (40.8%) patients. Nausea and repeated vomiting that did not bring relief was observed in 89 (86.4%) patients. An increase in body temperature to febrile values was recorded in 67 (65%) patients.

Physical examination revealed tenderness on palpation in the epigastrium and right hypochondrium in all patients. Positive Ortner, Murphy, and Kehr signs were detected in 92 (89.3%) patients. Signs of peritoneal irritation were determined in 31 (30.1%) patients, mainly with destructive forms of cholecystitis. Abdominal distension and weakening of peristalsis were noted in 58 (56.3%) patients, indicating the development of intestinal paresis against the background of pancreatitis.

Laboratory studies revealed an increase in blood amylase levels more than 3 times the normal in 94 (91.3%) patients, lipase in 97 (94.2%). Leukocytosis greater than $12 \times 10^9/L$ was determined in 82 (79.6%) patients, left shift of the leukocyte formula in 76 (73.8%). Hyperbilirubinemia was detected in 38 (36.9%) patients, indicating the presence of biliary hypertension. Elevated transaminases were noted in 71 (68.9%) patients.

Of particular interest were the results of the study of markers of endotoxemia and systemic inflammation. The level of medium molecular weight molecules upon admission was elevated in all patients and was 0.482 ± 0.034 conventional units at $\lambda=254$ nm and 0.394 ± 0.028 conventional units at $\lambda=280$ nm in the control group (normal 0.24 ± 0.02 and 0.28 ± 0.02 , respectively). In the main group, these indicators were comparable: 0.476 ± 0.031 and 0.389 ± 0.026 conventional units, respectively (fig. 1).

The study of the cytokine profile revealed a significant increase in pro-inflammatory cytokines. The concentration of IL-1 β upon admission was 142.3 ± 18.6 pg/ml in the control group and 138.7 ± 16.9 pg/ml in the main group with a norm of 31.2 ± 4.3 pg/ml. IL-6 levels were elevated to 186.4 ± 24.3 and 182.1 ± 22.7 pg/ml, respectively (normal 9.7 ± 1.8 pg/ml).

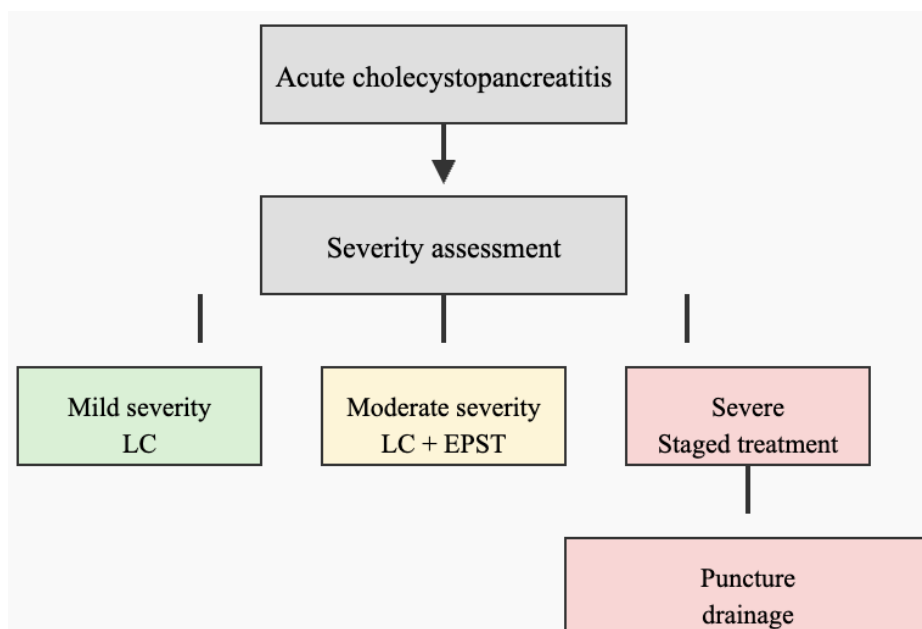


Fig. 1. Algorithm for selecting surgical tactics in acute cholecystopancreatitis

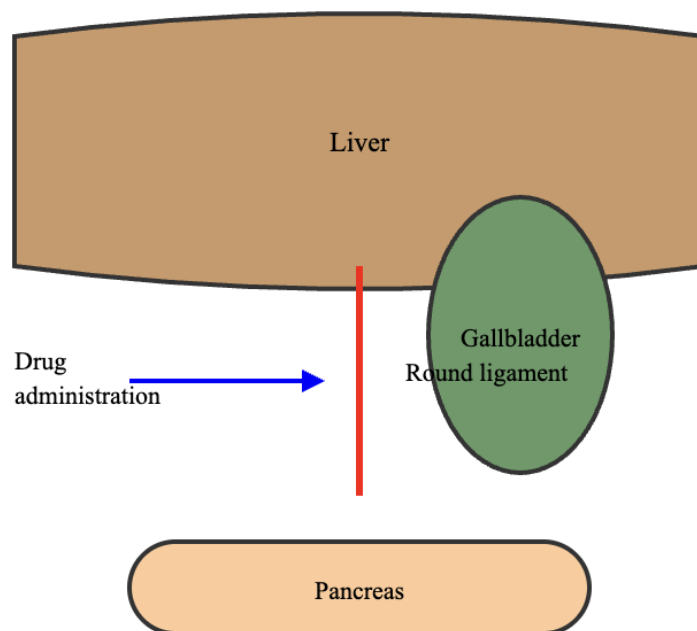


Fig. 2. Scheme of laparoscopic cholecystectomy with drug administration through the round ligament of the liver

TNF- α concentration reached 94.6 ± 12.4 and 91.8 ± 11.7 pg/ml with a norm of 8.1 ± 1.2 pg/ml.

Lipid peroxidation indicators were also significantly elevated. MDA levels were 8.74 ± 0.92 $\mu\text{mol/L}$ in the control group and 8.62 ± 0.89 $\mu\text{mol/L}$ in the main group with a norm of 3.45 ± 0.38 $\mu\text{mol/L}$. The content of diene conjugates was increased to 4.82 ± 0.54 and 4.76 ± 0.51 $\Delta\text{E/ml}$, respectively (normal 2.13 ± 0.24 $\Delta\text{E/ml}$). At the same time, a decrease in the activity of antioxidant enzymes was noted: SOD to 42.3 ± 5.1 and 43.7 ± 4.8 conventional units (normal 67.4 ± 6.2 conventional units), catalase to 12.4 ± 1.8 and 12.9 ± 1.6 mcat/L (normal 18.7 ± 2.1 mcat/L).

Abdominal ultrasound revealed an increase in pancreatic size in 87 (84.5%) patients, decreased echogenicity of the parenchyma in 91 (88.3%), blurred contours in 79 (76.7%). Fluid in the omental bursa was determined in 34 (33%) patients, in parapancreatic tissue in 28 (27.2%). Signs of acute cholecystitis in the form of gallbladder wall thickening more than 4 mm, double contour, positive ultrasound Murphy sign were detected in all patients. Gallbladder stones were visualized in 96 (93.2%) patients, choledocholithiasis in 23 (22.3%).

Contrast-enhanced CT performed in 47 patients with signs of severe pancreatitis allowed more detailed assessment of the extent of the inflammatory process. Pancreatic edema (Balthazar stage A) was detected in 8 patients, gland edema with inflammatory changes in peripancreatic tissue (stage B) in 14, pronounced inflammatory changes with single fluid collections (stage C) in 16, multiple fluid collections (stage D) in 7, extensive fluid collections with gas (stage E) in 2 patients (fig. 2).

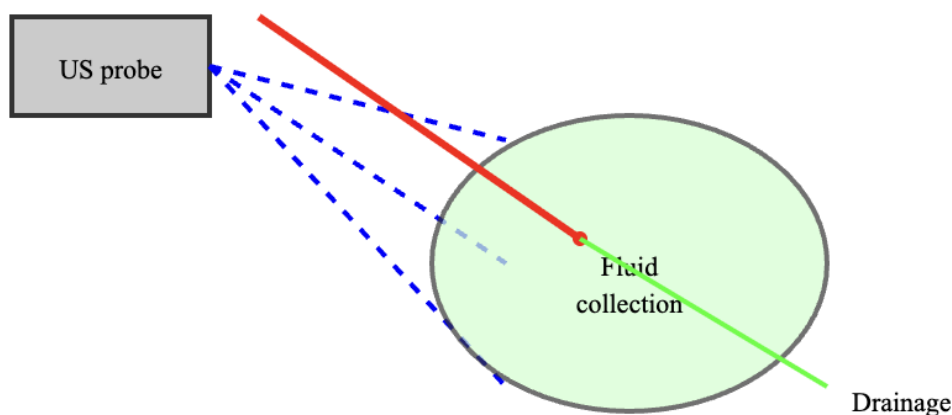
Surgical treatment in the control group included traditional cholecystectomy from an upper midline

approach in 32 (66.7%) patients and from a Kocher approach in 16 (33.3%). Choledocholithotomy was required in 11 (22.9%) patients, common bile duct drainage according to Kehr was performed in 8 (16.7%), according to Vishnevsky in 3 (6.3%). Drainage of the omental bursa was performed in 18 (37.5%) patients, parapancreatic tissue in 14 (29.2%).

In the main group, laparoscopic cholecystectomy was performed in 42 (76.4%) patients. In 8 (14.5%) patients, LC was combined with endoscopic papillosphincterotomy performed intraoperatively (assisted EPST). The technique we developed allowed simultaneous elimination of the source of biliary hypertension and sanitation of the bile ducts. In 5 (9.1%) patients with severe somatic status, percutaneous transhepatic drainage of the gallbladder under ultrasound control was performed as the first stage with subsequent delayed LC.

Of particular interest is the technique we developed for administering drugs through the round ligament of the liver during LC. After mobilization of the round ligament, a solution containing protease inhibitors (contrical 20,000 units), broad-spectrum antibiotics, and antispasmodics was injected into it. This technique was used in 12 patients of the main group with moderate severity pancreatitis. Administration of drugs directly into the inflammation zone allowed rapid relief of the inflammatory process and prevention of destructive changes in the pancreas.

Navigation-assisted puncture interventions under ultrasound control were performed in 18 (32.7%) patients of the main group. Indications for them were: fluid collections in the omental bursa and parapancreatic tissue with a volume of more than 50 ml, signs of infection of fluid collections, severe somatic status of patients not allowing radical surgery.



1. US navigation

2. Puncture

3. Drainage

Fig. 3. Technique of navigation-assisted puncture drainage of fluid collections

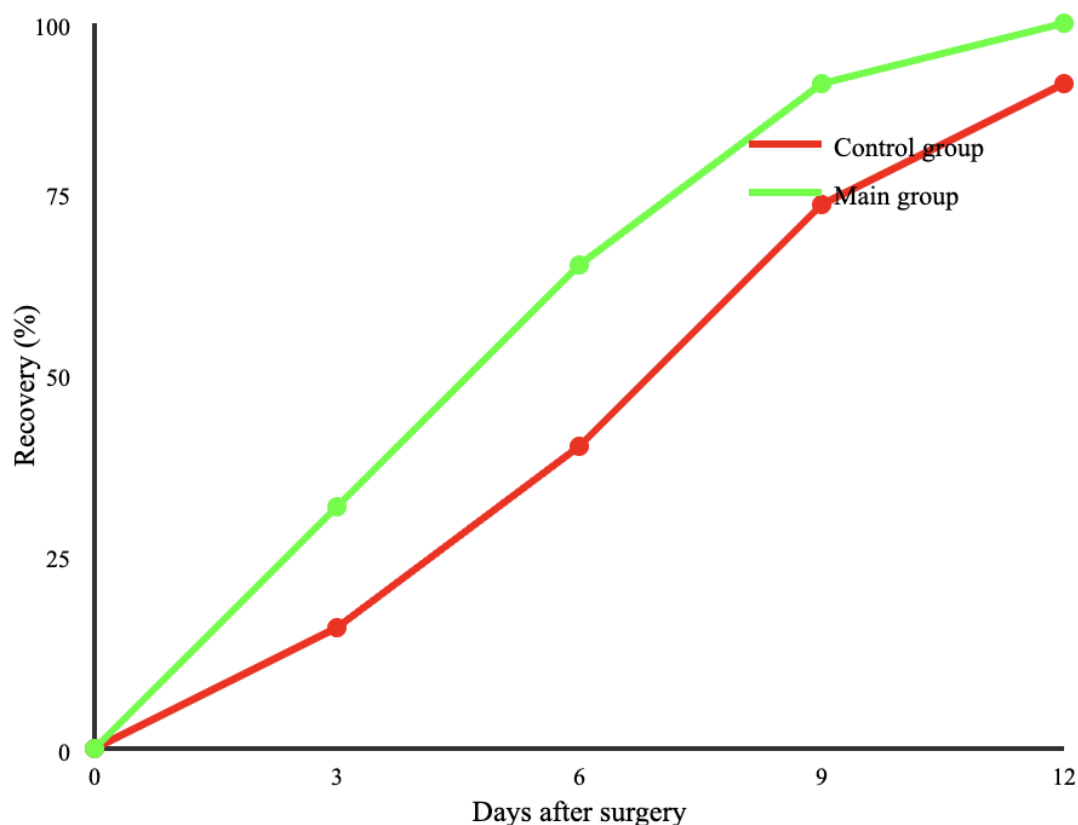


Fig. 4. Comparative dynamics of patient recovery in the postoperative period

Puncture and drainage were performed using the Seldinger technique with pig-tail drains with a diameter of 8-10 Fr.

The dynamics of laboratory parameters in the postoperative period differed significantly between groups. In the control group, normalization of blood amylase levels occurred by days 7-8, in the main group by days 4-5. The level of MMM in the control group decreased to normal values by days 10-12, in the main group by days 6-7. The concentration of pro-inflammatory cytokines in the main group decreased significantly faster: IL-6 normalized by day 5

versus day 9 in the control group, TNF- α by day 4 versus day 7, respectively.

Postoperative complications in the control group developed in 10 (20.8%) patients. The structure of complications included: surgical wound infection - 4 cases, omental bursa abscess - 2, pancreatic fistula - 2, bile leakage - 1, pneumonia - 1. In the main group, complications were noted in 4 (7.3%) patients: trocar hernia - 1, residual choledocholithiasis - 1, pancreatic fistula - 1, seroma in the trocar wound area - 1.

The average duration of surgery in the control group was 94.3 ± 12.6 minutes, in the main group for LC - 52.4 ± 8.3 minutes, for LC with EPST -

78.5±10.2 minutes. Intraoperative blood loss in the control group was 186.4±34.2 ml, in the main group - 42.3±12.1 ml. The need for narcotic analgesics in the postoperative period in the control group was 3.8±0.6 days, in the main group - 1.2±0.3 days.

Restoration of intestinal peristalsis in the main group occurred on 1.8±0.3 days, in the control group on 3.2±0.5 days. Mobilization of patients in the main group was carried out 8-12 hours after surgery, in the control group on days 2-3. The average hospital stay in the control group was 14.3±2.1, in the main group - 7.2±1.3 days.

Mortality in the control group was 4.1% (2 patients). The causes of death were progressive pancreatic necrosis with the development of multiple organ failure in one patient and pulmonary embolism in another. In the main group, 1 (1.8%) patient died from acute myocardial infarction on day 3 after surgery.

Long-term results were followed in 78 (75.7%) patients at terms from 6 months to 3 years. In the control group, 3 (8.1%) patients developed ventral hernias requiring surgical treatment. In 2 (5.4%) patients, chronic pancreatitis with frequent exacerbations developed. In the main group, long-term complications were noted in 2 (4.8%) patients: one developed a trocar hernia, another developed a stricture of the terminal part of the common bile duct after EPST, requiring endoscopic stenting.

Quality of life of patients, assessed using the SF-36 questionnaire, was significantly higher in the main group. The physical component of health 6 months after surgery was 82.4±6.3 points in the main group versus 68.7±7.2 points in the control group. The psychological component of health was 78.9±5.8 and 64.3±6.9 points, respectively.

Economic analysis showed that despite the higher cost of consumables for laparoscopic operations, the total cost of treating one patient in the main group was 34.2% lower due to reduced hospitalization time, reduced medication consumption, and lower complication rates.

The results of our study align with recent international data demonstrating the superiority of minimally invasive approaches in managing acute cholecystopancreatitis. The Tokyo Guidelines 2018 and the World Society of Emergency Surgery recommendations support early intervention with minimally invasive techniques when feasible. Our findings particularly emphasize the importance of patient selection and timing of intervention based on severity stratification.

The novel technique of drug administration through the round ligament represents a significant advancement in targeted therapy for pancreatitis. This approach allows direct delivery of therapeutic agents to the inflamed pancreatic tissue while minimizing systemic exposure. The reduction in systemic in-

flammatory markers observed in our study suggests that this technique effectively modulates the local inflammatory response.

The role of biomarkers in guiding surgical decision-making cannot be overstated. Our data demonstrate that early assessment of endotoxemia markers, cytokine profiles, and oxidative stress parameters provides valuable prognostic information. These markers not only predict disease severity but also guide the selection of appropriate surgical intervention and timing.

Conclusions:

1. Elevated levels of endotoxemia, cytokine profile, and lipid peroxidation products serve as early diagnostic markers of acute cholecystopancreatitis, enabling optimal surgical tactics selection.

2. The developed techniques of LC with assisted EPST and LC with drug administration through the round ligament of the liver significantly improve treatment outcomes in patients with acute cholecystopancreatitis.

3. Navigation-assisted puncture interventions in acute cholecystopancreatitis in patients with severe somatic status allow relief of the destructive process and performance of LC under more favorable conditions.

4. Differentiated surgical tactics using laparoscopic hybrid and puncture-drainage minimally invasive technologies in the treatment of acute cholecystopancreatitis reduced the number of postoperative complications from 20.8% to 7.3% and mortality from 4.1% to 1.8%.

Literature:

1. Adilov K. Z., Rizaev J. A., Adilova Sh T. Diagnostic and prognostic significance of gingival fluid cytokines in the development of inflammatory periodontal diseases //The American Journal of Medical Sciences and Pharmaceutical Research. – 2024. – T. 6. – №. 07. – C. 12-18.
2. Bagnenko SF, Tolstoy AD, Krasnorogov VB, et al. Acute pancreatitis: diagnostic and treatment protocols. Surgery. N.I. Pirogov Journal. 2019;7:5-14.
3. Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis-2012: revision of the Atlanta classification and definitions by international consensus. Gut. 2013;62(1):102-111.
4. Barkun AN, Almadi M, Kuipers EJ, et al. Management of nonvariceal upper gastrointestinal bleeding: guideline recommendations from the International Consensus Group. Ann Intern Med. 2019;171(11):805-822.
5. Crockett SD, Wani S, Gardner TB, et al. American Gastroenterological Association Institute guideline on initial management of acute pancreatitis. Gastroenterology. 2018;154(4):1096-1101.

6. De Waele JJ, Martin-Loeches I. Optimal antimicrobial therapy in severe acute pancreatitis. *Curr Opin Crit Care*. 2018;24(5):336-342.
7. Forsmark CE, Vege SS, Wilcox CM. Acute pancreatitis. *Nigur Engl J Med*. 2016;375(20):1972-1981.
8. Galperin EI, Dyuzheva TG, Dokuchaev KV, et al. Diagnosis and surgical treatment of pancreatic necrosis. *Surgery. N.I. Pirogov Journal*. 2021;3:55-62.
9. Haney CM, Kowalewski KF, Schmidt MW, et al. Endoscopic versus surgical treatment for infected necrotizing pancreatitis: a systematic review and meta-analysis of randomized controlled trials. *Surg Endosc*. 2020;34(6):2429-2444.
10. Hollemans RA, Bakker OJ, Boermeester MA, et al. Superiority of step-up approach vs open necrosectomy in long-term follow-up of patients with necrotizing pancreatitis. *Gastroenterology*. 2019;156(4):1016-1026.
11. IAP/APA evidence-based guidelines for the management of acute pancreatitis. Working Group IAP/APA Acute Pancreatitis Guidelines. *Pancreatology*. 2013;13(4 Suppl 2):e1-15.
12. Kurbonov KM, Sharipov KhY, Azizov ZA. Minimally invasive interventions in complex treatment of acute destructive pancreatitis. *Avicenna Bulletin*. 2020;22(3):456-462.
13. Lee PJ, Papachristou GI. New insights into acute pancreatitis. *Nat Rev Gastroenterol Hepatol*. 2019;16(8):479-496.
14. Leppäniemi A, Tolonen M, Tarasconi A, et al. 2019 WSES guidelines for the management of severe acute pancreatitis. *World J Emerg Surg*. 2019;14:27.
15. Lutsevich OE, Prudkov MI, Gallinger YI. Endoscopic surgery of cholelithiasis. *Surgery. N.I. Pirogov Journal*. 2021;5:24-31.
16. Mowbray NG, Ben-Ismaeil B, Hammada M, et al. The microbiology of infected pancreatic necrosis. *Hepatobiliary Pancreat Dis Int*. 2018;17(5):456-460.
17. Nazyrov FG, Akilov KhA, Devyatov AV, et al. Surgical tactics in acute biliary pancreatitis. *Annals of Surgical Hepatology*. 2019;24(2):68-75.
18. Petrov MS, Yadav D. Global epidemiology and holistic prevention of pancreatitis. *Nat Rev Gastroenterol Hepatol*. 2019;16(3):175-184.
19. Prudkov MI, Shulutko AM, Galimzyanov FV. Minimally invasive surgery of necrotizing pancreatitis: a guide for physicians. Yekaterinburg: UGMU Publishing House, 2020. 48 p.
20. Rizaev J. A., Azimov A. M., Khramova N. V. Prehospital factors influencing the severity of odontogenic purulent-inflammatory diseases and their outcome // *Journal "Medicine and Innovation"*. - 2021. - No. 1. - Pp. 28-31.
21. Rizaev J. A., Musaev U. Yu. The influence of environmental conditions on the degree of prevalence of dental diseases in the population // *Postgraduate doctor*. - 2009. - Vol. 37. - No. 10. - Pp. 885-889.
22. Rizaev E. A. et al. Optimization of surgical strategies in acute pancreatitis based on visual assessment of pathological changes in the abdominal cavity: analysis of efficiency and mortality // *Zamonaviy ta'lim tizimini rivojlantirish va unga qaratilgan kreativ g'oyalar, takliflar va yechimlar*. - 2024. - Vol. 7. - No. 71. - P. 189-189.
23. Rizaev J. A., Vohidov E. R., Nazarova N. S. The importance of the clinical picture and development of the condition of periodont tissue diseases in pregnant women // *Central Asian Journal of Medicine*. - 2024. - №. 2. - C. 85-90.
24. Rizaev J. A., ugli Sattorov B. B., Nazarova N. S. Analysis of the scientific basis for organizing dental care for workers in contact with epoxy resin // *Журнал гуманитарных и естественных наук*. - 2024. - №. 15. - C. 280-283.
25. Rizaev J. A., Rizaev E. A., Akhmadaliev N. N. Current View of the Problem: A New Approach to Covid-19 Treatment // *Indian Journal of Forensic Medicine & Toxicology*. - 2020. - T. 14. - №. 4.
26. Rizaev J. A., Maeda H., Khramova N. V. Plastic surgery for the defects in maxillofacial region after surgical resection of benign tumors // *Annals of Cancer Research and Therapy*. - 2019. - T. 27. - №. 1. - C. 22-23.
27. Rizaev E. A. et al. The role of visual assessment of pathological changes in the abdominal cavity and the impact on clinical outcomes // *Zamonaviy ta'lim tizimini rivojlantirish va unga qaratilgan kreativ g'oyalar, takliflar va yechimlar*. - 2024. - Vol. 7. - No. 71. - P. 120-120.
28. Rizaev E. A. et al. Differentiated surgical approach to the treatment of acute pancreatitis based on visual assessment of pathological changes in the abdominal cavity: outcome analysis // *Scientific approach to the modern education system*. - 2024. - Vol. 3. - No. 29. - P. 138-139.
29. Rizaev E. A. et al. Application of visual assessment of pathological changes in the abdominal cavity to select a surgical strategy for acute pancreatitis: analysis of effectiveness and mortality // *Scientific approach to the modern education system*. - 2024. - Vol. 3. - No. 29. - P. 140-141.
30. Rizaev E. A., Kurbanyazov Z. B., Abdurakhmanov D. Sh. Aspects of surgical treatment of acute biliary pancreatitis // *Journal of Humanitarian and Natural Sciences*. - 2024. - No. 16 [1]. - P. 280-284.
31. Rizaev E. A., Kurbanyazov Z. B., Abdurakhmanov D. Sh. Differentiated approach in the treatment of minimally invasive interventions for acute pancreatitis of alimentary genesis // *Journal of Humanitarian and Natural Sciences*. - 2024. - No. 16 [1]. - P. 272-279.
32. Savelyev VS, Filimonov MI, Burnevich SZ. *Pancreatic necrosis*. Moscow: MIA, 2019. 408 p.

33. Schepers NJ, Bakker OJ, Besselink MG, et al. Impact of characteristics of organ failure and infected necrosis on mortality in necrotising pancreatitis. *Gut*. 2019;68(6):1044-1051.

34. Tenner S, Baillie J, DeWitt J, et al. American College of Gastroenterology guideline: management of acute pancreatitis. *Am J Gastroenterol*. 2013;108(9):1400-1415.

35. Tolstoy AD, Panov VP, Krasnorogov VB, et al. Acute pancreatitis: difficulties, opportunities, prospects. St. Petersburg: I.I. Dzhanelidze Research Institute of Emergency Medicine, 2019. 146 p.

36. Van Brunschot S, van Grinsven J, van Santvoort HC, et al. Endoscopic or surgical step-up approach for infected necrotising pancreatitis: a multicentre randomised trial. *Lancet*. 2018;391(10115):51-58.

37. Van Santvoort HC, Besselink MG, Bakker OJ, et al. A step-up approach or open necrosectomy for necrotizing pancreatitis. *N Engl J Med*. 2010;362(16):1491-1502.

38. Vinnik YS, Miller SV, Teplyakova OV. Improving differential diagnosis and predicting the course of acute pancreatitis. *Grekov's Bulletin of Surgery*. 2020;168(6):31-35.

39. Working Group IAP/APA Acute Pancreatitis Guidelines. IAP/APA evidence-based guidelines for the management of acute pancreatitis. *Pancreatology*. 2013;13(4 Suppl 2):e1-15.

40. Yokoe M, Hata J, Takada T, et al. Tokyo Guidelines 2018: diagnostic criteria and severity grading of

acute cholecystitis. *J Hepatobiliary Pancreat Sci*. 2018;25(1):41-54.

41. Zerem E. Treatment of severe acute pancreatitis and its complications. *World J Gastroenterol*. 2014;20(38):13879-13892.

ДИФФЕРЕНЦИРОВАННАЯ ХИРУРГИЧЕСКАЯ ТАКТИКА ПРИ ОСТРОМ ХОЛЕЦИСТОПАНКРЕАТИТЕ

Курбаниязов Б.З., Хайдаров Н.Б.

Резюме. В данном исследовании оценивается эффективность малоинвазивных хирургических методов лечения острого холецистопанкреатита (ОХП). По сравнению с традиционными открытыми хирургическими вмешательствами, малоинвазивные методы, включая лапароскопическую холецистэктомию в сочетании с эндоскопическими вмешательствами и пункционным дренированием с навигационной системой, значительно снизили частоту послеоперационных осложнений и летальность. Новый подход к введению препаратов через круглую связку улучшил местный контроль воспаления. Ранняя оценка эндотоксемии и воспалительных биомаркеров помогла определить хирургическую тактику и улучшить результаты лечения пациентов. В целом, полученные данные подтверждают, что малоинвазивные методы лечения ОХП являются более безопасными и эффективными.

Ключевые слова: Острый холецистопанкреатит, малоинвазивная хирургия, лапароскопическая холецистэктомия, воспалительные биомаркеры.