Central Asian Journal of Medicine

Volume 2019 | Issue 2 Article 4

6-23-2019

Treatment Results of Acute Biliary Pancreatitis

A.Kh. Babadjanov
Andijan State Medical Institute, Andijan, Uzbekistan, azam746@mail.ru

F.N. Nishanov
Andijan State Medical Institute, Andijan, Uzbekistan, fnnishonov@mail.ru

B.R. Abdullajanov
Andijan State Medical Institute, Andijan, Uzbekistan, doctor0275@mail.ru

Central Asian Journal of Medicine

Treatment Results of Acute Biliary Pancreatitis

Babadjanov A.Kh., Nishanov F.N., Abdullajanov B.R.

Republican Specialized Scientific-practical Medical Centre of Surgery named after acad. V.Vakhidov

Article info

Published: june 2019 y

Key words: *biliary pancreatitis, treatment, algorithm, complication, comparative analysis.*

ABSTRACT

The article analyzes the treatment results of 438 patients with biliary pancreatitis, which were divided into two groups. The main group included 201 patients treated for the period from 2014 to 2018. The comparison group included 237 patients treated from 2009 to 2013. The analysis of indicators was carried out according to the Ranson and APACHE II prognostic scales. The developed algorithm for the choice of treatment tactics for acute biliary pancreatitis, which was used in patients of the main group in combination with the proposed clinical and pathogenetic aspects of intensive therapy of pancreatogenic systemic complications, allowed to reduce their development frequency from 24.9% to 14.9%, to increase the probability of stabilization and regression of the main pathological process from 81% to 89.6% and thereby to reduce the mortality rate from 11.4% to 4.5%.

Introduction

The most dangerous and often fatal complication of severe acute pancreatitis (SAP) in its "late" stage is infection of the necrotic pancreas which is developed in 30-40% of patients with pancreatic necrosis within 2-3 weeks after the formation of pancreas necrosis [2, 5-6, 10-11].

The infection is believed to be caused by translocation of the intestinal flora from the small and large intestines, as evidenced by the frequent presence of E. coli in the infected material. Antibiotic prophylaxis changes microbiology in favor of gram-positive and fungal flora [1, 3-4, 7, 9, 15, 17, 19].

In patients with early systemic complications of acute pancreatitis (AP), secondary infection is the most formidable late complication, with a frequency of about 30-40% and is the cause for most cases of late deaths. Secondary infection is manifested by an escalation of sepsis or a worsening of multiple organ failure (MOF) indicators, usually in the second (36%) and third (71%) weeks of disease [7, 16-17, 22].

Currently, there are no established criteria for assessing adequate tissue perfusion and oxygenation, in which it would be possible to judge the patients' recovery with AP. Modern recommendations indicate the need for early aggressive infusion therapy to stabilize hemodynamics and reduce the risk of MOF, with mandatory monitoring of hourly urine output, blood pressure and pulse oximetry [8, 12-14, 18, 20-21].

Aim of the study is to improve the treatment outcomes of patients with acute pancreatitis by enhancing tactical diagnostic monitoring of specific pancreatogenic complications and optimizing the complex of treatment and prophylactic measures.

Material and methods

A biliary etiology of the disease was determined in 438 of 1073 patients (40,8% of cases) in the structure of all forms of AP. Taking to the account that the main focus for the study is precisely the improvement of therapeutic tactics for biliary pancreatitis, all patients were divided into 2 groups. The main group included 201 patients treated for the period from 2014 to 2018.Patients were used the developed algorithm for the choice of treatment tactics for acute biliary pancreatitis in combination with the proposed clinical and pathogenetic aspects of intensive therapy of pancreatogenic systemic complications. The comparison group was consisted of 237 patients treated from 2009 to 2013. Relatively low surgical activity was observed in 39 patients (19,4%) of the main group and in 73 (30,8%) cases of the comparison group. The remaining patients received only conservative therapy: 162 patients (80.6%) in the main group and 164 (69,2%) in the comparison group (χ^2=7,425; Df=2; p=0,025) (Tab.1).

Table1.

Surgical activity in compared groups

Treatment	Main group		Comparison group		Total	
	Abs.	%	Abs.	%	Abs.	%
Surgical	39	19,4	73	30,8	112	25,6
Conservative	162	80,6	164	69,2	326	74,4
Total	201	100,0	237	100,0	438	100,0
χ^2criterion	7,425; Df=2; p=0,025				-	-

Surgical tactics included repeated surgical interventions in patients of the main (7 of 201; 3.5%) and comparison groups (33 of 237; 13.9%) (Tab. 2). Thus, the main group was characterized by a relatively significant indicator of repeated surgeries (χ^2=12,110; Df=2; p=0,003).

Table 2.

Repeated surgical interventions in compared groups

Surgery	Main group		Comparison group		Total	
	Abs.	%	Abs.	%	Abs.	%
Repeatednecro- andsequestrectomy	3	1,5	17	7,2	20	4,6
Laparotomy, abdominal cavity sanation, necro- and sequestrectomy after minimally invasive interventions	2	1,0	12	5,1	14	3,2
Arrosivebleedingarrest	2	1,0	4	1,7	6	1,4
Total	7	3,5	33	13,9	40	9,1
χ^2criterion	12,110; Df=2; p=0,003				-	-

Results and discussions

According to the results of the treatment effectiveness analysis in patients of the main group, the complicated course of the disease was observed in 15 of 162 cases (9,3%) with intensive conservative management, whereas with the use of surgical tactics this indicator was higher and amounted to 15 of 39 cases (38,5 %)

(table. 3). However, it was found when conducting a statistical analysis in the comparison group that the complication rate was significantly lower (χ^2=6,881; Df=2; p=0,033).

Table 3.

The frequency and structure of various systemic complications of biliary pancreatitis in the main group

Complication	Conservative tactics		Surgical tactics		Total	
	Abs.	%	Abs.	%	Abs.	%
Progressiveliverfailure	3	1,9	4	10,3	7	3,5
Respiratoryfailure(ARDS)	8	4,9	7	17,9	15	7,5
Renalfailure	5	3,1	5	12,8	10	5,0
Cardiovascularfailure	4	2,5	4	10,3	8	4,0
DIC-syndrome	2	1,2	3	7,7	5	2,5
Sepsis	4	2,5	5	12,8	9	4,5
Septic (infectious-toxic) shock	3	1,9	4	10,3	7	3,5
pulmonary embolism(at autopsy - ARDS)	0	0,0	0	0,0	0	0,0
Intraabdominal errosivehemorrhage	0	0,0	2	5,1	2	1,0
Gastroduodenalbleeding	0	0,0	2	5,1	2	1,0
Exudativepleuritis	6	3,7	5	12,8	11	5,5
Patients with complications	**15**	**9,3**	**15**	**38,5**	**30**	**14,9**
χ^2 criteriontocomparison group	**6,881; Df=2; p=0,033**				**-**	**-**

The most common systemic complication was acute respiratory distress syndrome (ARDS) which was observed in 4,9% of cases in conservative and 17,9% in surgical treatment. The next most common complication was acute renal failure, diagnosed in 10 of 201 patients (5,0%) of the main group, while patients with conservative treatment made up 3,1%, with surgical treatment – 12,8%. In comparative assessment of acute biliary pancreatitis course, depending on the undertaken treatment tactics (Fig. 1), it was found that stabilization was observed in most patients both in the main (89,6%) and in the comparison groups (81,0%). Statistically significant best indicators were identified in the main group (χ^2=6,197; Df=2; p=0,046). Thus, conservative treatment tactics led to an improvement in the condition of patients in 148 of 162 cases (91,4%) of the main group and in145 of 164 cases (88,4%) of the comparison group. The progression of the pathological process was noted in the remaining observations.

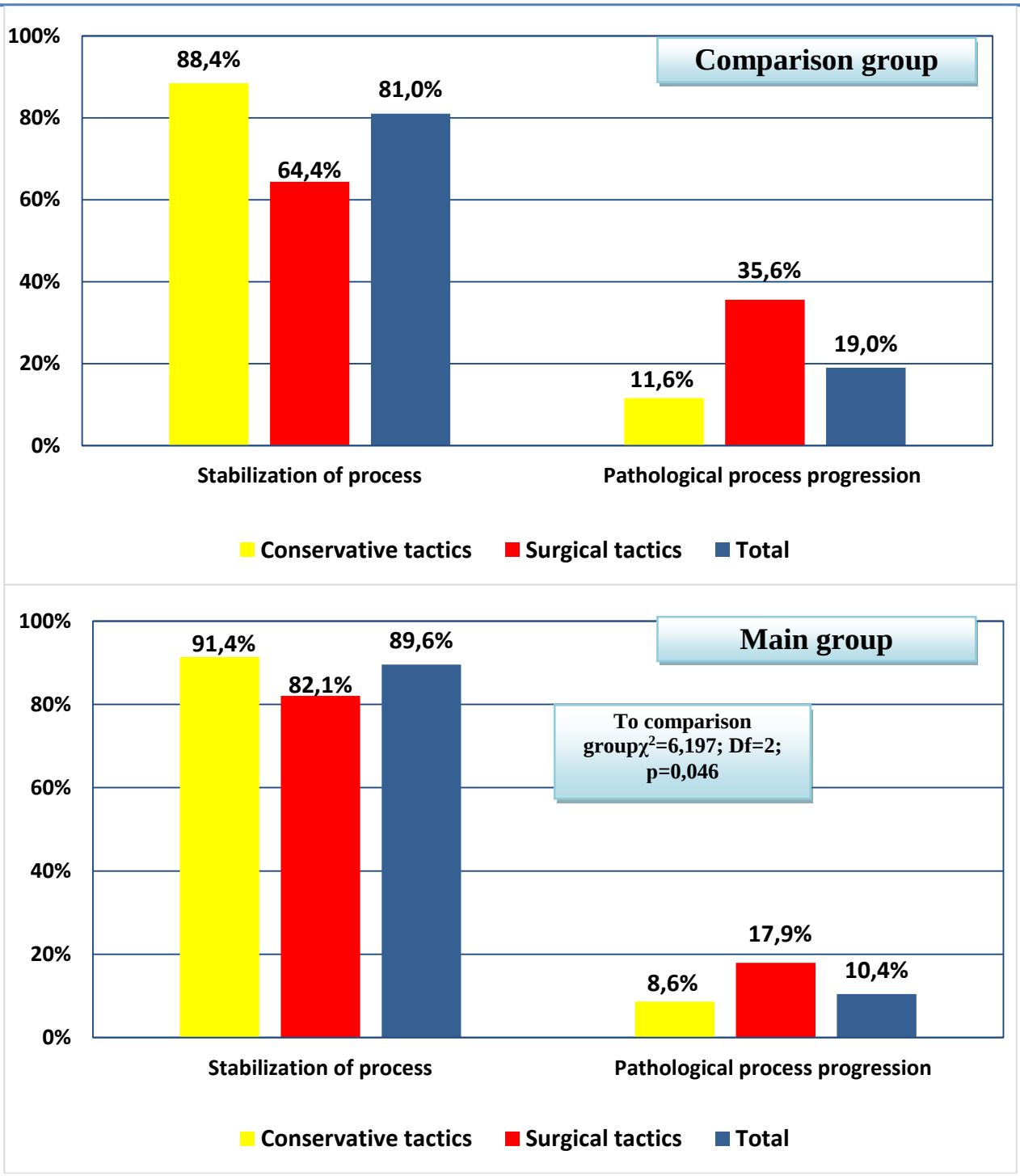

Fig. 1. Comparative estimation of AP course against the background of the under taken tactics

Lower rates of treatment effectiveness for biliary AP were noted among patients with active surgical tactics. So, stabilization of the state after surgical interventions was observed in 82,1% (32 of 39) of cases in the main group, and in 64,4% (47 of 73) of patients in the comparison group. Comparatively better results in the main group are associated with the use of active-expectant tactics with the phased use of surgical treatment methods. We identified three main types of the pathological process progression and their frequency varied depending on the treatment tactics undertaken (Fig. 2). Thus, the transformation of edematous

pancreatitis into sterile pancreatic necrosis was observed in 6,0% (12 of 201) of cases among patients of the main group and in 8,0% (19 of 237) of cases in the comparison group.

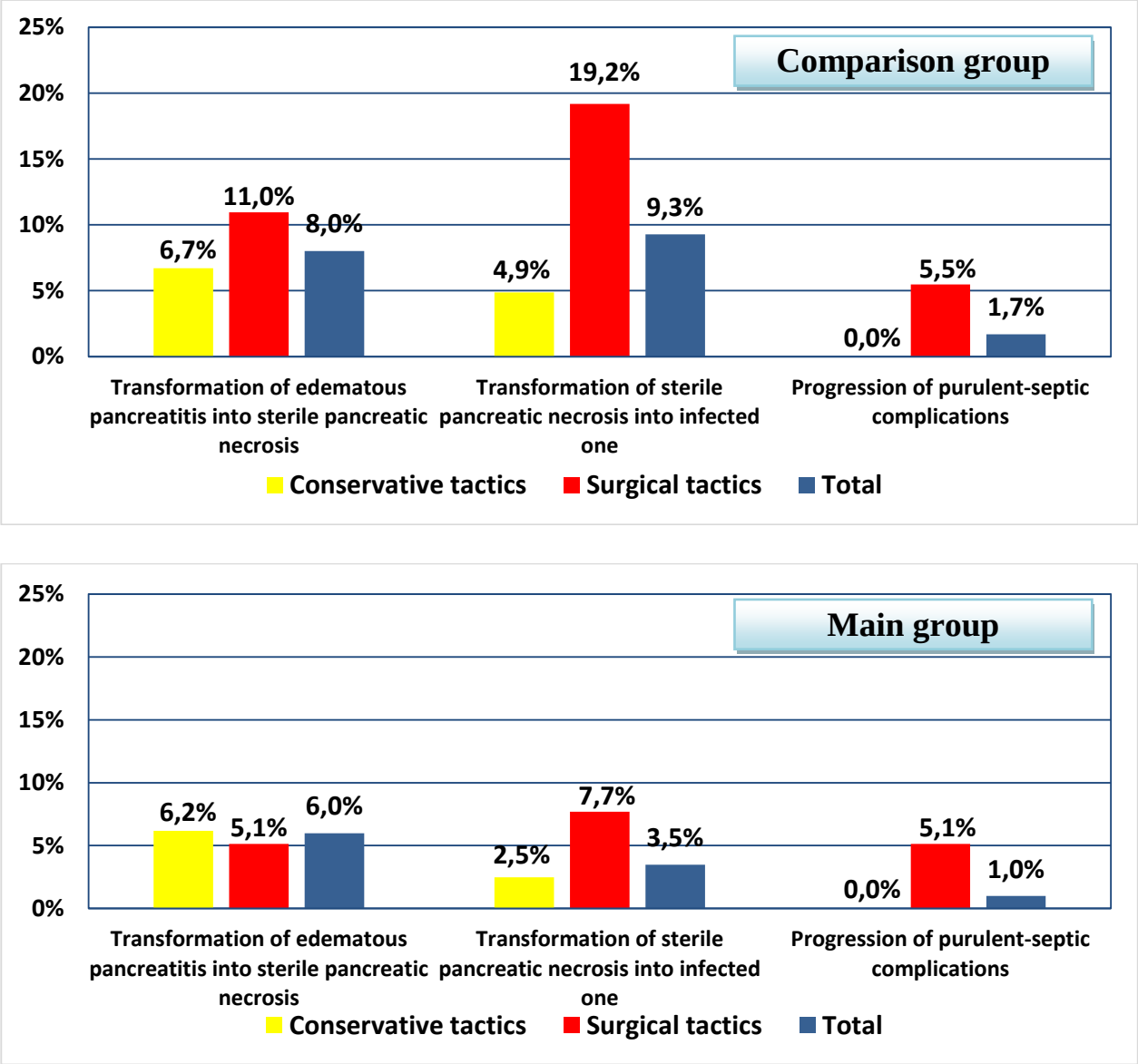

Fig. 2. Progression of the pathological process depending on treatment tactics in compared groups

Transformation of sterile pancreatic necrosis into an infected one was observed in 3,5% (7 of 201) and in 9,3% (22 of 237) of cases in the main and comparison groups, respectively. Against the background of delayed surgical interventions (main group) this indicator made up 7,7% (3 of 39) and with active surgical tactics (comparison group) – 19,2% (14 of 73). The progression of purulent-septic complications was not observed both in the main and in the comparison group at intensive conservative management of patients with biliary AP. However, this phenomenon occurred in 5,1% and 5,5% of cases against the background of surgical tactics. Fig. 3 shows comparative data of complications frequency, reoperations and mortality. Thus, the frequency of observations with systemic complications was less in the main group than in the comparison group

(14,9% versus 24,9%). Repeated surgeries were performed in 3,5% (7 of 201) and in 13,9% (33 of 237) of cases in the main and comparison groups, respectively. The mortality rate was lower in the main group and made up 4,5% (9 of 201cases) versus 11,4% (27 of 237cases) (χ^2=19,234; Df=3; p<0,001).

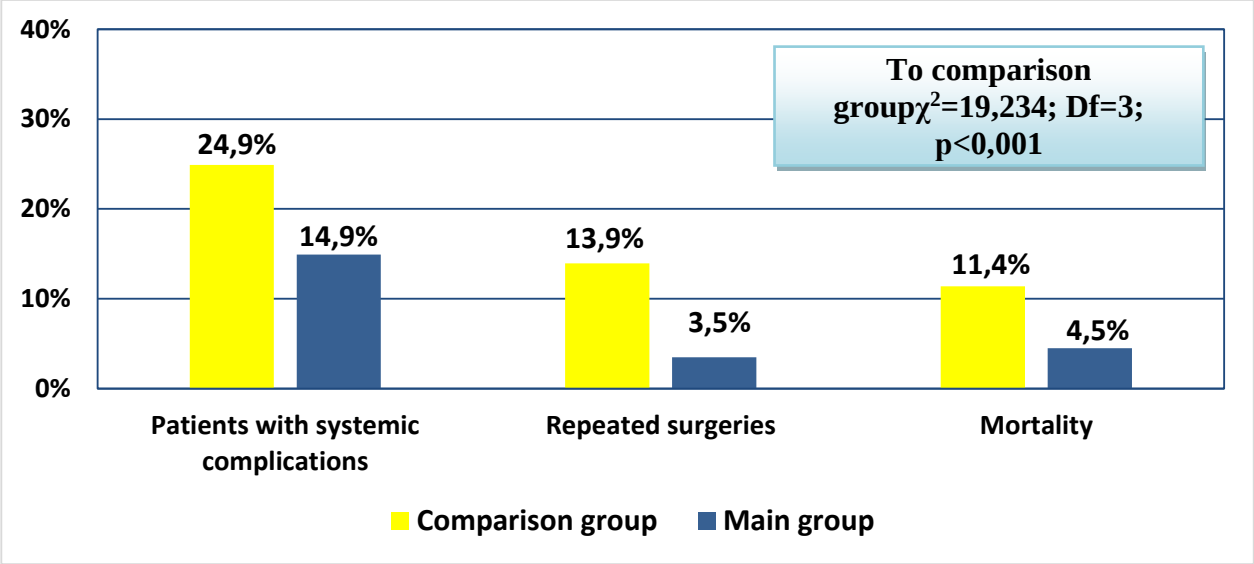

Fig. 3. Comparative data on the frequency of complications, reoperations and mortality

Due to the fact that the most significant complication and cause of lethal outomesin severe acute pancreatitis of biliary etiology was acute respiratory distress syndrome, we evaluated the effectiveness of respiratory support in the development of this complication in the main group (Fig. 4).

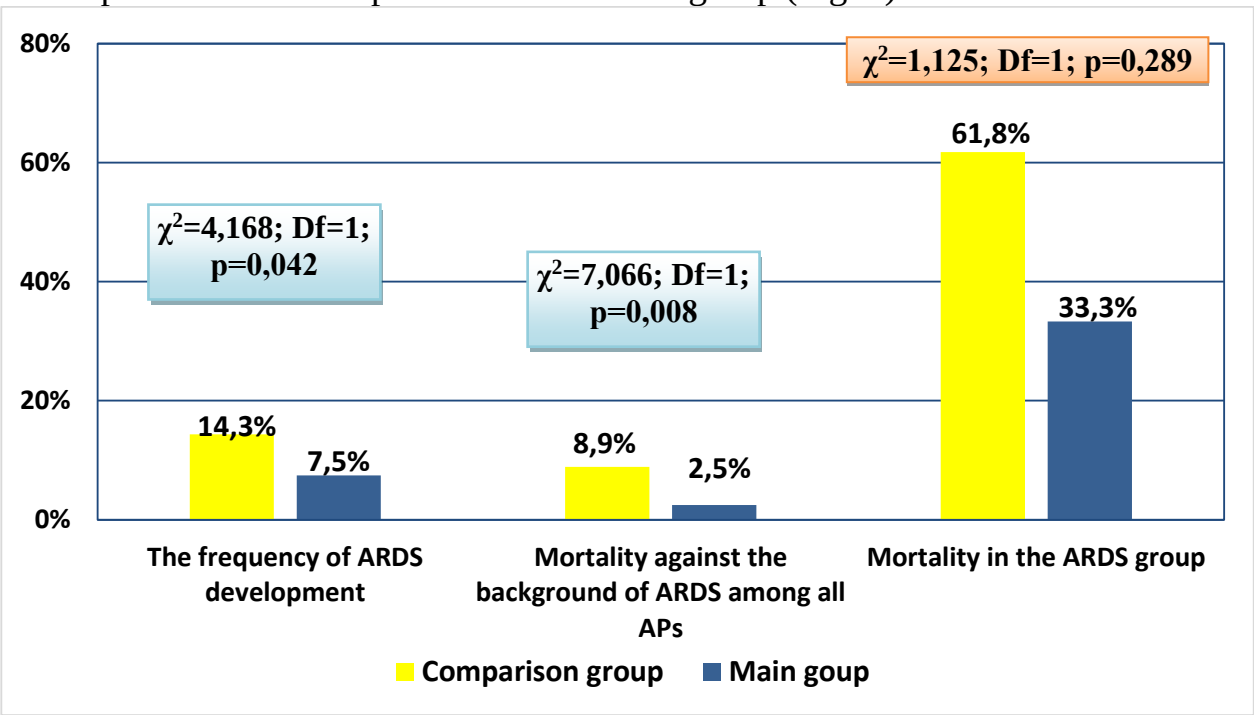

Fig. 4. The efficiency of respiratory support in the development of ARDS against the background of severe biliary pancreatitis

In a comparative aspect the incidence of ARDS was higher in the comparison group (14,3% versus 7,5%; χ^2=4,168; Df=1; p=0,042). The overall mortality against the background of ARDS was 2.5% and 8.9% in the main and comparison groups, respectively. The efficiency of respiratory therapy in patients with ARDS was higher in the main group, where a significantly lower percentage of deaths was also observed than among patients with ARDS in the comparison group (61,8% versus 33,3%).

A comparative analysis of bed days (Fig. 5) showed that in the comparison group this indicator was more important (10,3±0,5 versus 8,5±0,4 days; T=2,81; p<0,01), also before surgery (6,4±0,5 versus 5,0±0,4 days; T=2,18; p<0,05), whereas after surgical interventions the bed-days rate was insignificant, but lower than in the main group (7,2±0,8 versus 8,2±1,0).

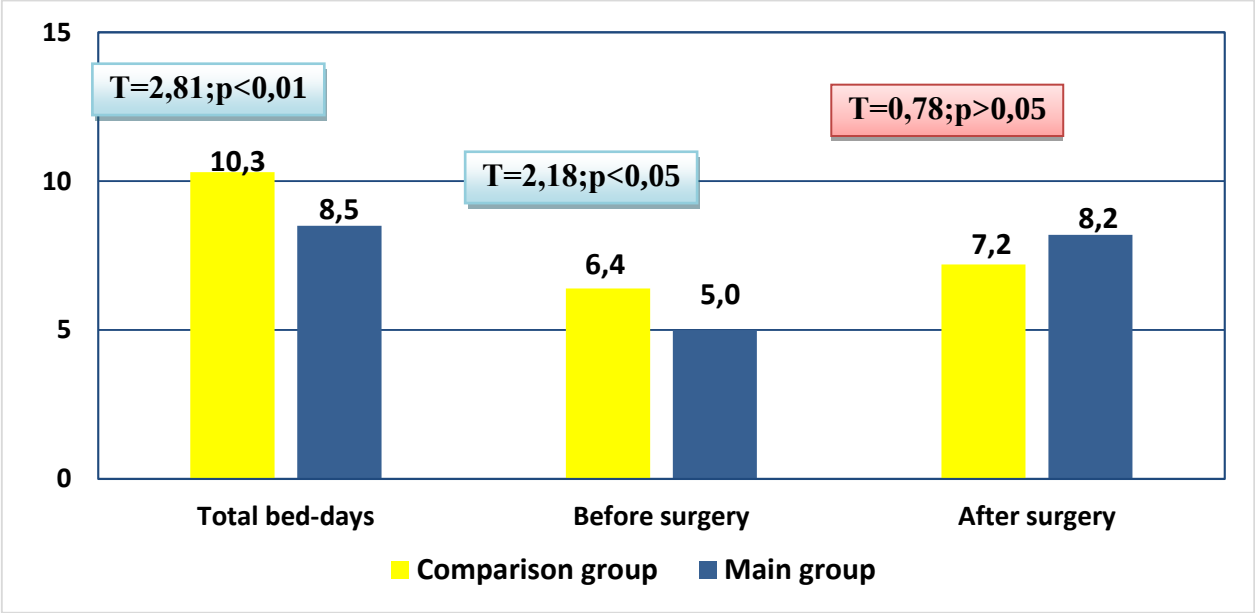

Fig. 5. Bed-days rate in compared groups

Conclusion

Thus, the systematization of criteria for estimation the severity of acute biliary pancreatitis made it possible to change approaches to the choice of therapeutic tactics, in the structure of which the proportion of forced surgical interventions decreased from 30,8% (73 patients in the comparison group) to 19,4% (39 patients in the main group). The frequency of conservative treatment increased from 69.2% (164) to 80,6% (162) (criterion fχ^2=7,425; Df=2; p=0,025) which made it possible to reduce the likelihood of surgical infection of the sterile destructive process in the pancreas, to ensure the possibility of its stabilization in 82,1% of cases (in 32 of 39 operated patients in the main group) (versus 64,4% in the comparison group).The combination of therapeutic tactics using the proposed multicomponent intensive care program for patients with acute biliary pancreatitis caused a decrease in the share of repeated interventions from 4,.2% (33 of 73 in the comparison group) to 17,9% (7 of 39 in the main group), postoperative systemic complications from 54,8% (in 40 of 73 in the comparison group) to 38,5% (in 15 of 39 in the main

group) and mortality from 3,.5% (21) to 15,4% (6).The developed algorithm for the choice of treatment tactics for acute biliary pancreatitis in combination with the proposed clinical and pathogenic aspects of intensive therapy for pancreatogenic systemic complications allowed to reduce their incidence from 24,9% (in 59 of 237 patients in the comparison group) to 14,9% (in 30 of 201 patients in the main group) (criterion $\chi 2$ = 6,881; Df = 2; p = 0,033), to increase the probability of stabilization and regression of the main pathological process from 81% (192) to 89.6% (180) and thereby to reduce the mortality rate from 11.4% (27) to 4.5% (9) (criterion χ^2=19,234; Df=3; p<0,001).

References:

1. Andreev A.V., Ivshin V.G., Goltsov V.R. Treatment of infected pancreatic necrosis with minimally invasive interventions // Annals of surgical hepatology.2015; 20(3): 110-116.

2. Bagnenko S.F., Goltsov V.R., Savello V.E. et all. Classification of acute pancreatitis: the current state of the problem. Bulletin of Surgery named after I.I. Grekov.2015; 174(5): 86–92.

3. IbragimovS.Kh., Shanieva Z.A., Ibadov R.A. Prognostic factors of rational antibiotic therapy for purulent complications of pancreatic necrosis. Materials of the 14th republican scientific-practical conference "Actual problems of the organization of emergency medical care: issues of urgent surgery for diseases and injuries of the hepatopancreatoduodenal zone." Tashkent, December 12, 2017 // Bulletinofemergencymedicine.2017; 10(4): 14.

4. Litvin A.A. Possibilities for the prevention of infectious complications of severe acute pancreatitis // Surgeon. 2012;8: 26-30.

5. Nazirov F.G., Akbarov M.M. Diagnostics and treatment of acute pancreatitis // Annals of surgical hepatology. 2009; 1(4): 85-90.

6. Rizaev K.S., Ermetov A.T., Ruzmatov A.E. et al. Results of surgical treatment of destructive pancreatitis. Medicalnews.2016; 9:50-53.

7. Savelyev V.S., Gelfand B.R., Filimonov M.I. et al. The role of the procalcitonin test in the diagnostics and assessment of the severity of infected forms of pancreatic necrosis // Annals of surgery.2001; 4: 44-49.

8. Khrupkin V.I., Afanasyev A.N., Shalygin A.B. et al. Differentiated treatment and diagnostic tactics in acute destructive pancreatitis. Bulletin of experimental and clinical surgery.2014; 7(2): 125-131.

9. Dellinger EP, Tellado JM, Soto NE. et al. Early antibiotic treatment for severe acute necrotizing pancreatitis: a randomized, double-blind, placebo-controlled study //Annals of Surgery. 2007; 245(5):674-83.

10. de-Madaria E, Herrera-Marante I, González-Camacho V, Bonjoch L, Quesada-Vázquez N, Almenta-Saavedra I et al. Fluid resuscitation with lactated Ringer's solution vs normal saline in acute pancreatitis: A triple-blind, randomized, controlled trial. United European Gastroenterology Journal. 2018 Feb;6(1):63-72.

11. Doctor N, Philip S, Gandhi V. et al. Analysis of the delayed approach to the management of infected pancreatic necrosis //World J Gastroenterol. 2011;17: 366–371.

12. Escobar-Arellano R, Guraieb-Barragán E, Mansanares-Hernández A. et al. Sensitivity, specificity and reliability of the POP score vs. APACHE II score as predictors of severe acute biliary pancreatitis. Cir Cir. 2019;87(4):402-409.

13. Gardner TB, Vege SS, Chari ST. et al. Faster rate of initial fluid resuscitation in severe acute pancreatitis diminishes in-hospital mortality // Pancreatology. 2009; 9(6):770-6.

14. Garg PK, Sharma M, Madan K. et al. Primary conservative treatment results in mortality comparable to surgery in patients with infected pancreatic necrosis //Clinical Gastroenterology and Hepatology. 2010; 8(12):1089-1094.

15. Jinno N, Hori Y, Naitoh I. et al. Predictive factors for the mortality of acute pancreatitis on admission. PLoS One. 2019 Aug 22;14(8):e0221468.

16. Kayar Y, Senturk H, Tozlu M. et al. Prediction of Self-Limited Acute Pancreatitis Cases at Admission to Emergency Unit. GE Port J Gastroenterol. 2019 Jul;26(4):251-259.

17. Singer M, Deutschman CS, Seymour CW.et al. "The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)"//AMA.2016;315(8): 801–10.

18. Szabo FK, Fei L, Cruz LA. et al. Early enteral nutrition and aggressive fluid resuscitation are associated with improved clinical outcomes in acute pancreatitis //Journal of Pediatrics. 2015; 167(2):397-402;

19. Villatoro E, Mulla M, Larvin M. Antibiotic therapy for prophylaxis against infection of pancreatic necrosis in acute pancreatitis // Cochrane Database Syst Rev 2010;(5);CD002941.

20. Vivian E et al. Acute Pancreatitis Task Force on Quality: Development of Quality Indicators for Acute Pancreatitis Management. Am J Gastroenterol. 2019 Aug;114(8):1322-1342.

21. Wall I, Badalov N, Baradarian R. et al. Decreased mortality in acute pancreatitis related to early aggressive hydration //Pancreas. 2011; 40(4):547-50;

22. Wittau M, Mayer B, Scheele J, et al. Systematic review and meta-analysis of antibiotic prophylaxis in severe acute pancreatitis // Scand J Gastroenterol 2011;46(3):261-70. Most recent review of the role of antibiotics in acute pancreatitis.