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Organic and Extraorganic Pancreatic Pseudocysts. The Clinical Course. An Experience and Results of Surgical Treatment

ABSTRACT

This article shows data of the results of surgical treatment of patients with intraorganic and extrapancreatic pseudocyst. According to the study the frequency of formation of extrapancreatic pseudocysts is significantly lower than its intraorganic localization. Extrapancreatic pseudocysts differ with scanty clinical presentation and less quantity of complications. X-ray computed tomography with intravenous bolus tracking is considered a 'gold' standard of the diagnostics of postnecrotic pseudocysts (especially extraorganic localization). Not complicated extrapancreatic postnecrotic pseudocysts, as usually do not require surgical correction and in complicated process a minimally invasive method of surgical intervention should be applied as the main method of the treatment.

Key words: pancreatic pseudocysts, surgical treatment.

INTRODUCTION

In spite of achievements of modern hi-tech medicine and accumulated practical experience in pancreatology, since present times many problems related to early diagnostics and adequate expected treatment of extraorganic and intraorganic extrapancreatic pseudocysts have not been solved, they being formed during pathomorphologic transformation on the different stages of acute destructive pancreatitis.

High prevalence rate of complications and lethality at different clinicopathological forms and in the different stages diseases, it being referred by authors in the research works, and also different variants of surgical treatment, including in a historical aspect, presumably, creates the situation of statistical unauthenticity [14]. Nevertheless, to a great extent it is caused by different terms of hospitalization from the moment of formation of pseudocyst, untimely or/and inadequate diagnostics, absence of single interpretation of pathological forms [1,4]. Such situation creates the necessity of searching new methods of diagnostics, treatment, and also improvement of existing principles and methods of conservative and surgical treatment of pancreatic pseudocysts [10,11,13].

The large variety of localizations, pathomorphology of cysts particularly a state of their wall, character of content, alterations of other departments of pancreas and contigu

ous organs does not allow simply to select the appropriate treatment [2,3,5,8,9]. However, it should be noted that to a great extent testimonies to operations and selecting of its concrete method are determined by localization, term depth and cyst, as well as by a type of developing complication [5,6,11].

In our work we tried to underline some steps in diagnostics, features of the clinical course and a therapeutic approach in revealing extraorgans (extrapancreatic) pseudocysts. It is characterized by the situation that for the last decade there have been considerable achievements in surgical pancreatology and revision of basic ideas about pathomorphologic processes at acute destructive pancreatitis and in development of his polymorphic complications, as well as few advanced studies sanctified to features of the clinical course and variants of complications in extrapancreatic pseudocysts.

MATERIALS AND METHODS

The presented work is based on the analysis of results of conservative and surgical treatment 497 patients with pancreonecrosis, hospitalized in surgical departments and the Center of ambulatory surgery of the Republican center of Emergency Medical Service of the Republic of Sakha (Yakutia) for period from 2010 to 2015.

The diagnosis 'pancreonecrosis' and its complications is verified on the basis of complex inspection including data of clinical, laboratory and instrumental methods of research, including the x-rayed computer tomography. At 384 (77,3%) patients included in the control group according to data of clinical, laboratory and instrumental methods of the research we revealed the development of widespread pancreonecrosis, at 113 (22,7%) the formation of restricted destructive process. As criteria of the formation of widespread pancreonecrosis [13], necrotizing alterations in more than one department of pancreas with the obligatory involvement of cellulose of different areas of retroperitoneum were revealed such as parapancreatic, paracolical, paranephric, small pelvis and/or cellulosis structures of abdominal region (mesentery of thin or thick bowel, small and large stuffing-box). At 53 (10,7%) patients the formation of postnecrotic pseudocysts is marked after 4 and more than weeks with initial diagnosis of sharp pancreatitis, here 17 (32,1%) patients had their extraorgan localization.

All patients were divided into 4 groups concerning to the periods of forming postnecrotics pseudocysts (PNPC). According to the following classification [7] the 1st group included patients with the formation of PNPC for 4-6 weeks since destructive pancreatitis had been diagnosed; the 2nd group comprised patients, which term of formation PNPC amounted 2-3

months from DP onset; the third group included patients, which term of forming PNPC amounted 6 months from DP onset and the fourth group, the term of forming of postnecrotics pseudocysts comprised 6-12 months from DP onset.

The primary estimation of severity of the general state and polyorganic insufficiency for PNPC patients was conducted at the reception of in-patient department and/or reanimation and intensive therapy departments and was based on clinical manifestations of the disease, primary indices of the laboratory and instrumental methods of research, and application of computer versions of calculation algorithms of integral systems-scales TFC [13], APACHE II [15], as well as complex estimation of a level of endogenous intoxication (determination of level and distribution of substances of low and middle molecular mass and oligopeptide (OP) in the different biological media of the organism with selection of 5 phases of endogenous intoxication (EI) and accordingly to the 4th categories of severity [8, 12].

Statistical treatment of the material is produced with the use of the statistical program "StatPlus 2007" for the operating system Microsoft Office 2007 with the calculation of averages ($M \pm m$). A certainty of distinctions (p) of two groups factor was determined on t - to the criterion of Student.

Results and discussion. All patients the researches included in the cohort were divided into two groups depending on localization of PNPC. So the first group was made by patients with intraorganic localization of PNPC at 36 (67,9%) patients. The second group was made by patients with extraorganic localization of PNPC at 17 (32,1%) patients (table. 1).

According to the results of our researches the complicated course of PNPC was revealed in 58,3 cases of 1th group and in 29,4 cases of the 2th group. We presented the complications of PNPC, being found out in the supervision of the 1st and 2nd groups of the research (Tab. 2).

In connection with developing complications of PNPC the operative treatment was conducted to 21 (58,3%) patients of 1th group of supervision : 2 (9,5%) patients were with I degree of severity, 14 (66,7%) patients with II degree of severity, 4 (19,0%) 1 (4,8%) patients with IV degree of severity (Table 3). Thus, at 15 (41,7%) patients of 1th group the reduction of liquid formation or its considerable reduction with jugulation was noted after conducting multicomponent conservative therapy, it excluding invasion interventional methods focused on pseudocyst liquidation.

Suppuration of cyst is educed at 9 (25,0%) patients (88,9%) patients with the period of formation of PNPC for 4-6 weeks, 11,1% patients with the period of forming for 2-3 months). 7 of them (77,8%) patients underwent transcutanical outward drainage of cyst cavity by ultrasound

supervision, at 2 patients (22,2%) laparoscopic complemented operations with the use of intermuscular short-scar incision using a universal surgical set "Mini-assistant". Only in one case the repeated operation was required in the volume of outward drainage of cyst cavity by Penrouse-Miculich's tampon with forming of omentobursostomia, as a result of detritus permanent obturation of drainage constructions. For this patient the complication was related to forming of outward pancreatogenical fistula that was closed independently as a result of conservative measures.

During supervisions at 3 (8,3%) patients PP was complicated by bleeding (all patients with the period of forming of PNPC for more than 6 weeks), here the surgical approach was determined by its intensity, blood loss volume, localization of cyst, severity of the state of the patient. Two types of operative intervention were conducted to the patients with bleeding: pancreatectomy together with a cyst and omentobursostomia, sewing of bleeding vessel and tight swabin of cyst cavity in case of grave condition of the patient. Pancreatectomy is executed 1 (33,3%) patient, omentobursostomia with tight swabin of cyst - 2 (66,7%) patients. It should be noted that at 1 patient, who underwent omentobursostomia with tight swabin and sewing of bleeding vessel, the repeated operation was implemented due to bleeding regression.

But one of the most threatening complication was perforation of pancreas pseudocyst at 5 (13,9%) patients (60 patients with the period of forming of PNPC for 4-6 weeks, 40 patients with the period of forming 2-3 months). The perforation of pseudocyst in a spare abdominal region was noted at 4 (80,0% patients, in pleura cavity at 1 (20,0%) patients. Perforation of cyst in the abdominal region with development of local peritonitis is marked at 3 (60,0%) patients. The drainage of the abdominal region and omental sac is produced all three patients with the use of intermuscular short scar incision. Surgical manual in the volume of outward drainage of cyst cavity and by drainage of abdominal region with the use of celiotomy access in case of occurring diffuse peritonitis was conducted at 1 (20,0%). At 1 (20,0%) patients the perforation of cyst is conducted in a pleura cavity. The treatment of such patient was conducted with active aspiration of pleura cavity contents. After stabilizing of the state the operative intervention was executed to him in the volume of distal pancreatectomy with a cyst.

We examined 4 (11,1%) patients with pancreas pseudocysts with complication due to development of mechanical icterus (75 patients with the period of forming PNPC for 4-6 weeks, 25 patients with the period of forming for 2-3 months). All cysts were localized in the head of pancreas, at 3 (75,0%) patients the cysts were "immature" [6] (forming period - 4-6 weeks). Patients with the "immature" pseudocysts of pancreas were operated with the use of minimally



invasive methodologies, including the cyst drainage by means of ultrasound investigation. At all patients slump of walls and obliteration of cyst cavity were noted. In this group the internal drainage was executed at 1 (25,0%) patient. Complications were noted at 2 (50,0%) patients: 1 case had outward pancreatic fistula after transcutaneous drainage, it being closed after conservative measures, and another case had subhepatic abscess on Kerschne after cystoduodenostomy. The patient was operated and recovered.

In the 2th group of supervision the operative treatment due developing complications of the disease was conducted at 5 (29,4%) patients: with I degree of severity at 1 (20%) patient, with II degree of severity at 3 (60%) patients, with III degree of severity at 1 (20%) patient (Table. 3). Thus at 12 (70,6%) patients, as well as in the 1th group of supervisions, after multicomponent conservative therapy reduction of liquid education or its considerable reduction is marked by regression of clinical manifestations.

Suppuration of cyst is educed at 2 (11,8%) patients, the localization of PNPC was a paranephric cellulose on the left (all patients with the period of forming PNPC of more than 6 weeks). All patients underwent the drainage of cavity of suppurated PNPC with the use of intermuscular short-scar incision.

Abdominal ischemic syndrome that complicated the course of PNPC of extraorganic localization was diagnosed at 2 (11,8%) patients (all patients with the period of forming PNPC of 4-6 weeks). In both cases PNPC was in the projection of paracolic cellulose on the left with driving back of mesostenium root (the size of cysts, as a rule was more than 5 cm in a diameter). The patients underwent the drainage of cysts by ultrasound investigation from lumbar access. For all patients the slump of walls and obliteration of cyst cavity was noted.

Regional portal hypertension was diagnosed at 1 patient of 5,9 cases (with the period of forming of PNPC for more than 6 months). In this clinical case PNPC was localized in the projection of omental sac with driving back of hepatoduodenalis copula lateralis and by compression of janitrix on 1/3 (based on data of selective angiography). The internal drainage of cyst is executed at patients with the use of intermuscular short-scar incision.

Apparently, we used the wide arsenal of operative interventions (Table. 4). On the whole draining operations prevailed in 1 and in 2 groups with the use of littleinvasion methodologies. It is necessary to mark that comparison of patients on the types of the executed operative interventions, in this case, had relative character, as forming of intraorganic pseudocysts, in many cases cause to radical interference (resection) or operations of internal catchment, in case of the well-shaped ("mature") wall of cyst. However, the data demonstrate the predominance of



minimally invasive interferences evidently at both in the 1st group and 2nd groups, being a healthy factor in improvement of quality of medicare and reduction of terms of hospitalization, and earlier renewal of workability of this category of patients.

CONCLUSION. During the study the frequency of forming of extrapancreatic cysts is noted to be considerably lower than their intraorganic localization amounting 35%. Extraorganic (extrapancreatics) pseudocysts differ with scanty clinical symptomatology and characterized by less complications in the period of the existence – 29,4%. The leading method of diagnostics of postnecrotics pseudocysts (to especially extraorgans localization) and for present tense there is the x-rayed computer tomography with the intravenous bolus contrasting. The Uncomplicated extrapancreatics postnecrotics pseudocysts, as a rule, do not require an operative correction, and at complicated their flow the method of choice must be one of methods of wide arsenal of littleinvasion surgery.

Table №1

Localization of postnecrotic pseudocysts

Area of localization	Amount of patients (N=53)	
	абс.	M±m
1th group (n=36)		
Head of pancreas	4	11,1±4,0
Isthmus of pancreas	3	8,3±3,5
Body of pancreas	11	30,6±5,9
Tail of pancreas	15	41,7±6,3
Plural localization	3	8,3±3,5
Total	36	100
2th group (n=17)		
Parapancreatic cellulose	4	23,5±5,4
Area of stuffing-box bag	3	17,6±4,9
Paracolic cellulose on the left	2	11,8±4,1
Paracolic cellulose on the right	5	29,4±5,8
Paranephral cellulose on the left	2	11,8±4,1
Region of small pelvis on the left	1	5,9±3,0
Total	17	100

* - authenticity of distinctions of 1th group in relation to 2th ($p < 0,05$).

Table №2

Complications of postnecrotical pseudocysts organ and extraorgans localizations

Type of complication and localization	Amount of patients (N=53)	
	aбс.	M±m
1th group (n=36)		
Suppuration	9	25,0±5,5
Perforation	3	8,3±3,5
Bleeding	5	13,9±4,4
Development of mechanical icterus	4	11,1±4,0
Total	21	58,3±6,3
2th group (n=17)		
Suppuration	2	11,8±4,1
Abdominal ischemic syndrome	2	11,8±4,1
Regional portal hypertension	1	5,8±3,0
Total	5	29,4±5,8

* - authenticity of distinctions of 1th group in relation to 2th ($p < 0,05$).

Table №3

Structure and description of distribution of patients on weight of the state

Weight of the state			Amount of patients			
Not operated patients			Group 1 (n=36)		Group 2 (n=17)	
APACHE II (points)	TFC (points)	EI (phase)	aбс.	M±m	aбс.	M±m
to 10 (I category)	to 3	I	2	5,6±2,9	8	47,1±6,4
11-20 (II category)	4-7	II	12	33,3±6,0	4	23,5±5,4
21-30 (III category)	8-11	III	1	2,8±2,1	-	-
31 and < (IV category)	12 and >	IV-V	-	-	-	-
Operated patients			Group 1		Group 2	
to 10 (I category)	to 3	I	2	5,6±2,9	1	5,9±3,1
11-20 (II category)	4-7	II	14	38,8±6,2	3	17,6±4,9
21-30 (III category)	8-11	III	4	11,1±4,0	1	5,9±3,1
31 and < (IV category)	12 and >	IV-V	1	2,8±2,1	-	-

* - authenticity of distinctions of 1th group in relation to 2th ($p < 0,05$).

Table №4

Types of operations at treatment of the complicated postnecrotical pseudocysts

Types of operation	Group 1 (n=21)		Group 2 (n=5)	
	aбс.	M±m	aбс.	M±m
Outward catchment	18	85,7±4,5	4	80,0±5,1
- transcutnical under ultrasonic control	10	47,6±6,4	2	40,0±6,3
- laparoscopic complemented from miniaccess	2	9,5±3,8	-	-
Distal pancreatectomy	2	9,5±3,8	-	-
Omeobursostomy with tomponade	2	9,5±3,8	-	-
Minilaparotomy from intermuscular miniaccess	3	14,3±4,5	-	-
Laparotomy with an outward catchment	1	4,8±2,7	-	-
Internal laparotomy	1	4,8±2,7	1	20,0±5,1
Lumbotomy from intermuscular miniaccess	-	-	2	40,0±6,3

* - authenticity of distinctions of 1th group in relation to 2th ($p<0,05$).

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