SURGICAL TREATMENT AND DIAGNOSTICS OF PATIENTS WITH LIVER CYSTIC FORMATIONS

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Summary. *The study is based on a clinical and laboratory examination of 117 patients with cystic liver formations who underwent diapeutic and surgical interventions in the surgical department of the multidisciplinary clinic of Samarkand State Medical University for the period from 2016 to 2023. The advantages of diapeutic interventions include early postoperative rehabilitation of patients, reduction (from 38.5% to 13.5%) or prevention of various types of complications characteristic of laparoscopic and open traditional operations, as well as a reduction in hospital stay from 312.2 ± 96 .8 to 16.2±4.4 hours.*

Key words: *liver cysts, diapeutic interventions.*

The relevance of research. Currently, there is no clear concept for the treatment of NPC in the literature. Some articles report surgical interventions immediately after diagnosis (Poźniczek M. et al, 2020); according to the recommendations of other authors, surgical treatment is carried out only in the presence of clinical symptoms (Chuang Yang et al, 2019). However, the issue of treatment or dynamic monitoring of asymptomatic cysts still remains unresolved. Modern trends in surgery lead to an increase in the frequency of use and expansion of indications for minimally invasive techniques for the treatment of both parasitic and non-parasitic liver cysts.

An analysis of modern literature shows that there are several directions in the treatment of liver cysts: traditional surgical interventions, endovideosurgical methods and percutaneous puncture-drainage treatment of cysts under ultrasound or CT control with pre- and postoperative chemotherapy for parasitic liver cysts. The PAIR technique is widely used and approved by WHO. Nevertheless, attempts to modify percutaneous methods in order to improve treatment results continue. Thus, new types of minimally invasive interventions for echinococcosis have appeared - PEVAC, PAI, Örmeci, MoCaT. The PEVAC technique involves replacing the Seldinger drainage, which carries the risk of contamination of the puncture canal. PAI and Örmeci involve leaving the germicide in the cavity, which does not help reduce the residual cavity and increases the risk of suppuration. According to the MoCaT method, the cyst is punctured immediately with a thick drainage, which is dangerous due to detachment of the chitinous membrane and rupture of the cyst. Despite the fact that the authors of these methods declare their effectiveness and safety, the small number of patients and the short period of

postoperative observation do not allow us to draw objective conclusions. Thus, the decision on the choice of the optimal method of surgical intervention and the method of its implementation remain relevant.

The purpose of the study is .

Materials and methods of research. The study is based on a clinical and laboratory examination of 117 patients with cystic liver formations who underwent diapeutic and surgical interventions in the surgical department of the multidisciplinary clinic of Samarkand State Medical University for the period from 2016 to 2023. Three main methods of surgical treatment of cystic liver formations were used (Table 1). All procedures for patients were performed as planned. Depending on the choice of treatment tactics, the patients were divided into two groups. In the main group of patients, all patients received diapeutic treatment methods: 39 (75.0% of 52) patients with non-parasitic liver cysts underwent percutaneous puncture and sclerosis of the cysts ; 13 (25.0%) patients with parasitic liver cysts underwent percutaneous transhepatic echinococcectomy. In the comparison group, all patients underwent laparoscopic open surgical interventions. Of these, 13 (20.0%) patients with non-parasitic liver cysts underwent laparoscopic fenestration of the cysts with treatment of their epithelial lining, 19 (29.2%) patients with liver echinococcosis underwent laparoscopic echinococcectomy of the liver. Laparotomy, fenestration of cysts with treatment of their epithelial lining and laparotomy echinococcectomy of the liver were performed in 6 (9.2%) and 24 (36.9%) patients with non-parasitic and parasitic liver cysts, respectively.

Table 1.

Methods of surgical treatment of cystic liver formations

Indications for surgery	Study groups									Total (n=117)	
	Comparison group (n =65)					Main group (n =52)					
	Solitary cysts (n=38)		Multiple cysts (n=12)		Polycystic liver disease (n=15)	Solitary cysts (n=42)		Multiple cysts (n=10)			
	aras.	non-parasitic	aras.	non-parasitic		aras.	non-parasitic	aras.	non-parasitic		
Percutaneous puncture and sclerosis of cysts							32		7	9	3.3
Percutaneous						0				3	1.1

transhepatic echinococcectomy											
Laparoscopic fenestration of cysts with treatment of their epithelial lining		5*		2	6					3	1.1
Laparoscopic echinococcectomy of the liver	2									9	6.2
Laparotomy fenestration of cysts with treatment of their epithelial lining					6						.1
Laparotomy echinococcectomy of the liver	1									4	0.5
Segmentectomy or atypical liver resection					3						.6

Note: * difference is significant ($p<0.05$)

Segmentectomy and atypical liver resection were performed in 1 (1.5%) and 2 (3.1%) patients with polycystic liver disease, respectively.

Since 2016 , we began to use puncture-drainage cystectomy methods known as PAIR (Punction-Aspiration-Injection-Reaspiration percutaneous method of puncture treatment)

and PEVAC (Percutaneos-Evacuation of cyst contens percutaneous method of puncture evacuation and drainage of the cavity).

Percutaneous puncture and sclerosis of liver cysts under ultrasound control were considered indicated in the presence of solitary and multiple liver cysts measuring 5 cm or more in diameter in the presence of contraindications to laparoscopic operations. Echosonographically, true cysts were round or oval cavities limited by a thin wall (0.1 - 0.2 cm) without echogenicity of the internal space with clear, even contours and the presence of a clearly visible posterior wall, the absence of internal reflections and a characteristic increase in echo signals directly behind cystic formation. In the presence of an intraluminal septum of the cyst, a characteristic spotty pattern was visualized. Intraluminal echo signals indicated hemorrhage into the cyst cavity or its infection.

Percutaneous puncture was also performed in patients with severe concomitant pathology, who were contraindicated for operations through laparotomy access.

In 4 (7.7%) patients, only aspiration of the cyst contents was performed (Table 2).

Table 2.

Puncture methods of treatment of non-parasitic liver cysts

Puncture methods of treatment	Number of patients (%)
Puncture and aspiration of cyst contents	4 (7.7%)
Puncture, aspiration of contents and sclerosis of the cyst	31 (59.6%)
Puncture, aspiration of contents, sclerosis and drainage of the cyst	17 (32.7%)
Total	52 (100%)

The main puncture method of treatment in the studied patients was percutaneous puncture and sclerosis of liver cysts, which was performed in 31 (59.6%) patients. We used 96% alcohol as a sclerosing agent, introducing it into the cyst cavity in a volume of 40-45% of the amount of evacuated fluid. For large cysts, instillation of 40-60 ml of alcohol was performed to prevent intoxication. The exposure lasted 5 minutes, while the patient was asked to change his body position several times to increase the contact of the inner lining of the cyst with the sclerosant, after which a full evacuation of the contents of the cyst was repeated, followed by removal of the needle. It should be noted that most authors also suggest using 96% alcohol in combination with iodine as a sclerosant.

Research results. After performing the above interventions for the indicated indications, a number of complications were diagnosed. We analyzed their qualitative and quantitative composition depending on the method of surgical treatment (Table 3).

Table 3.

Complications of surgical treatment of liver cysts

Treatment results	Patient group		
	Percutaneo	Laparoscop	Laparotom

	us puncture (n=52)	y (n=32)	y (n=33)
Intraoperative complications			
Bleeding	1 (1.9%)		
Bile leakage	1 (1.9%)		
Allergic reaction	1 (1.9%)	1 (3.1%)	
Pleural sinus puncture	1 (1.9%)		
Colonization of the abdominal cavity		1 (3.1%)	
Complications in the early postoperative period			
Are common:			
Pleurisy	1 (1.9%)		1 (3.0%)
Bronchopulmonary complications		1 (3.1%)	2 (6.1%)
Cardiovascular complications		1 (3.1%)	1 (3.0%)
Acute pyelonephritis			1 (3.0%)
Specific:			
Suppuration of the residual cavity	2 (3.8%)	2 (6.2%)	3 (9.1%)
Bile leakage through drainage		1 (3.1%)	6 (18.2%)
Purulent cholangitis			1 (3.0%)
Postoperative wound suppuration			2 (6.1%)
Dynamic intestinal obstruction			1 (3.0%)
Total complications:	7 (13.5%)	7 (21.9%)	18 (54.5%)*
Total patients:	5 (9.6%)	5 (15.6%)	11 (33.3%)

Note: *difference is significant ($p<0.05$)

The most common complication was suppuration of the residual cavity, which was significantly ($p<0.05$) more often observed after operations for liver echinococcosis performed through laparotomy. The total number of complications – 32 (27.3%) was also significantly ($p<0.05$) higher after laparotomy echinococcectomy, cyst fenestrations, atypical liver resections and other operations performed with traditional open access.

During this study, the time parameters of all methods of surgical treatment of liver cysts were studied (Table 4).

Table 4.

Duration of treatment, surgery and postoperative hospital stay for various methods of surgical treatment

Parameter	Surgical approach				
	Percutaneous puncture (n=52)	Laparoscopy (n=32)		Laparotomy (n=33)	
		Solit. and plural cysts	Polycystic	Solit. and plural cysts	Polycystic
Length of hospital stay (hours)	16.2±4.4	72.6±10.4	47.8±16.4	312.2±96.8*	336.6±144.2*
Operation duration (min)	38.4±6.2	62.8±20.4*	52.4±22.6*	93.4±12.8*	106.2±14.4*
Length of hospital stay after surgery (hours)	6.8±1.2	22.6±6.4	18.4±6.2	192.4±24.2*	192.6±24.2*

Note: *difference is significant ($p<0.05$)

The maximum length of hospital stay was observed in patients after surgical interventions performed for polycystic liver disease through laparotomy access. Almost the same time was spent on treating patients after open echinococcectomy and other interventions for solitary and multiple liver cysts. The length of hospital stay for patients using minimally invasive surgical techniques was significantly ($p<0.05$) shorter. A similar picture is observed when comparing the duration of postoperative hospital treatment after open methods of surgical treatment, which is significantly ($p<0.05$) longer than after minimally invasive methods.

Conclusions. Percutaneous puncture cystectomy is a modern minimally invasive method of surgical treatment of parasitic and non-parasitic liver cysts, which has great clinical effectiveness, which has an important social significance and economic effect in comparison with laparoscopic and traditional methods. The advantages of the intervention include early postoperative rehabilitation of patients, reduction (from 38.5% to 13.5%) or prevention of various types of complications characteristic of laparoscopic and open traditional operations, as well as a reduction in hospital stay from 312.2 ± 96. 8 to 16.2±4.4 hours.

Analysis of the long-term results of diapeutic interventions for liver cysts showed the radicality of the method, being more preferable in patients with non-parasitic liver cysts and can be the operation of choice in patients with severe concomitant diseases.

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