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Department of hepatopancreatobiliary surgery and liver transplantation,
A. N. Syzganov's National Scientific Center of Surgery, Almaty, Kazakhstan.
E-mail: Shokan.Kaniyev@gmail.com zh.baimakhan@gmail.com medeubek@mail.ru

**LIVER HYDATID DISEASE (ECHINOCOCCOSIS):
UPDATES IN SURGICAL TREATMENT STRATEGY**

Abstract. Retrospective comparative analysis was done by authors in 119 cases with parasitic hepatic injury-hydatid disease of liver, which were operated on various surgical methods of treatment (pericystectomy and other methods without removal a fibrous capsule) 2013 between 2016. First identified liver echinococcoses were 101 (84.9%) patients and recurrent liver echinococcosis were 18 (15.1%) patients. The main purpose of the study was to develop a common approach of diagnosis and optimal treatment of hepatic echinococcosis.

There were 79 (66.4%) patients with echinococcectomy without removal of fibrous capsule; when residual cavity was eliminated as follows: a) residual cavity abdominisation in 31 (26%) patients; b) capitonnage of residual cavity in 29 (24.4%) patients; c) omentofixation in 9(7.6%) patients; d) abdominisation 40 (33.6%).

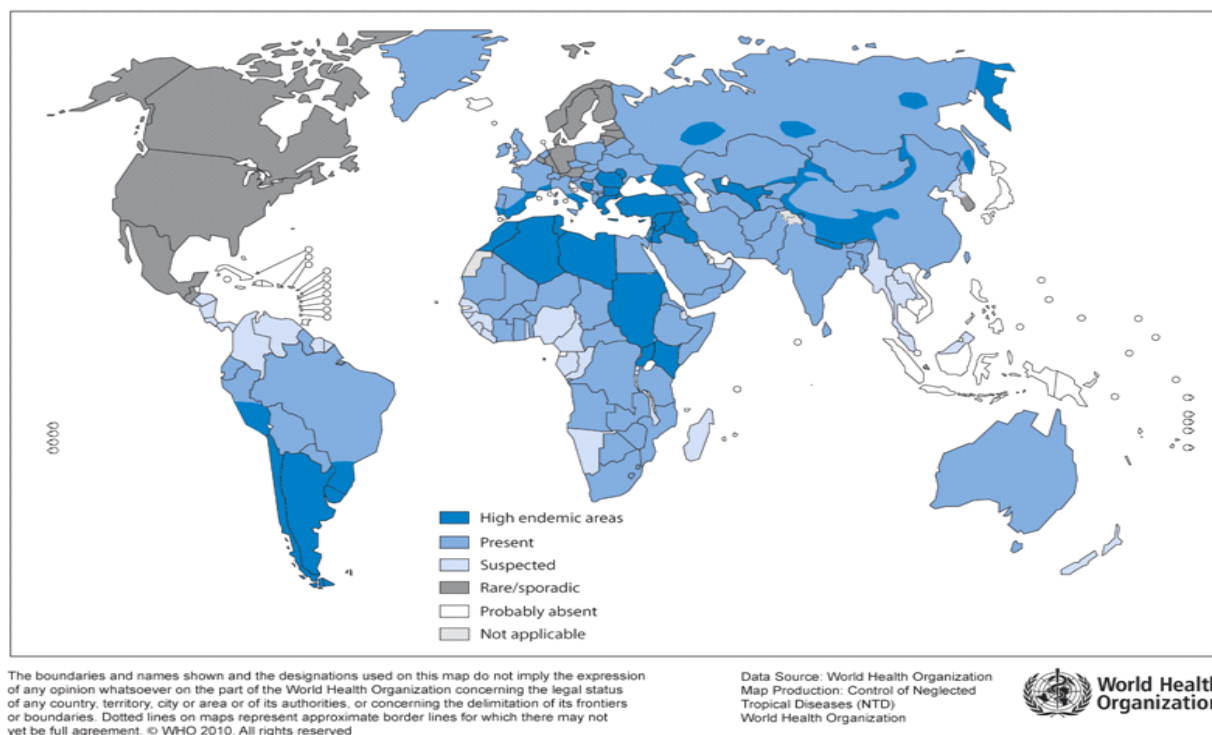
According to the analysis, there was a tendency for an increase in pericystectomy method from 17.9% of patients in 2013, to 56.7% of patients in 2016 respectively. The total percentage of all complications was 17.6%. At the same time, in the performance of pericystectomy, the number of complications was significantly lower to compare with other methods of echinococcectomy. Thus, the authors concluded that the selection method for parasitic liver diseases is pericystectomy. If it is not possible to perform pericystectomy (intraparenchymal localization, lobular bile ducts invasion), it is preferable to perform an echinococcectomy without removal a fibrous capsule.

Key words: hydatid disease of liver, pericystectomy, liver echinococcosis, postoperative complications after echinococcectomy.

Conclusion. In choosing the method of surgery, it is necessary to take into account the size, cyst localization and the interest of the main vessels and biliary tract. Nowadays, the method of choice for parasitic liver diseases is pericystectomy in our center. If it is impossible pericystectomy to perform because of the intraparenchymal location and the interested main branches of the bile ducts, it is preferable to perform organ-saving operations with the subsequent administration of antiparasitic treatment in order to prevent recurrence of the disease.

Introduction. Hydatid disease, included hepatic echinococcosis, remains one of the outstanding surgery issues in the world, which causes extensive damage in the health-care system and overall national economy. In the absence of treatment echinococcosis may pose a threat to human life. Giving relative youth of patients, high frequency of disability at a repeat surgery, with each passing year the problem of surgical treatment of hepatic echinococcosis is becoming more actual issue in endemic regions of Kazakhstan. Despite on success of hepatic echinococcosis in surgical treatment, the question of the optimum size of surgery is open.

Echinococcosis prevalence is global; somewhere endemic regions are whole countries (figure). Echinococcosis is more commonly in Latin America, where its register up to 7.5 cases per 100 000 population per year. Echinococcal disease is also often found in Central Asia, Australia, New Zealand, Russia (mainly the Caucasus) and Europe (Italy, Bulgaria, Iceland). Hydatid disease covers all age categories, but mostly people suffer from a young working age. The disease has been recently registered away from endemic regions in connection with growing movement of people. This problem has been



Distribution of echinococcus granules and cystic echinococcosis (hydatidosis), worldwide, 2009 [2]

affected in 66th World Health Organization Assembly from 20-28 May 2013 in order to improvement and research of effective action against disease [1].

The incidence of hepatic echinococcosis of Kazakhstan's rural population has grown in the dynamics. For example, the incidence amounted to 6.42 in 2013, 6.52 in 2014, 6.65 in 2015 per 100 000 population [3]. In 14 regions of countries retrospective analysis for endemicity has shown that the greatest number of casualties 297 (211 of them were liver diseases) was in the South Kazakhstan oblasts, next was Almaty oblast 146 (110 of them were liver diseases) from 2007 to 2016 (9 months) [4]. Dates from Committees on Consumer Right Protection of Republic of Kazakhstan.

The relevance of problem has shown in many researches of surgeons, who dealt with echinococcosis. The frequency of recurrences is from 7 to 45% of cases in postoperative period. Postoperative recurrences and deaths leave much to be desired [5].

By the frequency localization, the liver struck in 50-60% cases. Once released into systemic blood possible defeat of other organs, included encephalon and soft tissues.

The main purpose of the study was to develop a common approach of diagnosis and optimal treatment of hepatic echinococcosis.

Materials and methods. From 2013 to 2016, in the department of hepatopancreatobiliary surgery and liver transplantation, A. N. Syzganov's National Scientific Center of Surgery, 119 patients underwent various liver surgical interventions for echinococcosis. Uncomplicated forms were in 119 (68.8%) patients, complicated forms were in 31.2%. Complicated forms were known like obstructive jaundices, cystobiliary fistulas, maturation, breakthrough and seeding of the abdominal cavity. The part of complicated forms was found in pre-operative period, certain were directly during operation. By origin residual liver echinococcosis was not observed, whereas first identified were 101(84.9%) patients and recurrent liver echinococcosis in 18 (15.1%) cases.

Diagnosis of hepatic echinococcosis was of then includes standard researches itself, in some cases required individual approach in plan of complementary studies. There are ultrasound, MRI+MRCPT, CT of abdominal cavity with or without bolus contrast in echinococcosis examination. Staging of liver echinococcosis was carried out on the basis of ultrasound results, according to the WHO classification from 2003[5]. The sensitivity of this method makes it possible to classify hydatid liver diseases in the

preoperative period. WHO recommended the following classification, based on ultrasound of the abdominal cavity (table 1).

Classification of cystic Echinococcosis Cysts. Types of echinococcal cysts, depending on the ultrasound data according to WHO classification [2]. This classification is divided into 5 stages depending on cystic activity and fluid, which define further surgical tactics. Ultrasound is still below CT, because of its high resolution [2].

Differential diagnostics of parasitic diseases (echinococcosis and alveococcosis) should be carried out with nosology with different disease etiology: parasitic cysts of other etiology, nonparasitic (polycystic) liver cysts, liver tumors (innocent and malignant), hepatic cirrhosis (macronodular), liver abscesses (amebic and pyogenic) with the above-mentioned methods of examination.

Surgical methods of treatment of liver echinococcosis consist of the following types: puncture-aspiration-injection-reaspiration (PAIR), video endoscopic, surgical (echinococcectomy with residual cavity left, ideal echinococcectomy, resection of part of the affected organ). Table 1 reflects the treatment tactics depending on the stage according to WHO classification.

Table 1 – WHO-IWGE Classification of Ultrasound images of cystic Echinococcosis Cysts. Ultrasound classification

WHO classification	Tactics
CE1	cyst ≤ 5,0 cm only albendazole Cyst ≥ 5,0 cm PAIR+ albendazole
CE2	Surgical treatment + albendazole
CE3a	cyst ≤ 5,0 cm only albendazole Cyst ≥ 5,0 cm PAIR+ albendazole
CE3b	Surgical treatment + albendazole
CE4 и CE5	Watch and wait

Surgical indicators for pericystectomy in hepatic echinococcosis are the presence of large and giant cysts, cysts calcification any liver localization. There are also the following contraindications: central hydatid cyst of the liver with a breakthrough into the bile ducts, the location of cysts near the view of the bile ducts (right or left bile ducts). Upon fulfillment of the above, this method can provide reduce recidivism of hepatic echinococcosis and improving outcomes of treatment. In some cases the option can be atypical resection of liver with parasitic cyst.

Intraoperative antiparasitic treatment of residual cavity plays a major role. There are following methods in our Centre: treatment with 1% povidone solution and hot solution - (80–90 °) with exposure of each from 3 to 5 minutes. To the above surgical treatment, the companion drug of choice is Albezol 800 mg/day in the postoperative period. The duration of the continuous cycle is from 3 weeks to several months, the interval between cycles is 21-28 days. However, the surgical method remains the main method of treatment of patients with echinococcosis (there is as yet no convincing evidence of a positive effect without surgical treatment).

Results and discussion. Comparative analysis was done in 199 cases of operative patients from different ways (pericystectomy and other methods without removal a fibrous capsule) 2013 between 2016. There were 79 (66.4%) patients with echinococcectomy without removal of fibrous capsule; residual cavity was eliminated as follows: a) residual cavity abdominisation in 31 (26%) patients; b) capitonnage of residual cavity in 29 (24.4%) patients; c) omentofixation in 9(7.6%) patients; d) abdominisation in 40 (33.6%). Table 2. In our hospital lately, preference has been given to pericystectomy with the possibility of carrying it out.

We have had annual compares pericystectomy with group without removal a fibrous capsule, there was a tendency for an increase in pericystectomy method from 17.9% of patients in 2013, to 56.7% of patients in 2016 respectively. Also there was a tendency for reduction echinococcectomy without removal of fibroses capsule in 23(82.15) patients and 13 (43.3%) patients in 2013 and 2016 respectively.

Table 2 – Types of surgery from 2013 to 2016

№	2013 n=28	2014 n=30	2015 n=31	2016 n=30
Residual cavity abdominisation	11(39,3%)	10 (33,3%)	10 (32,2%)	9 (30%)
Capitonnage of residual cavity	10 (35,7%)	10 (33,3%)	6 (19,4%)	3 (10%)
Omentofixation	2 (7,1%)	1 (3,3%)	6 (19,4%)	1 (3,3%)
Pericystectomy	5 (17,9%)	9 (30%)	9 (29%)	17 (56,7%)

On the basis of the analysis from postoperative complications had been identified in 21 (17.6%) patients with different types of complications (table 3): a) infectious complication in 9 (7.5%) patients, b) biliary fistulas in 6 (5.05%) patients, c) responsive pleurisy in 6 (5.05%). Postoperative bed day was at an average 11.8 days (table 3), the patients with capitonnage of residual cavity were stayed maximum 20 days at hospital. Extent of blood loss was from 100 ml to 400 ml. There were no fatalities.

Table 3 – Compliance with various methods of echinococcectomy

	Residual cavity abdominisation	Residual cavity abdominisation	Residual cavity abdominisation	Residual cavity abdominisation
Extent of blood loss	100-150,0 ml	100-200 ml	100 ml	150-400,0 ml
Hyperthermia	3	5	1	0
Biliary fistulas	3	1	1	1
Pleurisy	2	3	1	0
Bed day	12,3 (10-17)	14,2 (9-20)	11,5 (10-15)	9,2 (7-10)

In examining complications, also comparative analysis with group: pericystectomy and echinococcectomy without removal of fibroses capsule was held. There was the highest number of infectious complication in group with capitonnage of residual cavity in 5 (4.2%) patients. Responsive pleurisy was in 3(2.5%) patients with capitonnage of residual cavity, in group with pericystectomy had not this complication. Biliary fistulas were in abdominisation residual cavity in 3(3.5%), for comparison with pericystectomy was 1(0.8%) patient.

Of 21 patients with compliance in post-operative period, only 1 patient had pericystectomy and it's worth knowing that 40 pericystectomy had been performed. Our analysis has shown that blood loss was more in pericystectomy (up to 400 ml), in comparison without removal of the fibrous capsule (up to 100 ml).

In the analysis on 18 recurrent cases of hepatic echinococcosis revealed that first made operations without removal of the fibrous capsule.

Relapse prevention of parasitic diseases is possible with full-fledged pre-operative diagnosis, respect for the principles of aparasitic intervention, exclusion of cyst contents into area of surgery, completely removing fetal elements, ensuring aparasitic intervention with modern physical and chemical parasitocidal actions, intraoperative ultrasonographic control of intervention radicalism, pre- and postoperative preventive chemotherapy with albendazole. In order to prevent the recurrence of echinococcosis we use anthelmintic specific therapy in a comprehensive treatment program. Conservative therapy of patients with echinococcosis is indicated for multiple lesions of the liver, lungs and other organs, in which operative intervention carries a high risk for life. In certain situations, the surgery is costly, so relapse of hepatic echinococcosis can be economic relevant, which could help equip the operating room with everything necessary to prevent relapse. Conservative and surgical treatment of echinococcosis is complementary each other and requires a strict individual approach.

Conclusion. In choosing the method of surgery, it is necessary to take into account the size, cyst localization and the interest of the main vessels and biliary tract. Nowadays, the method of choice for

parasitic liver diseases is pericystectomy in our center. If it is impossible pericystectomy to perform because of the intraparenchymal location and the interested main branches of the bile ducts, it is preferable to perform organ-saving operations with the subsequent administration of antiparasitic treatment in order to prevent recurrence of the disease.

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About authors:

Kaniyev Shokan Akhmetbekovich – surgeon-department of hepatopancreatobiliary surgery and liver transplantation, JSC NSCS named after A. N. Syzganov. Shokan.Kaniyev@gmail.com.

Baimakhanov Zhasulan Bolatbekovich – PhD, chief scientific officer division of HPB and LT JSC NSCS named after A. N. Syzganov.

Skakbayev Aidar Serikhanovich – surgeon-department of hepatopancreatobiliary surgery and liver transplantation, JSC NSCS named after A. N. Syzganov.

Doskhanov Maksat Onalbaevich – head of the department HPB and LT JSC NSCS named after A. N. Syzganov.

Medeubekov U.Sh. – Deputy Chairman of the Board of JSC NSCS named after A.N. Syzganov, dr. med., professor. E-mail: medeubek@mail.ru

Baimakhanov Bolatbek Bimendeevich – Chairman of the Board JSC NSCS named after A. N. Syzganov, MD, professor.

**Ш. А. Каниев, Ж. Б. Баймаханов, А. С. Скакбаев, М. О. Досханов,
Е. К. Нурланбаев, Е. Серикулы, Г. К. Каусова, Р. А. Бардыбай, Д. З. Байгусова,
Ч. Т. Садыков, М. А. Сейсембаев, Ұ. Ш. Медеубеков, Б. Б. Баймаханов**

А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығы
Гепатопанкреатобилиарлы хирургиясы және бауыр трансплантациялау бөлімі, Алматы, Қазақстан

БАУЫРДЫҢ ГИДАТИДТІК ЭХИНОКОККОЗЫ: ЖАҢА ХИРУРГИЯЛЫҚ ӘДІСТЕР СТРАТЕГИЯСЫ

Аннотация. Авторлар 2013 жылдан 2016 жыл аралығындағы 119 бауыр паразитарлы ауруына шалдыққан-бауыр эхинококкозы, әртүрлі хирургиялық әдіспен (перистэктомия және фиброзды капсуланы қалдыру) ота жасалған науқастарға ретроспективті анализ жүргізді. Бірінші рет ауырған 101 науқас (84,9%), және де рецидивті бауыр эхинококкозы 18 (15,1%) жағдай.

Фиброзды капсуласы қалдырылған 79 (66,4%) науқас болды, қалдық қуысын келесі әдістермен жойылды а) қалдық қуысын абдоминизациялау 31 (26%) науқас. б) қалдық қуысын капитонаждау 29 (24,4%) науқас. в) оментопексия 9 (7,6%) науқаста. г) абдоминизация 40 (33,6%) науқаста.

Анализ кезінде байқалатын жайт, перистэктомияның көбею тенденциясы 2013 жылда 17,9% науқастан, 2016 жылы 56,7% науқасқа дейін сәйкесінше. Ота жасалғаннан кейінгі асқынулар 17,6% құрады. Перистэктомия кезінде эхинококкэктомиядан қарағанда асқынулар аз кездесті. Сонымен авторлар бауырдың паразитарлы ауруларында – перистэктомия жасаған жөн деген тұжырымға келді. Перистэктомияны жасау мүмкін болмаған жағдайда (интрапаренхиматозды орналасу, бөлім өт жолдарының қатысуы) фиброзды капсуланы қалдырып эхинококкэктомия жасаған жөн.

Түйін сөздер: бауыр эхинококкозы, перистэктомия, эхинококкоздың таралуы, эхинококкэктомиядан кейінгі операциядан кейінгі асқынулар.

Авторлар туралы мәліметтер:

Каниев Шокан Ахметбекұлы – А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының ГПБХ және БТ бөлімінің дәрігер-ординаторы,

Баймаханов Жасулан Болатбекович – PhD, А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының ГПБХ және БТ бөлімінің бас ғылыми қызметкері,

Сқақбаев Айдар Серікханұлы – А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының ГПБХ және БТ бөлімінің дәрігер-ординаторы,

Досханов Максат Оналбаевич – А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының ГПБХ және БТ бөлімінің меңгерушісі,

Медеубеков Ұ.Ш. – А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының басқарма Төрағасының ғылыми-клиникалық қызметтер жөніндегі орынбасары, м.ғ.д., профессор.

Баймаханов Болатбек Бимендеевич – А. Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының АҚ Басқарма Төрағасы, м.ғ.д., профессор.

**Ш. А. Каниев, Ж. Б. Баймаханов, А. С. Сқақбаев, М. О. Досханов,
Е. К. Нурланбаев, Е. Серикулы, Г. К. Каусова, Р. А. Бардыбай, Д. З. Байгусова,
Ч. Т. Садықов, М. А. Сейсембаев, Ұ. Ш. Медеубеков, Б. Б. Баймаханов**

Национальный научный центр им. А. Н. Сызганова,
Отделение гепатопанкреатобилиарной хирургии и трансплантации печени, Алматы, Казахстан

**ГИДАТИДОЗНЫЙ ЭХИНОКОККОЗ ПЕЧЕНИ:
НОВОЕ В ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ**

Аннотация. Авторы провели ретроспективный сравнительный анализ у 119 случаев с паразитарными поражениями печени – эхинококкоз печени, оперированных различными хирургическими методами лечения (перицистэктомия и другие методы оставлением фиброзной капсулы) с 2013 по 2016 годы. Первично выявленные эхинококкозы печени составили 101 пациентов (84,9%), и рецидивные эхинококкозы печени 18 (15,1%) случаев.

При эхинококкэктомии с оставлением фиброзной капсулы у 79 (66,4%) пациентов остаточная полость ликвидирована следующим образом: а) абдоминализация остаточной полости у пациентов у 31 (26%) пациентов. б) капитонаж остаточной полости у 29 (24,4%) пациентов. в) оментопексия у 9 (7,6%) пациентов. г) абдоминализация 40 (33,6%).

При анализе, имеется тенденция к увеличению перицистэктомии с 17,9% пациентов в 2013 году, до 56,7% пациентов в 2016 году соответственно. По результатам анализа послеоперационных осложнений, общий процент всех осложнений составил 17,6%. При этом, при выполнении перицистэктомии, количество осложнений было значительно меньше в сравнении с другими методами эхинококкэктомии. Тем самым, авторы пришли к выводу, что методом выбора при паразитарных заболеваниях печени является – перицистэктомия. При невозможности выполнить перицистэктомию (интрапаренхиматозное расположение, заинтересованность долевыми желчными протоками) предпочтительней выполнить эхинококкэктомию с оставлением фиброзной капсулы.

Ключевые слова: эхинококкоз печени, перицистэктомия, распространенность эхинококкоза, послеоперационные осложнения после эхинококкэктомии.

Сведения об авторах:

Каниев Шокан Ахметбекович – врач - ординатор отделения ГПБХ и ТП ННЦХ им. А. Н. Сызганова,
Баймаханов Жасулан Болатбекович – PhD, главный научный сотрудник отделения ГПБХ и ТП ННЦХ им. А. Н. Сызганова,

Сқақбаев Айдар Серікханович – врач - ординатор отделения ГПБХ и ТП ННЦХ им. А. Н. Сызганова,
Досханов Максат Оналбаевич – заведующий отделением ГПБХ и ТП ННЦХ им. А. Н. Сызганова,
Медеубеков У.Ш. – заместитель Председателя правления по научно-клинической деятельности АО ННЦХ им. А. Н. Сызганова, д.м.н., профессор, e-mail: medeubek@mail.ru

Баймаханов Болатбек Бимендеевич – председатель правления АО ННЦХ им. А. Н. Сызганова, д.м.н., профессор.

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