World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-39, October 2024
ISSN: 2749-3644

ECHINOCOCCUS AND ITS IMPORTANCE IN SURGERY (LITERATURE REVIEW)

Malikov Nodirbek Muzaffar ugli
Assistant of the Department of General Surgery No.2
Tashkent Medical Academy
Zhangabaeva Dinora Mirovna
Student of the Faculty of Pediatrics
Tashkent Medical Academy

Article history:

Received: August 8th 2024
Accepted: September 6th 2024

Abstract:

The article presents a review of the literature on one of the urgent problems of surgery. Echinococcal disease is widespread in many countries of the world. According to some estimates, more than 1 million people are currently affected by echinococcosis in the world, while the incidence in some endemic and non-endemic regions differs by more than 200 times [1]. In the last decade, there has been an increase in the incidence of echinococcosis and the expansion of the geographical boundaries of the disease. Despite the improvement of surgical intervention techniques using modern technologies, the introduction of various chemical and physical methods of influencing the parasite, the frequency of recurrence of echinococcosis remains high. However, this is the basis for a deeper study of the problem.

Keywords: liver echinococcosis, hydatid echinococcosis, surgical treatment, chemotherapy.

INTRODUCTION. The Republic of Uzbekistan is the most densely populated region in Central Asia. With the development of laparoscopic technique, surgical indications for laparoscopic treatment of hepatic echinococcosis (HE) have expanded and broadened. Until now, almost all published articles discuss the feasibility and superiority of laparoscopic treatment of liver echinococcosis, ignoring its specific treatment algorithm, which is extremely important for clinical surgeons [2].

Echinococcosis is a chronic disease in which solitary or multiple cystic masses develop in the liver, lungs, and much less frequently in other organs. The causative agent is the larval stage of Echinococcus granulosus [3].

Echinococcosis of the liver belongs to severe parasitic diseases and remains a serious medical and social problem in a number of countries around the world, including Russia. Rostov region is one of the endemic foci of echinococcosis. The prevalence of echinococcosis in the Russian Federation is 0.39 cases per 100 thousand inhabitants with its multiple excess in echinococcosis endemic areas [4]. As is known, echinococci belong to the family Taeniidae, genus Echinococcus, which includes several species. The most widespread and most important is the causative agent of human hydatid (cystic) echinococcosis - E. granulosus. Hydatid cysts of echinococcosis can be localised in any organ, but the most frequent, in 70-90% of cases, is liver echinococcosis [5]. The highest prevalence of human and animal echinococcosis has been reported in countries located in temperate climatic zones, including several countries in Eurasia, Australia, parts of the Americas, and North and East Africa [6-7]. Hydatid echinococcosis is widespread in many regions of the world, especially in several countries in Asia, Europe, North Africa. Among biohelminthoses in Kazakhstan, echinococcosis remains the most common parasitic chronic human disease [8]. To date, the diagnosis of focal liver masses, including echinococcosis, has been developed quite well. In many medical centres of our country visualisation of echinococcal cysts of the liver is performed with the help of ultrasound examination (ultrasound), computer and magnetic resonance tomography, which in the majority of observations allow to reveal the parasitic character of cysts. Diagnosis verification is also carried out on the basis of immunoserological reactions, such as indirect haemagglutination reaction, latex-agglutination reaction, scolex-precipitation reaction, and enzyme immunoassay. When several immunological tests are used simultaneously, their diagnostic efficiency exceeds 90%. There are probably some strain differences in the causative agent of alveolar echinococcosis E.multilocularis. In 2005, cases of invasion with alveolar-like parasites were described in some animals - intermediate hosts living in Tibet; it is believed to be a separate species of parasite - E. shiquicus, different from the classical E. multilocularis. Aggregation of data from different diagnostic studies made it possible to clarify the ranges of different echinococcoses. Unlike most parasitic diseases, unicameral or cystic

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-39, October 2024
ISSN: 2749-3644

echinococcosis caused by E. granulosus is most common in the Northern Hemisphere, although endemic territories are also known in the Southern Hemisphere. Human cases are more common in sheep production areas. Areas endemic for echinococcosis include Australia and New Zealand, Western Europe, Russia, the Middle East, the northern provinces of China and Japan. In the Americas, echinococcosis is most common in Argentina, Chile and Uruguay. Small foci of echinococcosis have been identified in Alaska and Canada [9].

Classification of surgical interventions for hepatic echinococcosis

Given the variety of surgical interventions for liver echinococcosis, a classification of surgical interventions is necessary for systematisation of data and comparative analysis of the literature, which, unfortunately, is currently missing. In different years many different classifications were proposed, the principles of their construction changed and accordingly different authors used different terms for the same surgical intervention. In domestic surgery the most widespread is the classification of surgical methods of echinococcosis treatment by B.V. Petrovsky et al. (1985) [10]. According to this classification, types of echinococcectomy and methods of eliminating the residual cavity are distinguished:

• Echinococcectomy:
–closed (with resection of the organ, with removal of the organ, perfect echinococcectomy);
– open (after puncture or dissection of the cyst).
• Methods of eliminating residual cavity:
– external drainage;
– elimination of the cavity (capitonage, sealing, etc.);
– combined methods.

A.N.Lotov, N.R.Chernaya et al. (2011) distinguish three main methods of traditional surgical treatment of echinococcosis [11]:

1) removal of echinococcal cyst elements without fibrous membrane (echinocolectomy);
2) removal of the parasite together with the fibrous sheath (pericystectomy);
3) removal of an echinococcal cyst by resection of the organ.

Accordingly, within each method there are also distinguished:

• perfect echinococcectomy - removal of the parasite without opening the chitinous shell;
• closed echinococcectomy - after removal of the parasite elements, suturing of the cavity of the fibrous capsule without drainage;
• semi-closed echinococcectomy - leaving a drain in the residual cavity after its capitonage;
• omentoplasty - tamponisation of the fibrous capsule cavity with a strand of the greater omentum;
• open echinococcectomy (marsupialisation).

There is no consensus in foreign literature on this issue either. In 2010, the Conciliation Commission of the World Health Organisation (WHO-IWGE) published a review of surgical treatment options for echinococcal cysts. A review of options for surgical treatment of echinococcal cysts was published, where the following surgical interventions are distinguished: closed total pericystectomy, which implies removal of the cyst with fibrous capsule without opening it, and open total pericystectomy, which means opening the cyst, exposure of the cyst contents to chemical agents, then removal of the contents and complete removal of all cyst shells with fibrous capsule. There is also partial cystectomy, which consists in opening the cyst, antiparasitic treatment of its contents and removal of the cyst shells with partial pericystectomy. Percutaneous interventions (PAIR: puncture, aspiration, injection, re-aspiration) are considered separately [12].

Several classifications of hepatic echinococcosis have been proposed. The most widespread is the classification of A.V. Melnikov, who distinguishes in the course of echinococcosis: - asymptomatic stage; - stage of progressive growth of the parasite; - stage of complications. F.G. Nazirov and F.A. Ilhamov (2005), who have vast experience in treating patients with echinococcosis, proposed their own detailed classification of this disease. Clinical and morphological classification of liver echinococcosis according to F.G. Nazirov and F.A. Ilhamov [13].

I. On morphology of larvocysts: 1. Echinococcusveterinorum; 2. Echinococcushominis; 3. Echinococcusacephalocystis.

II. According to the number of cysts: 1. single; 2. multiple: 3. with lesion of one lobe; 4. with lesion of both lobes.

III. According to the presence of combined lesions of other organs: 1. isolated liver damage; 2. combined lesions of other organs.

IV. According to the diameter of the cysts: 1. small (up to 5 cm); 2. medium (6-10 cm); 3. large (11-20 cm); 4. giant (21 cm or more).

V. Segmental localisation of the cyst (I-VIII segments**).**

VI. According to the peculiarities of cyst localisation: 1. marginal localisation; 2. cysts of the diaphragmatic surface; 3. cysts of the visceral surface; 4. intra-parenchymatous cysts; 5. cysts in the region of the liver gate; 6. cysts occupying the whole lobe of the liver.

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-39, October 2024
ISSN: 2749-3644

VII. According to the presence and type of complications: 1. uncomplicated form; 2. complicated form: 2.1. suppuration of the cyst; 2.2. breakthrough into the biliary ducts (type 1 - with a pronounced clinic. 2.3. breakthrough into abdominal cavity; 2.4. breakthrough into pleural cavity; 2.5. compression of bile ducts with mechanical jaundice; 2.6 portal hypertension; 2.7. calcification; 2.8. combined complications; 2.9. rare types of complications.

VIII. By origin: 1. primary; 2. recurrent; 3. implantation. This classification, despite some overloading, sufficiently reflects the main pathological processes occurring in the liver in echinococcosis.

TREATMENT METHODS FOR ECHINOCOCCOSIS

Difficulties in effective treatment of echinococcosis and high probability of its recurrence are explained by the lack of a universally accepted optimal variant of surgical treatment depending on the size and localisation of the cyst, the thickness of the fibrous capsule, the qualitative characteristics of the parasite itself, the lack of uniform methods of treatment of the cyst bed and the small selection of highly effective germicidal solutions. The qualitative characterisation of the parasite is nowadays almost decisive in the choice of the method of surgical intervention, as indicated by numerous studies [14].

In case of large and multiple echinococcal cysts, complete replacement of a lobe or anatomical half of the liver with cysts, their marginal and diaphragmatic location, and also in case of recurrent cysts, most surgeons prefer to perform liver resection, which is considered to be the most radical operation that gives the best guarantee that there will be no recurrence of the disease [15].

When choosing surgical treatment, the surgeon must decide at least three issues: the method of cyst removal, the relationship to the fibrous capsule, and the method of eliminating the residual cavity. It is known that the leading role in the development of recurrences of the disease is played by germinal elements of echinococcus, brood capsules with protoscolexes, fragments of germinative shells of larvocysts of the parasite and small acephalocysts. Therefore, an integral part of echinococcectomy and prevention of postoperative recurrences after removal of the chitinous sheath is reliable intraoperative antiparasitic treatment of the fibrous capsule wall [16].

In echinococcosis surgery, nothing is as controversial and controversial as the treatment of the fibrous capsule of the cyst. A number of investigators have found scolexes in the fibrous capsule, penetrating from the hydatids into its inner thickness and onto its outer surface. Consequently, in their opinion, any variant of echinococcectomy without removal of the fibrous capsule was a non-radical operation. Chemotherapy is not indicated for inactive non-growing cysts or calcified asymptomatic cysts. The daily dose of albendazole is 10-15 mg/kg in two doses; mebendazole is 40-50 mg/kg in three doses. Chemotherapy is recommended to be carried out continuously for 3-6 months [17]. With proper organisation of the diagnostic process, echinococcosis, in particular, liver echinococcosis, in most patients can be detected at an early stage of development, i.e. at small (up to 2-5 cm) cyst sizes. Tactics of treatment of the disease at these sizes of cysts in the liver have not been discussed until recently due to the lack of possibility to detect such cysts.

It should be noted that one of the threatening complications of hepatic echinococcosis is the cyst bursting into the abdominal cavity. For abdominal cavity sanation, antiparasitic solutions diluted tenfold are used to reduce their toxic and damaging effect on the peritoneum as opposed to those used for disinfection inside the cyst. Studies conducted to evaluate the disinfecting effect of antiparasitic solutions used in clinical practice have shown that 3% hypertonic sodium chloride solution and 0.04% chlorhexidine solution at 10-minute exposure do not provide complete disinfection of germinal elements of echinococcal cysts [18].

Capitonage, invagination of the residual cyst cavity, omental tamponade (omentoplasty) and aplatisation (abdominisation) are used to eliminate the residual cyst cavity. As a rule, the choice of the method of liquidation of the residual cavity depends on the size and location of the latter and the stiffness of its walls. For many years, the most common method of residual cavity liquidation was cyst marsupialisation, which is currently used only rarely.

The resolution of the XXII International Congress of the Association of Hepatobiliary Surgeons of the CIS countries summarised and formulated indications for percutaneous methods of treatment of liver echinococcosis: these are monovesicular cysts (I-II type according to Gharbi) without fibrous capsule calcinosis, patient's refusal from traditional intervention, severe somatic pathology. Regarding the size of cysts, small cysts (up to 3-4 cm) are subject to percutaneous puncture with antiparasitic treatment. In case of larger cysts, external drainage with mandatory removal of all germinative elements of the cyst is indicated. In cysts larger than 10 cm, a more restrained approach is appropriate [19]. According to the literature, the best results are observed with combined treatment (drug therapy and percutaneous puncture) of

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-39, October 2024
ISSN: 2749-3644

intraparenchymatous cysts larger than 5 cm. From the point of view of O.G. Skipenko, V.D. Parshin et al. (2011) the use of percutaneous puncture methods of treatment of liver echinococcosis is associated with a high risk of dissemination of the parasite in the abdominal cavity, the development of anaphylactic reactions and complications associated with puncture, so the authors prefer traditional methods of treatment [20-31].

Thus, the role of echinococcus in surgery is very relevant and requires a deeper study of the period from the onset of the disease to diagnosis.The prevalence of this disease in Central Asia, including Uzbekistan, makes surgeons more careful and requires many scientific studies.Undoubtedly, the use of the latest minimally invasive methods of treatment of echinococcus in surgery is extremely important and requires performing this procedure in the early stages of the disease.

REFERENCES

1. Юрий Леонидович Шевченко, Феруз Гафурович Назыров. Хирургия эхинококкоза. УДК 616-002.951.21-089// Москва 2016.
2. Хайитов, Илхом, and Абдулхамид Аминжанов. "Роль лапароскопических вмешательств в лечении эхинококковой болезни печени." *Eurasian Journal of Medical and Natural Sciences* 3.2 (2023): 33-37.
3. *Стреляева А.В. и др.* Лечение эхинококкоза печени взрослых больных, осложненного пециломикозом и ХОБЛ //Хирургическая практика. 2014. №. 1. С. 37-42.
4. Ветшев П. С., Мусаев Г. Х. Эхинококкоз: современный взгляд на состояние проблемы //Анналы хирургической гепатологии. – 2006. – Т. 11. – №. 1. – С. 111-117.
5. Бессонов А. С. Цистный эхинококкоз и гидатидоз. – 2007.
6. Назыров Ф. Г., Ильхамов Ф. А. Классификация эхинококкоза печени и методов его хирургического лечения //Анналы хирургической гепатологии. – 2005. – Т. 10. – №. 1. – С. 8-11.
7. Шамсиев А. М. Миниинвазивные хирургические вмешательства при эхинококкозе легких у детей //Здравоохр Таджикистана. – 2004. – Т. 3. – С. 37.
8. Musaev G. H., Jehinokokkoz V. P. S. sostojanie problem (Echinococcosis: status of the problem) //Klin. perspekt. gastorojenterol. gepat. – 2005. – №. 4. – С. 7-12.
9. Назыров Ф. Г., Десятов А. В., Махмудов У. М. Комплексный подход к хирургическому лечению эхинококкоза печени и органов брюшной полости: Материалы научно-практической конференции //Материалы научно-практической конференции. Ташкент. – 2004. – С. 50.
10. Петровский Б. В., Милонов О. Б., Дееничин П. Г. Хирургия эхинококкоза. – Медицина, 1985.
11. Лотов А. Н. и др. Сберегающая хирургия при эхинококкозе печени //Анналы хирургической гепатологии. – 2011. – Т. 16. – №. 4. – С. 11-18.
12. Brunetti, Enrico, Peter Kern, and Dominique Angèle Vuitton. "Expert consensus for the diagnosis and treatment of cystic and alveolar echinococcosis in humans." *Actatropica* 114.1 (2010): 1-16.
13. Назыров Ф. Г., Ильхамов Ф. А. Классификация эхинококкоза печени и методов его хирургического лечения //Анналы хирургической гепатологии. – 2005. – Т. 10. – №. 1. – С. 8-11.
14. Черноусов А. Ф., Мусаев Г. Х., Фатьянова А. С. Эхинококкоз: стратегия и тактика //Вестник хирургической гастроэнтерологии. – 2013. – №. 4. – С. 5-10.
15. Вишневский В. А. и др. Операции на печени //М.: Миклош. – 2003. – Т. 157.
16. Шамсиев А. М., Шамсиев Ж. А., Рахманов К. Э. Анализ результатов хирургического лечения эхинококкоза печени //Вісникнауковихдосліджень. – 2016. – №. 1.
17. Shamsiyev, Azamat Muhitdinovich, et al. "Development of surgical treatment of echinococcosis of the liver (literature review)." *Современные инновации: актуальные направления научных исследований*. 2017.
18. Мукантаев Т. Е. Антипаразитарные свойства сколецидных растворов, используемых при прорыве эхинококковой кисты в брюшную полость //Вестник хирургической гастроэнтерологии. – 2015. – №. 1-2. – С. 69-74.
19. Цвиркун В. В., Буриев И. М., Глабай В. П. Резолюция XXIV Международного конгресса Ассоциации гепатопанкреатобилиарных хирургов стран СНГ "Актуальные проблемы гепатопанкреатобилиарной хирургии" 19-22 сентября 2017 года, г. Санкт-Петербург //Анналы хирургической гепатологии. – 2018. – Т. 23. – №. 1. – С. 116-120.
20. Скипенко О. Г. и др. Эхинококкоз печени: современные тенденции в хирургической

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-39, October 2024
ISSN: 2749-3644

тактике //Анналы хирургической гепатологии. – 2011. – Т. 16. – №. 4. – С. 34-39.

21. Моминов, А. Т., Маликов, Н. М., Якубов, Д. Р., & Абдусаломов, Б. А. (2022). ПРОБЛЕМЫ ОБЕЗБОЛИВАНИЯ В АМБУЛАТОРНОЙ ХИРУРГИИ. *European Journal of Interdisciplinary Research and Development*, *10*, 81-89.
22. Ergashev, U. Y., Zokhirov, A. R., & Ernazarov, K. I. (2022). THE STUDY OF DIAGNOSTICS AND PREVENTION OF PATHOPHYSIOLOGICAL PARAMETERS AFTER MODERN TREATMENT OF PURULENT-NECROTIC PROCESSES IN DIABETIC.
23. Ergashev, U. Y., Minavarkhujayev, R. R., Gafurov, B. T., Malikov, N. M., Ortiqboyev, F. D., & Abdusalomov, B. A. (2022). Efficiency of Percutaneous Minimally Invasive Technologies in the Treatment of Patients with Obstructive Jaundice. *Jundishapur Journal of Microbiology*, *15*(2), 645-655.
24. Эргашев, У. Ю., Моминов, А. Т., Маликов, Н. М., & Якубов, Д. Р. (2022). НАРУШЕНИЕ ЦЕЛОСТЬНОСТИ СТОПЫ У ПАЦИЕНТОВ С САХРНЫМ ДИАБЕТОМ (ОБЗОР ЛИТЕРАТУРЫ). *Journal of new century innovations*, *17*(1), 7-18.
25. Yusufjanovich, E. U., Tashgarkanovich, M. A., & Muzaffarovich, M. N. (2023). Evaluation of biochemical changes in endogenous intoxication in diabetic complications. *Conferencea*, 109-114.
26. Yusufjanovich, E. U., & Rafiqovich, Z. A. (2023). The Use of Endovascular Laser Coagulation in the Recurrence of Varicose Veins of the Lower Extremities. *International Journal of Scientific Trends*, *2*(2), 24-31.
27. Маликов, Н. М., Махмудов, А. М., & Бобокулов, М. Ф. (2023). ИСПОЛЬЗОВАНИЕ РАНОЗАЖИВЛЯЮЩЕГО ПРЕПАРАТА ФарГАЛС ПРИ ЛЕЧЕНИИ ГНОЙНЫХ РАН. *Journal of new century innovations*, *22*(2), 143-146.
28. Yusufjanovich, E. U., Rafiqovich, Z. A., & Irsalievich, E. K. (2023). Assessment of the Process of Epithelialization After Complex Treatment of Diabetic Foot Syndrome. *Texas Journal of Medical Science*, *16*, 19-23.
29. Ergashev, U. Y., Zokhirov, A. R., & Ernazarov, K. I. (2022). THE STUDY OF DIAGNOSTICS AND PREVENTION OF PATHOPHYSIOLOGICAL PARAMETERS AFTER MODERN TREATMENT OF PURULENT-NECROTIC PROCESSES IN DIABETIC.
30. Yusufjanovich, E. U., & Rafiqovich, Z. A. (2023). Evaluation of the lipid peroxidase index in diabetic complications. *Conferencea*, 68-73.
31. Yusufjanovich, E. U., & Rafiqovich, Z. A. (2023). Treatment of purulent-necrotic lesions of the lower extremities with modern drugs. *Conferencea*, 88-94.