Results of the Surgical Treatment of Liver Hydatid Cyst

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Abstract:

The hydatic disease is a severe, potentially lethal disease caused by Echinococcus granulosus larvae. The infection with E. granulosus should be seen as a challenge both from a medical and economic point of view. In Romania, the incidence of this pathology is increasing, with 5-6 cases per 100.000 inhabitants each year.

Aim: aim of this research was to find out which procedure (radical, drainage and obliteration) are the best procedure for the treatment of liver hydatid cyst.

Methodology: 44 patients with Liver hydatid cyst (LHC) Preventive medicine department were operated in the surgical ward of Nangarahar Medical University Hospital between 13/sep/2018 and 8/oct /2019 were reviewed prospectively. It was observed that cystectomy or hepatectomy had been preferred in sure patients the size of cyst small and sub capsular location.

Results: There was no significant difference in the type of surgical procedures, post-operative early complications. recurrence rates and mean duration of hospital stay were significantly lower in patients treated by radical procedures than the group of patients who are drainage and obliteration.

Conclusion: Radical operations for hydatid cystic lesion are safe methods and may be preferred in selected cases.

Key words: hydatid cyst diseases, hepatectomy, cystectomy, drainage.

Introductions

Human echinococcosis is a zoonotic infection transmitted by dogs in livestock raising areas. The causative agent is Echinococcus granulosus belonging to taeniidae family of cestoda class (7). Based on their genetic structures and biological properties, six different types of E. granulosis (sheep, cattle, horse, camel, swine and deer) have been shown, but four are of public health concern: *E. granulosus* (which causes Cystic Echinococcosis), E. multilocularis (which causes alveolar echinococcosis), E. vogeli and E. oligarthrus (which cause polycystic echinococcosis). Two new species have recently been identified: E. shiquicus in small mammals from the Tibetan plateau and E. felidis in African lions, but their zoonotic transmission potential is unknown. Molecular studies using mitochondrial DNA sequences

have identified 10 distinct genetic types (G1—10) within *E. granulosus* (22,25). These include two sheep strains (G1 and G2), two bovid strains (G3 and G5), a horse strain (G4), a camelid strain (G6), a pig strain (G7), and a cervid strain (G8). A ninth genotype (G9) has been described in swine in Poland and a tenth strain (G10) in reindeer in Eurasia. The sheep strain (G1) is the most cosmopolitan form and is most commonly associated with human infections (22). Certain human activities (e.g. the widespread rural practice of feeding dogs the viscera of home-butchered sheep) facilitate transmission of the sheep strain and consequently raise the risk that humans will become infected (25).Cystic echinococcosis or hydatid disease, also known as hydatidosis, remains a significant public health problem in endemic areas such as Mediterranean countries, the Middle East, Australia and South America. Worldwide travelling and ongoing immigration lead the disease to spread through rarely seen regions like United States and Europe (3O.22) Although liver (50-70%) is the most frequently infected organ, hydatid cysts (HC) can be developed in many other organs (25)). Hydatid cysts are generally asymptomatic. However, they can be infected or ruptured or can exert pressure to adjacent organs after reaching remarkable sizes (24.18). The rupture can cause anaphylaxis or dissemination (11). This disease can be caused by any one of three species of the genus Echinococcus: E. granulosus, E. multilocularis and E. oligaettas. Since the epidemiological and pathological features of these three tapeworms are very similar, only a detailed description of E. granulosus is given here epidemiology Hydatid disease, caused by the larval form of E. granulosus, has a cosmopolitan distribution, being particularly prevalent in the sheep- and cattle-raising areas of the world. Reservoir and transmission Dogs are the main reservoir of human infection. Humans acquire hydatid disease when they swallow infected ova as a result of their close association with dogs, and the insanitary habit of not washing hands before ingesting food. The ova may live for weeks in shady environments but they are quickly destroyed by sunlight and high temperatures. The dog faeces contaminating fleeces of sheep can also be an indirect source of human infection. The main cycle of transmission in Kenya is between dogs and domestic livestock (Plate 31). It has been shown that in Kenya hydatid cysts are present in more than 30% of cattle, sheep and goats, though the disease in humans occurs infrequently, except in the areas of Turkana. Canines are heavily infected while light infections have been recorded in wild carnivores, for example jackals and hyenas. Turkana tribesmen are the most heavily infected people in Kenya because of the intimate contact between children and the large number of infected canines in the area – here dogs are used to clean the face and anal regions of babies (21). The hydatic disease is a severe, potentially lethal disease caused by Echinococcus granulosus larvae. The infection with E. granulosus should be seen as a challenge both from a medical and economic point of view (7).In Romania, the incidence of this pathology is increasing, with 5-6 cases per 100.000 inhabitants each year (20).E. granulosus is a hermaphrodite flatworm with three stages of development. The structure of the cyst is usually made of three components: the pericyst, made of the host's inflammatory tissue, the exocyst and the endocyst, where the scolecs and the proligere membrane are produced (25,24). The hydatic cyst occurs by accidental infection of the human with the eggs of Echinococcus granulosus, followed by the development of the larvae, most commonly in the liver (50-70% of cases), and less commonly in the lungs, spleen, kidneys and brain (15,1).At this time, the WHO-IWGE classification sets both the staging of hepatic hydatid cysts based on the ultrasound aspect,

and the therapeutic attitude depending on this staging (5) . Echinococcosis granulosus is a severe parasitic disease which affects both animals and humans, with various complications and frequent relapse. Hepatic hydatidosis is a significant health problem in Mediterranean and tropical countries such as Middle East,South America,Turkey,and Australia. As an endemic disease, it causes social and economic losses for countries 1. Although the disease may occur in all age groups, 50-55 % of cases are found in the 20-40 year age group. Movchun et al 2 Hydatidosis may be asymptomatic for many years.It may become evident while the liver is imaged for other reasons 3Various procedures have been developed to overcome these complications such as external or internal drainage following evacuations and capitonnage with or without omentoplasty 4, 5. Many controversial results have been reported but total excision of the cyst alone or with part of the liver appears to be the most effective 6,8. In this study, the various methods of treatment, exter-nal drainage, obliteration (introfexion, capitonnage and omentoplasty) and radical (pericystectomy, partial hepatectomy) procedures, in the HLD (hydatid liver disease) was evaluated according to duration of hospitalization and the rates of morbidity, mortality and recurrence (10).

Methodology:

The 44 patients with Liver hydatid cyst (LHC) Preventive medicine department were operated in the surgical ward of Nangarahar Medical University Hospital between 13/sep/2018 and 8/oct / 2019 were reviewed prospectively. It was observed that cystectomy or hepatectomy had been preferred in sure patients the cyst size are small and sub capsular location. Age, gender, presenting symptoms of the patients and findings on the physical examination, location and size of the cysts, surgical procedures performed, medical treatments administered, post-operative complications & hospital stay were recorded. All cysts were classified with ultrasound as defined by Gharbi (10).CT scan) was used to determine the anatomical details. During laparotomy, intra-cystic pressure was lowered by aspirating a small amount of cyst fluid after the aspiration; the cyst was protected with compresses immersed into 20% hypertonic sodium chloride. 10 to 15 minutes were allowed to pass following the application of 20% hypertonic sodium chloride in to the cyst cavity. Germinative membrane was removed by means of cystectomy. Cyst drainage, omentoplasty or capitonnage was performed following partial cystectomy. Cystectomy or hepatectomy was preferred in certain patients with cysts of small size or subscapular location. All communicating biliary ducts with the cyst cavity were sutured. Complication rates were compared using Fisher's exact test. $P<0.04$ were considered to be statistically significant. the duration of hospital stay was compare by student's t test.

Results

The 35 of the 44 patients were female and 9 were male. The patients were between 18 - 70 years of age. The most common symptom was pain on the right upper quadrant (68,18%) , nausea & vomiting (15,90%) and the most common finding on the physical examination was a palpable mass at RUQ (15,90%),

Table -1:

No	Sign & symptom of patient's	No of patients	Percentage %
1	R U Q pain	30	68,18%
2	Nausea & vomiting	7	15,90%
3	Abdominal mass in RUQ	7	15,90%

The Location of Most hydatid cysts of the liver were found in the Right lobe 31 patients (70, 45%), 2 patients (4,54%) in Lt lobe and in 11 patients (25,00 %)in both lobes.

Table -2.

No	Location in the liver	No of patients	Percentage %
1	Right lobe	31	70,45%
2	Lift lobe	2	4,54%
3	Both lobe	11	25,00%

The sizes of the cysts are between 6 to 12 cm in 29 patients (53,70%) , less than 5 cm in 11 patients (25%) and above of 13 cm in 4 patients (9,09%).

Table -3.

No	Size of the cyst	No of patients	Percentage %
1	6 -12 cm	29	53,70%
2	Less than 5 cm	11	25,00%
3	Above from 12 cm	4	9,09%

Right Kocher incision was preferred in 36 patients (81.81%). Median incision was performed in 8 patients (20.45%).Of 44 hepatic cysts, 7 (19.44%) were treated with partial cystectomy and drainage, 15 (34,09%) with partial cystectomy and capitonnage and 14 (31.81%) with partial cystectomy and omentoplasty. The following methods were used: total pericystectomy in 7 (19.44 %) patients, and with resection of the left liver lobe in 3 (5/55 %) patients. 3 patients (8.33%) had communication with the biliary tract, and all of them underwent choledochotomy. this condition depended the CBD was occluded by the parasitic material. Or liquidation of the residual cavity, choledochotomy removal of the parasitic material from the bile duct, cleansing of the bile duct with antiseptic solution and external drainage of the bile ducts was performed. 3 patients (8, 33%) underwent cholecystectomy. Postoperative complication rate was 24,90% Wound infection developed in 3 (8.3%) of the patients and was the most common early post-operative complication. Biliary fistula was observed in 3 patients. All fistulas healed no need intervention. There was no significant difference in the type of surgical procedures and early post-operative complications ($p>0.046$). Mean duration of hospitalization, and recurrence rates were (6.00 days, 8.3%) in drainage and obliteration group and (3.96 days, 0%)in patients treated by radical procedures respectively.($p <0.046$).

Table - 4:

Procedure& complications	Drainage Group (7)	Obliteration group(26)	Radical proce.(11)
Cavity abscess	1	0	0
UTI	0	0	1
Wound infection	2	1	0
Fistula	1	2	0
Empyema	0	1	0
Atelectasis	0	0	1

Table 5 : Recurrence rate , Hospital stay & p - value.

No		Drainage & obliteration group	Radical procedure group	p- value
1	Recurrence rate	3(8,3)	0	<0,046
2	Hospital stay	6,00 days	3,96 days	<0,046

Discussion

Hydatid cyst (HC), or hydatidosis, is a global parasitic zoonosis (3). That is endemic to countries in the Mediterranean, Turkey, Australia, North Africa, Australia, New Zealand, South America, the Philippines, Northern China and the Indian subcontinent. Like other cestoda, Echinococcus has intermediate and definitive hosts. Canidae, especially dogs, are the definitive hosts; ruminants may also host the organism. Sheep and goats are intermediate hosts, although E. granulosus can also be hosted by a wide range of vertebrates. The diagnosis of non-complicated HC of the liver is based on clinical suspicion. Ultrasonography and computed tomography are the most important diagnostic tools and are helpful for identifying any associated complications and for planning treatment (27).Hepatic hydatid cyst is health problem of the world. The parasite is bound to the intestinal mucosa of animals such as dog, fox and wolf and millions of parasite eggs to disperse with each defecation of the animal. The parasite reaches the liver by portal vein and lymphatics vessels after passing the intestinal mucosa as a consequence of ingesting contaminated foods (19). The symptoms of hydatid cysts of the liver depend on the localization, size, and stage of the cyst. It has been reported that asymptomatic cases constituted 38 to 60% of all patients (13).Complicated cysts (free rupture into the intraperitoneal cavity or biliary tract, or infected by bacterial infection) are also symptomatic. Although liver hydatid cysts are usually asymptomatic, the most common symptoms are pain , hepatomegaly, Fever and jaundice along with complicated cysts.The diagnosis is based on laboratory tests (immunological) and radiological imaging. Ultrasound is the most useful noninvasive diagnostic test (10,4). CT scan provides better information about the location and size of the cyst (23).Treatment belongs to the stage, localization, size, and complications of the cysts. Chemotherapy is the choice treatment for patients who have a high risk for surgery. Albendazole is recommended as the chemotherapeutic agent of choice. The usual dosage is 10-15 mg/kg/day (17). Surgery is the basic treatment for hepatic hydatidosis. The main goal of surgical treatment is to eradicate the parasite, to prevent intraoperative spillage of cyst contents and to obliterate the residual cavity. If the cyst is localized peripherally, total cystectomy or hepatic resection is

recommended because of the low rate of recurrence. Complete en block surgical resection without antihelminthic chemotherapy is successful without recurrence in a follow-up period (12) .partial cystectomy and omentoplasty are the most frequently used operations for intraparenchymal hydatid cysts.. Fluid accumulation and recurrence lso can be prevented by using a capitonnage technique, but it is important to remember that capitonnage carries with it the risk of injuring major ducts or vessels passing just outside the pericystic layer. Exploration of the biliary tract with choledochotomy and placement of a T-tube or choledochoenterostomy are mandatory in cases of hepatic hydatidosis complicated with rupture into biliary tract. Exploration of ductus choledochus was performed in six of our patients with hydatic disease complicated with rupture into the biliary tract (9).A drain is usually placed to prevent abscess, biloma, or biliary peritonitis. If bile drainage lasts more than 10 days, it should be considered as a biliary fistula (16, 8). Leakage stopped spontaneously in five patients within 7 days; Relapse is a major problem in hydatid disease surgery. Ultrasonography alone is not enough to detect relapses following surgical treatment of liver hydatid cyst. If we compare the results of our research with the results of the research that was conducted in Selim Sözen, Kayseri Traınıng and Research Hospıtal, General Surgery Harman mahallesi Mezarlık sokak 29/11 Seraçe sitesi c blok. From 2007 and 2008 in 48 patients who have liver hydatic hydatic cyst , so there isn't so much difference between both of them. In our research, 44 patients have been liver hydatic hydatic cyst , in drainage group one patient (2,94 %) patient caught up cavitary abscess, 2 patients (5,88%) faced with wound infection, one patient (2,94%) of them caught up fistula. In the obliteration group one patient (3,84%) caught wound infection ,2 patients (7,69%) caught up fistula and one patient (3,84%) caught up empyema and in the radical procedure group one patient (9,09%) caught up UTI and one patient (9,09%) caught up atelectasis. while in the research of Kayseri Traınıng and Research Hospıtal In 48 who have been hepatic hydatic cyst , in drainage group 1 patient (12,5%) caught up cavitary abscess, 2 patients (25,%) faced with wound infection, 2 patients (25,00%) of them caught up fistula. In the obliteration group 2 patients (7,14%) caught wound infection ,2 patients (7,14%) caught up fistula and 1pateint (3,57%) caught up empyema and in the radical procedure group 1 patient (8,33%) caught up UTI and 1 patient (8,33%) caught up atelectasis. By the way, Radical hydatid cyst operations are safe methods in selected cases. In our clinic, radical hydatid cyst operations have been performed more often in recent years and these operations may have advantages of lower complications and hospital stay. Furthermore, albendazole treatment and the use of scolicidal agents are not needed in these patients,

Suggestions:

1. The best treatment choice for hydatid disease is still controversial. Conservative surgical treatment is safer and easy to perform.
2. but has high recurrence and complication rates.
3. Radical surgical treatment has high intraoperative risk, but low recurrence and complication rates.
4. Radical surgical interventions should be performed in high-volume hepatobiliary centers.

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