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Acute complications of liver hydatidosis: Still associated with significant morbidity

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ABSTRACT

Objective: To detail the pattern of postoperative morbidity in patients with acute complications of liver hydatidosis. **Methods**: We retrospectively studied all patients with liver hydatidosis, managed in a tertiary university centre between January 2011 and December 2016. **Results**: Fifty-three patients with cystic liver echinococcosis and a mean age of (43.64±17.54) years were selected. The mean diameter of the cyst was (8.11± 4.84) cm. Thirty-five (66%), 12 (22.6%), 4 (7.5%), and 2 (3.8%) patients had one, two, three, or four cysts, respectively. Nine (17%) patients were admitted in an emergency setting. The surgical approach was by laparotomy in 43 (81.1%) and by laparoscopy in 10 (18.9%) patients. Eleven (20.8%) patients developed postoperative complications: Class I – 3 (5.7%), Class II – 7 (13.3%), Class III – 1 (1.9%), Class IV – 1 (1.9%) patient according to Clavien-Dindo classification. Four (7.5%) patients developed long-term complications. 18 (34%) patients had more than one hospital admissions. **Conclusions**: Acute complications of the liver hydatid disease are associated with significant post-therapeutic morbidity, which correlates with the cyst's type according to Gharbi classification.

1. Introduction

Hydatidosis is included in the list of the top 17 neglected tropical diseases (NTDs) [1]. The hydatidosis is caused by Echinococcus granulosus, Echinococcus multilocularis or Echinococcus Vogeli [2]. These complexes generate the disease characterized by unilocular cystic lesions. These parasites can be found worldwide, with a higher reported prevalence in the Mediterranean region, Eastern Africa, South America, China, Central Asia, and the Middle East[3]. In Italy, the central and southern regions (Basilicata, Abruzzo, and Tuscany) and the main islands are the largest affected areas, with most of the sheep and goat livestock in the isle, infecting Sicily (6.5%-36.5%) and Sardinia (70.6%-92.8%)[4]. In Romania, hydatid disease has a decreasing incidence, from 5.6 cases every 100 000 inhabitants (years 1953 – 1963) to 2.6% cases every 100 000 inhabitants between years 1987 – 1991[5]. However, the 'progressive urbanization' of fox population, with a four-fold increase in Zurich for example, may expand the prevalence of alveolar echinococcosis in developed areas[6]. The echinococcal species have their definitive hosts in canines that pass the eggs in their feces. Following their

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ingestion via food, water or even dust in the setting of alveolar echinococcosis, some cysts develop in the intermediate hosts such as sheep, cattle, humans, goats, camels, horses [7].

The liver is involved in about two-thirds of the cases, and its cysts may require an extended period, up to years, to become enlarged enough and symptomatic. They are usually discovered several years later by routine ultrasound, which represents the golden standard for the diagnosis [8, 9].

Gharbi, in his report of 121 hydatid cysts of the liver seen in Tunisia, classified them into five distinct types, based on echographic morphology[10]. Before the 1980's the surgical therapy represented the only available strategy in the management of liver hydatidosis patients. Nowadays, their management is more subtle, including percutaneous interventional and surgical techniques, besides the systemic chemotherapy. The surgical options are both conservative (simple tube drainage, marsupialisation, capitonnage, de-roofing, partial simple cystectomy and open/closed total cystectomy with/without omentoplasty) and radical (total pericystectomy, and partial hepatectomy). All the therapeutic procedures previously discussed should be performed in addition to a Benzimidazole drug, whose administration should be done at least one day before the surgery and last no less than one month post-surgically, to decrease the risks of a residual disease or its recurrence[11].

The objective of this study is to detail the pattern of postoperative morbidity in patients of acute complications of liver hydatidosis.

2. Materials and methods

For the present retrospective study, we have selected all patients with hepatic echinococcosis managed in the Emergency Hospital of Bucharest, Romania, between 2011 and 2016.

2.1. Selection criteria

Cases of cystic echinococcosis exclusively affecting the liver were included in the analysis on the basis of clinical, imagistic (ultrasonographic and/or CT studies revealing either univesicular or multivesicular cysts in the liver), cytologic or parasitologic (procedural or operative specimens showing viable or nonviable scolices, hooklets, and/or fragments of laminated membrane), and/or serologic (detectable serum IgG and/or IgM antibody titres addressed in the detection of Echinococcus granulosus) grounds.

2.2. Exclusion criteria

Patients diagnosed with hepatic hydatid cysts that were not treated with surgery as the primary treatment were not included in our study. Furthermore, the echinococcal infections that did not affect the liver were excluded from the study.

2.3. Statistical analysis

The data extracted from the hospital database included: initial and serial post-procedure/post-operative hepatic cyst size; dose, route and duration of medical treatment; findings of serial clinical and biochemical examinations; the results of serial serological tests; length of hospital stay as well as complications – including disease recurrence – and each individual outcome.

To localize the hepatic cysts, we used Brisbane terminology[12]. The included variable were: name; surname; patient's file number; gender; age; year of patient's admission; number of admissions related to echinococcal infection; number of cysts; cyst's diameters; cyst's location in hepatic surface according to Coinaud's classification; cyst's type according to Gharbi's classification; prior episodes of hydatidosis; presence of emergency condition at the time of admission; complicated cyst at the time of admission; type of hepatic complications at the time of admission; anti-parasitic treatment prior to surgery; type of parasitical medication administrated prior to surgery; number of transfusions needed; Endoscopic Retrograde Colangiopancreatography performed or not; type of surgical approach; type of surgical procedure; number of surgical interventions needed to eradicate the disease; post-operatory hospitalization' s length; presence of intra-operative biliary fistula; presence of post-operative biliary fistula; presence of early post-operative complications; type of early post-operative complications; presence of tardive post-operative complications; type of tardive post-operative complications; survival; hospital's costs. For statistical analysis, we used the SPSS (Statistical Package for Social Science) version 20 software.

3. Results

From January 2011 to December 2016, 53 patients corresponded to the criteria of our study. Patient characteristics are described in the Table 1. Thirty-five (66%), 12 (22.6%), 4 (7.5%), and 2 (3.8%) of patients had one, two, three, or four cysts, respectively. The mean diameter of the cyst was (8.11±4.84) centimeters. 9 (17%) patients were admitted in the emergency setting. Eighteen (34%) patients presented complicated hydatid disease: cholangitis – 4 (7.5%), cystic – large biliary duct communication – 6 (11.3%),

traumatic intraperitoneal rupture – 4 (7.6%), biliary lithiasis – 1 (1.9%), obstructive jaundice – 2 (3.8%), and anaphylactic shock – 1 (1.9%). Twenty (37.7%) patients received preoperative parasiticidal medication before surgery. Endoscopic retrograde cholangiopancreatography was performed preoperatively in 4 (7.5%) patients and postoperatively in 5 (9.4%) patients. The surgical approach was by laparotomy in 43 (81.1%) and by laparoscopy in 10 (18.9%) patients (Table 2). In fifty (94.3%) cases the surgical procedure was conservative, and in 3 (5.7%) patients was performed a hepatectomy with radical resection of the cyst. 37 (69.8%) patients had a history of only one surgical procedure, 14 (26.4%) patients had two surgical procedures, and 2 (3.8%) patients had a history of three surgical procedures to address their hydatid disease. Eleven (20.8%) patients developed postoperative complications: Class I – 3 (5.7%), Class II – 7 (13.3%), Class III – 1 (1.9%), Class IV – 1 (1.9%) according to Clavien-Dindo classification. Four (7.5%) patients developed long-term complications. 18 (34%) patients had more than one hospital admissions.

Table 1

Characteristics of the included patients.

Clinical data	Groups of patients	*n* (%)
Gender	Males	19 (35.8)
	Females	34 (64.2)
Age	43.64±17.54	
Diameter of the cyst (cm)	8.11±4.84	
Number of cysts	One	35 (66.0)
	Two	12 (22.6)
	Three	4 (7.5)
	Four	2 (3.8)
Location of the cysts in the liver's sections	Posterior	32 (60.4)
	Anterior	6 (11.3)
	Lateral	11 (20.8)
	Medial	4 (7.5)
Cyst's type according to Gharbi classification	Type I	14 (26.4)
	Type II	6 (11.3)
	Type III	22 (41.5)
	Type IV	9 (3.8)
	Type V	2 (3.8)
Complications of the cyst	Yes	18 (34.0)
	No	35 (66.0)
Anti-parasitic treatment pre-surgery	Yes	18 (34.0)
	No	35 (66.0)
Surgical intervention	Open	43 (81.1)
	Laparoscopy	10 (18.9)
Surgical procedure	Conservative	50 (94.3)
	Others	3 (5.7)
Intra-operative biliary fistula	Yes	8 (15.1)
	No	45 (84.9)

Table 2

Postoperative data.

Parameters	Groups of patient	*n* (%)
Patients with transfusions need	Yes	3 (5.70)
	No	50 (94.30)
Post-operative hospitalization (days)	8.96±5.73	
Post-operative biliary drainage	Yes	13 (24.50)
	No	40 (75.50)
Early post-operative complications	Yes	11 (20.75)
	No	42 (79.25)
Tardive post-operative complications	Yes	4 (7.54)
	No	49 (92.46)
Survival	Yes	51 (96.22)
	No	2 (3.78)

4. Discussion

Many previous studies have been conducted on Liver Echinococcosis. All of them had come to the conclusion that surgery is the first curative option to be considered whenever possible. Open surgery was the treatment of choice until not long ago. This could be more difficult to be achieved in patients with multiple cysts and its value more doubtful in patients with calcified, dead or very small cysts [12]. Puncture-Aspiration-Injection-Reaspiration (PAIR) technique is more widely used lately in the case of selected hydatid lesions, especially those having a small size (<5-6 cm in diameter[13] and those that are belonging to the types of Gharbi's I, II and III[14,15]. No matter the chosen procedure, it has been demonstrated the essentiality of the chemotherapy, with Albendazole 10 mg/kg/day (more effective than Mebendazole) being the drug of choice. Its administration, before surgery, has shown evidence in the reduction of cystic recurrence and spillage (especially when combined with Praziquantel) [16].

The rapid development of laparoscopic techniques in the surgical field has encouraged surgeons to replicate principles of conventional hydatid surgery using a minimally invasive approach [17, 18]. Here, the cyst is approached by using the same hydatid aseptic techniques as in open surgery. Laparoscopic management is an alternative and useful method of treating hydatid cyst of the liver. The current evidence shows that it has the results ready similar to open surgery, with all the benefits of minimal access surgery [19].

Acute complications of the liver hydatid disease are associated with significant post-therapeutic morbidity, which correlates with the cyst's type according to Gharbi classification.

Authors' contribution

Gianmarco Lotito wrote the first draft of the manuscript, Ionut Negoi, and Mircea Beuran reviewed the manuscript; all authors approved the final version of the manuscript.

Conflict of interest statement

The authors report no conflict of interest.

References

[1]Molyneux DH. The London Declaration on Neglected Tropical Diseases: 5 years on. *Trans The Royal Soc Trop Med & Hyg* 2016; **110**(11): 623-625.

[2]Moro P, Schantz PM. Echinococcosis: a review. *Int J Infect Dis* 2009; **13**(2): 125-133.

[3]Grosso G, Gruttadauria S, Biondi A, Marventano S, Mistretta A. Worldwide epidemiology of liver hydatidosis including the Mediterranean area. *World J Gastroenterol* 2012; **18**(13): 1425-1437.

[4]Garippa G, Varcasia A, Scala A. Cystic echinococcosis in Italy from the 1950s to present. *Parassitologia* 2004; **46**(4): 387-391.

[5]Calma CL, Neghina AM, Vlaicu B, Neghina R. Cystic echinococcosis in the human population of a western Romanian county, 2004–2010. *Clin Microbiol & Infect* 2011; **17**(11): 1731-1734.

[6]Schweiger A, Ammann RW, Candinas D, Clavien PA, Eckert J, Gottstein B, et al. Human alveolar echinococcosis after fox population increase, Switzerland. *Emerg Infect Dis* 2007;**13**(6): 878-882.

[7]Kern P, Ammon A, Kron M, Sinn G, Sander S, Petersen LR, et al. Risk factors for alveolar echinococcosis in humans. *Emerg Infect Dis* 2004;**10**(12): 2088-2093.

[8]Stojkovic M, Rosenberger K, Kauczor HU, Junghanss T, Hosch W. Diagnosing and staging of cystic echinococcosis: How do CT and MRI perform in comparison to ultrasound? *PLoS Negl Trop Dis* 2012; **6**(10): e1880.

[9]Mihmanli M, Idiz UO, Kaya C, Demir U, Bostanci O, Omeroglu S, et al. Current status of diagnosis and treatment of hepatic echinococcosis. *World J Hepatol* 2016; **8**(28): 1169-1181.

[10]Gharbi HA, Hassine W, Brauner MW, Dupuch K. Ultrasound examination of the hydatic liver. *Radiology* 1981;**139**(2):459-463.

[11]Alvela-Suarez L, Velasco-Tirado V, Belhassen-Garcia M, Novo-Veleiro I, Pardo-Lledias J, Romero-Alegria A, et al. Safety of the combined use of praziquantel and albendazole in the treatment of human hydatid disease. *Am J Trop Med & Hyg* 2014; **90**(5): 819-822.

[12]Brunetti E, Kern P, Vuitton DA. Expert consensus for the diagnosis and treatment of cystic and alveolar echinococcosis in humans. *Acta Trop* 2010; **114**(1):1-16.

[13]Filice C, Brunetti E. Use of PAIR in human cystic echinococcosis. *Acta Trop* 1997; **64**(1-2): 95-107.

[14]Men S, Hekimoglu B, Yucesoy C, Arda IS, Baran I. Percutaneous treatment of hepatic hydatid cysts: an alternative to surgery. *AJR Am J Roentgenol* 1999; **172**(1): 83-89.

[15]Smego RA, Sebanego P. Treatment options for hepatic cystic echinococcosis. *Int J Infect Dis* 2005; **9**(2): 69-76.

[16]Horton RJ. Albendazole in treatment of human cystic echinococcosis: 12 years of experience. *Acta Trop* 1997; **64**(1-2): 79-93.

[17]Zaharie F, Bartos D, Mocan L, Zaharie R, Iancu C, Tomus C. Open or laparoscopic treatment for hydatid disease of the liver? A 10-year single-institution experience. *Surg Endosc* 2013; **27**(6): 2110-2116.

[18]Bostanci O, Kartal K, Yazici P, Karabay O, Battal M, Mihmanli M. Laparoscopic versus open surgery for hydatid disease of the liver. A single center experience. *Ann Ital Chir* 2016; **87**: 237-241.

[19]Tuxun T, Zhang JH, Zhao JM, Tai QW, Abudurexti M, Ma HZ, Wen H. World review of laparoscopic treatment of liver cystic echinococcosis—914 patients. *Int J Infect Dis* 2014; **24**: 43-50.