

MANAGEMENT AND RESULTS IN LIVER HYDATID DISEASE IN CHILDREN

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Abstract: Hydatid liver disease still has a high incidence, raising problems of diagnosis and treatment. It also remains a subject of interest in the medical world. Last years progress in the methods of diagnosing hydatid cyst in childhood provided better results in early diagnosis. Conservative surgical techniques are efficient in most of the cases during childhood. We present the results of a retrospective study made on a number of 83 patients hospitalized and treated of liver hydatid cyst in the Department of Pediatric Surgery of our hospital. We analyzed the surgical and medical treatment, complications and hospitalization length. Follow-up included clinical outcome and abdominal ultrasound for a period of three years and confirmed the favourable post surgical results.

Keywords: cyst, surgery, children

Rezumat: Hidatidoza hepatică, prin incidența crescută, problemele de diagnostic și tratament, rămâne un subiect care suscită interesul. Progresele înregistrate în diagnosticarea chistului hidatic hepatic la copil au dus la îmbunătățirea rezultatelor prin depistarea precoce. Tehnicile chirurgicale conservatoare sunt eficiente în majoritatea cazurilor. Prezentăm studiul nostru privind rezultatele tratamentului chirurgical pe un lot de 83 pacienți internați și tratați în Clinica de Chirurgie și Ortopedie Pediatrică din Cluj pentru chist hidatic hepatic. Au fost urmăriți mai mulți parametri: tipul tratamentului chirurgical, tratamentul medicamentos, complicațiile postoperatorii, durata internării. Evoluția clinică și ecografică a fost urmărită pe o durată de 3 ani și a confirmat rezultatele postoperatorii favorabile.

Cuvinte cheie: chist, chirurgie, copil

INTRODUCTION

Liver hydatid cysts continue to be of interest due to their relatively high incidence, the difficulty of establishing an early diagnosis and the treatment problems involved.

The recent development of imaging (ultrasound, computed tomography) (1,2) and immunological methods have greatly improved diagnosis.(3,4)

Although the medical treatment of liver hydatid cysts progressed, surgery is still the elective treatment of this disease.(5,6) There are several surgical indications for liver hydatid cysts; however, cyst characteristics (number,

size, intrahepatic topography, evolution, possible complications) must be taken into consideration. There are no strict rules regarding the surgical technique used. Numerous surgical interventions may be performed but they cannot be scheduled in advance. All interventions must meet two objectives: parasite inactivation and treatment of the residual cavity. The wide range of surgical interventions that may be carried out includes radical surgery (pericystectomy and liver resections), as well as conservative surgery (partial pericystectomy, cystotomy with or without capitonnage or drainage etc). The relatively high recurrence rates and postoperative morbidity leading to longer hospitalization periods are the disadvantages of such conservative techniques.(7,8)

As far as radical surgery is concerned, surgeons must bear in mind that “a benign condition requires non-aggressive treatment in the absence of immediate vital risks”.

MATERIAL AND METHODS

We carried out a retrospective analysis of the results of surgery for liver hydatid cysts in a group of patients hospitalized in the Pediatric Surgery Clinic of the city of Cluj-Napoca. The study included 83 patients with liver hydatid cysts admitted to our service over a 12 year period (1995-2006). The patients presented a total number of 105 liver hydatid cysts; 11 patients had multiple cysts while in 16 patients, cysts were also detected in other organs.

Table no. 1. Cysts with multiple localizations or associated cysts in other organs

Cyst localization	No. of cases	%
MULTIPLE HYDATID CYST	11	13.2
LUNG HYDATID CYST	12	14.4
PERITONEAL HYDATID CYST	2	2.4
BRAIN HYDATID CYST	1	1.2
SPLEEN HYDATID CYST	1	1.2

Out of the patients with multiple hydatid cysts, one patient presented 5 cysts; 2 patients had 3 cysts while 8 patients had 2 cysts.

CLINICAL ASPECTS

The patient with brain hydatid cyst initially underwent surgery in a neurosurgery clinic and was later re-admitted to our service and operated on for liver hydatid cyst. The patients with associated lung hydatid cysts underwent serial surgery. The lung cysts were removed first. The patient with associated spleen hydatid cyst had first the liver hydatid cyst removed, followed by splenectomy.

The surgical interventions were performed shortly after the patients' admission to hospital and the completion of imaging and laboratory investigations.

Xiphoid-umbilical laparotomies or right subcostal incisions were performed. In most cases, these approaches offered sufficient exposure. Median laparotomy (69.8%) was used to approach all left lobe cysts and some right lobe cysts, especially the anterior ones (segments V and VI). The thoracoabdominal approach, which offers good access to the dome of the liver, for the posterior segment, suprahepatic veins and for the inferior vena cava, was not used in any of the cases. Laparoscopic surgery was performed in only 3 patients since our service has only been recently provided with laparoscopic equipment.

Once the peritoneal cavity was open, systematic exploration of the peritoneal cavity was performed in search for possible secondary localizations or associated disease.(9) Next, the area was isolated using gauzes with hypertonic saline solution or hypertonic glucose solution. In all cases, the following well-known surgical steps were then completed: opening the cyst after inactivation, evacuation of the parasite and control of the residual cavity. Whenever yellowish or brownish hydatid cyst fluid was found, biliary fistulas were carefully searched for and closed with X stitches.(10) The thickness of the adventitia helped selecting a method for treating the residual cavity.

The surgeon must select the most appropriate surgical technique for treating residual cavities. The choice depends on various factors: topography of the cyst, degree of corticalization, cyst size, pericyst type and the surgeon's experience.

Both conservative and radical procedures for treating residual cavities were used within the Pediatric Surgery Clinic of the city of Cluj-Napoca.(11,12) Ideal cystectomy was the radical technique used in 8 patients with cysts on the anterior margin of the liver extending anteriorly towards the peritoneal cavity.(13) Conservative techniques were used in most cases: cystotomy with drainage and partial pericystectomy.

Cystotomy with drainage was mainly used in small, recent cysts with clear fluid situated on the diaphragmatic region or on the posterior segment, as well as in large cysts, situated near the hepatic hilum, segments V and VIII.(14,15) Cystotomy was followed by external drainage in all cases.

Partial pericystectomy was used to treat most residual cavities. Its first steps are similar with those of other procedures. However, after the resection of the cyst prominence, an electrical scalpel is used to dissect the open pericyst up to the margins of normal liver

parenchyma. Thus, the pericyst is flattened and there is only one, more or less deep, fundic area left. In all cases, a drain was placed near the residual cavity. In cases of deeper fundic areas, the partial pericystectomy was completed with capitonnage and drainage.(16,17)

Capitonnage reduces the size of the residual cavity and helps closing any biliary fistulas. However, it may only be done on elastic cyst walls.

External drainage was used in 98% of the cases.

Neither epiploic plompage of the cavity nor cystodigestive anastomoses were required.

Partial pericystectomy was performed in most cases, since all the 105 cysts were externalized and the tops of the cyst cavities were white-yellowish in colour and clearly visible. In cases of multiple cysts removed in one surgical time, each cyst was treated successively as if it had been a single cyst. Diaphragm adhesions were generally present in liver cysts situated on the diaphragmatic region. Adhesion lysis was carefully attempted in such cases in order to avoid diaphragmatic lesions.

The two patients with liver hydatid cysts associated with hydatid cysts of the peritoneal cavity had a history of abdominal trauma with rupture of the liver hydatid cyst, without alarming symptoms. However, abdominal ultrasounds detected the liver hydatid cysts after a period of 6 and 8 weeks, respectively. Intraoperatively, the excision of the liver hydatid cyst was followed by the complete removal of the epiploic and peritoneal cysts.(18)

Medical treatment aimed at protecting the peritoneal cavity from possible seeding during surgery and preventing secondary echinococcosis.(19,20) Albendazole treatment was introduced in the Pediatric Surgery Clinic, Cluj-Napoca, in 1999. However, it was not administered to all the patients with liver hydatid cyst. Out of 83 patients, only 23 received albendazole postoperatively, while 18 also received it preoperatively. All the patients treated with albendazole received the drug, both preoperatively and postoperatively.

Table no. 2. Medical treatment in the studied group

MEDICAL TREATMENT	NO. OF CASES	TIME OF TREATMENT	%
NOT TREATED	60	-	72.2
TREATED	23	PREOPERATIVELY 18	27.8
		POSTOPERATIVELY Y 23	

RESULTS

Results analysis focused on certain parameters: postoperative complications, length of hospitalization, patient condition upon discharge and evolution.

Out of the 83 cases of liver hydatid disease included in the study, 9 postoperative complications

CLINICAL ASPECTS

(10.8%) were recorded: one biliary fistula with moderate flow, one liver abscess, one right pleuropulmonary abscess, one secondary hydatidosis (epiploic), one cyst recurrence, two suppurations of the surgical wound and two cases of suture granulomas. The fistula closed spontaneously after seven weeks, the pleuropulmonary abscess was drained and treated with antibiotics, the suppurations healed after local treatment with Betadine for a few days and the suture granulomas were treated in the outpatient unit. The liver abscess, cyst recurrence and secondary epliploic echinococcosis required surgical re-interventions.

The length of hospital stay ranged between 6 and 45 days. Most cases (70) required less than 20 hospitalization days, the other 13 patients needed over 20 days.

The following results regarding the patients' health condition were recorded on discharge: 78 patients (93.8%) were cured while improvements were registered in 5 patients (6%). No deaths occurred.

Patient follow-up included clinical, biological and imaging examinations performed at certain time intervals following discharge. All check-ups revealed that the patients were clinically healthy. Laboratory analyses detected liver cytolysis in one patient who had been treated at the 1st Pediatric Clinic for chronic hepatitis. One month after discharge, 7 patients still had high eosinophilia levels with values between 6 and 11%. Three months postoperatively, eosinophilia continued to have relative increased values (9%) in only one patient.

Ultrasound examinations were carried out to follow-up the residual cavities.

One month postoperatively, ultrasound examinations revealed the disappearance of 7 residual cavities and a 36.7% reduction in diameter in the other cavities.

The ultrasounds performed on the three month check-up showed the disappearance of other 12 residual cavities. In the other patients, the involution was not as obvious as that observed on the first month check-up.

Six months following surgery, 23 residual cavities had been replaced by fibrous tissue. In the other residual cavities the measurements performed on 3 and 6 months revealed small, 5-12 mm, differences in diameter. The same size of the residual cavity was registered in only one patient.

The ultrasound examinations carried out one year after surgery revealed that other 10 residual cavities disappeared; the size of 19 cavities decreased by 15-21 mm on average while one cavity increased to 56 mm and contained daughter vesicles. The ultrasound examinations performed two years postoperatively showed the disappearance of other 12 residual cavities while the remaining cavities were between 25 and 30 mm.

Only three patients out of 83 came at the three year check-up. Although 27 patients were summoned to report for checkups, they failed to do so; therefore we lost track of them. This check-up revealed that other 2 residual cavities disappeared while the residual cavity of the third

patient was smaller than 20 mm.

DISCUSSIONS

All 83 patients, who presented a total of 105 cysts, underwent surgery. Detailed ultrasound evaluations were carried out preoperatively in order to determine the localization, size, number and evolution of the cysts.(21) Patients who also had hydatid cysts in other organs underwent stage surgery. Brain hydatid cysts were considered priorities, followed by lung and liver cysts.

Partial pericystectomy for the partial preservation of adjacent liver tissue was the most used surgical technique.(22) This method was used because all cysts were superficial and corticalized. Capitonnage was performed in 34 cases. External drainage associated with locoregional drainage was used in both pericystectomies and cystotomies. Ideal cystectomy was the only radical technique used in cysts situated on the anterior margin of the liver extending towards the peritoneal cavity.

Despite these conservative techniques, there were relatively few complications (10.8%) and in most of the cases, the length of hospitalization did not exceed 20 days. On discharge, 78 patients (93.8%) were cured, while improvements were registered in 5 patients (6%). No deaths occurred. Patient follow-up revealed that most residual cavities disappeared within the first year after surgery. This involution was not influenced by the initial size of the cysts or the surgical technique selected. The involution was generally influenced by the presence or absence of biliary fistulas.

CONCLUSIONS

1. The surgical methods used to treat liver hydatid disease must focus on two objectives: first, they treat the cyst content correctly in order to prevent secondary echinococcosis and then, they treat the residual cavity appropriately. Conservative surgical techniques (cystotomy and partial pericystectomy) are sufficient in most cases.
2. Correct treatment of the residual cavity and effective drainage lead to the quick disappearance of the cavity.
3. Although percutaneous puncture (PAIR) has been widely used in recent years, this method was not used on our group of patients.
4. The postoperative results were favourable: 93.8% of the patients were considered cured. No deaths occurred.
5. Patient evolution was favourable, as indicated by clinical, biological and ultrasound evaluations. Imaging showed that the residual cavities decreased and disappeared within different time intervals. This time interval is neither related with the initial diameter of the cyst nor with the surgical technique selected. The presence or absence of biliary fistulas and their closure played a major role in this involution. The effectiveness of intracavitary drainage greatly influenced the evolution of the residual cavities.

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