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MANAGEMENT OF NON-PARASITIC LIVER CYSTS IN CHILDREN

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Our experience in the use of partial cystectomy for symptomatic nonparasitic liver cysts in children is presented. Twelve children with 13 liver cysts were operated upon in 11 years. Abdominal ultrasound and computerized axial tomography were the main preoperative investigations. Partial cystectomy leaving the deep part of the cyst with a deliberately planned pedicled omentoplasty for packing the cyst cavity were done in all patients. The median age of the patients was 8 years. The cysts occurred in the right lobe in 7 patients (58%), in the left lobe in 3 patients (25%), whereas in one patient one cyst occurred in each lobe and in another patient a large (18cm diameter) cyst occurred in both lobes. The median diameter of the cysts was 9cm. No recurrence occurred in the follow-up periods (3-6 years).The procedure proved safe and effective in the management of non-parasitic liver cysts in children though known to have a short omentum .The latter could be lengthened to reach and pack the cyst cavity in all patients of the present work. It is recommended as a definitive procedure rather than recourse to more major operations as liver resection.

Key words: Liver cysts-nonparasitic-children cystectomy-omentoplasty.

INTRODUCTION

Non-parasitic liver cysts in children are rare. The surgeons armamentarium of management includes a wide spectrum of both relatively simple and technically demanding procedures. Our experience in the management of this controversial issue is presented with a view to the use of the more conservative partial cystectomy with planned omentoplasty rather than recourse to the more demanding procedures such as liver resection or transplantation.

PATIENTS AND METHODS

The present work comprises 12 children harbouring 13 symptomatic non-parasitic liver cysts who were managed both in Kasr-El-Aini hospital in Cairo and Hadi Clinic in Kuwait throughout the years from 1989 to 1999.Patients with asymptomatic cysts and those with Caroli disease were not included into the study.

All patients were subjected to thorough clinical evaluation, routine liver function tests, chest x-rays, abdominal ultrasound, computerised axial tomography and hemagglutination tests for hydatid disease. Endoscopic retrograde cholangiopancreatography (ERCP) was done in one patient. Under general endotracheal anaesthesia, the abdomen was explored through a bilateral subcostal incision with an upper midline extension (Mercedes-Benz).

After initial abdominal exploration, large abdominal swabs soaked in povidone iodine are used to protect the parieties and retract the viscera. The cyst is aspirated and the fluid is sent for bacteriological and cytological examination. A plane is developed between the opened cyst and the liver parenchyma. Combined blunt and sharp dissection with gentle traction on the "freed" cyst wall allowed partial excision of the cyst leaving behind the deep layer of the cyst (Fig. 1).Hemostasis is achieved by ball diathermy or underrunning sutures. An omental flap pedicled on either the right or left gastroepiploic artery is fashioned (omentoplasty) and is tucked into the remaining cyst wall using Vicryl sutures (Fig.2).

In one patient a huge 18cm-diameter multilocular cyst occupying both lobes of the liver was encountered. The cyst has caused 'splaying' of the hilar structures; the portal,

hepatic and biliary radicles were stretched and thinned out coursing along the wall of the cyst to their destinations. It was a re-entry operation as it was considered inoperable before. Deroofing of a large part of the cyst in between the branches of the compressed left lobe was done. Then omentoplasty could fill most of the cyst. One 'tongue' of the transposed omentum could fill a large loculus of the mother cyst abutting against the inferior vena cava.

In all patients the excised cyst wall and a wedge of the liver were taken for histopathological examination. The abdomen is closed after inserting a tube drain. No transfusion of blood or blood products was required in any patient. Follow-up using once yearly abdominal ultrasound for three years was conducted on outpatient basis.

RESULTS

The present work included 12 male children; the ages ranged from 5 to 12 years with a median of 8 years (Fig.3).

Painless upper abdominal mass was the main presenting feature in the present work 50% of patients (Fig.4).

No consistent change in the pattern of the routine liver function tests could be noted and the indirect haemagglutination test for Echinococcosis was negative in all patients.

The liver cysts appeared in abdominal ultrasound as rounded well-defined echo-free spaces with marked distal enhancement and smooth walls.

In seven patients (58%) the cysts were in the right lobe whereas in three patients the cysts were in the left lobe of the liver (25%). In one patient one cyst was found in each lobe. In the large 18cm cyst occupying both liver lobes with a large internal loculus , preoperative ERCP revealed the splaying of the hilar structures. The preoperative sonographic and computerized axial tomographic data were confirmed at operation. The diameters of the cysts ranged between 6cm and 18cm (Fig. 5). No intrahepatic dilatation of the biliary radicles could be seen in any of the patients.

Histopathological examination of the cyst wall revealed thick hyalinised tissue with no actual epithelial lining. Cytological as well as bacteriological examination of the cyst fluid revealed negative findings with no detectable parasites.

No recurrence of the cysts occurred in the follow-up periods ranging from 3 to 6 years.

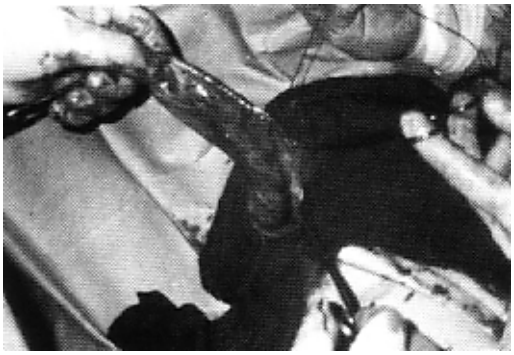

Fig (1): ***Partial cystectomy; most of the cyst wall is :freed" ready for excision. Povidone- iodine soaked abdominal swabs surround the operative field.***

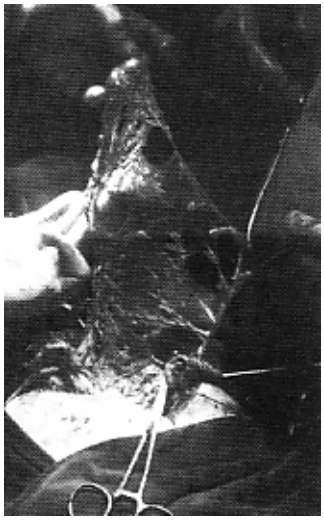

Fig (2): ***Omentoplasty pedicled on the left gastroepiploic artery in an 8 - year old chile.***

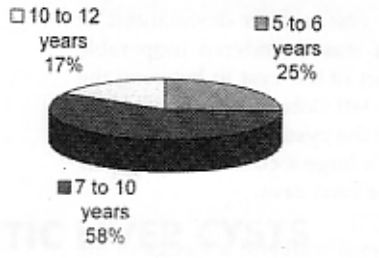

Fig. (3): *Ages of the Patients*

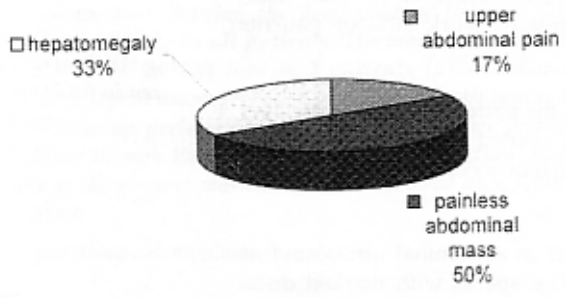

Fig. (4): *Clinical Presentation of the Patients*

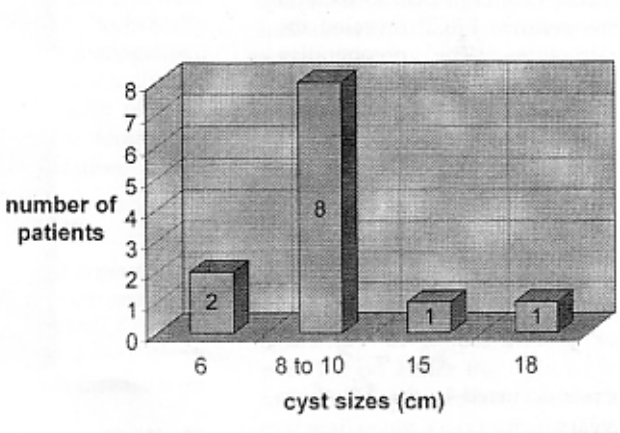

Fig. (5): *Size of the Liver Cysts*

DISCUSSION

The diagnosis and management of symptomatic liver cysts in children constitute a controversial issue. Although many surgeons would agree that a high index of suspicion and the routine use of ultrasound are essential for diagnosis [1,2] a few would agree on the best way of management. The clinical presentation and the sonographic pattern of the cysts were similar to other published report [3,4] although some pertain that, unlike the pre sent study, the cysts are more commonly multilocular than unilocular [5]. The predominance of the cysts in the right lobe of the liver in the present work (58%) has been similarly observed by many workers [5,6].

In addressing the problem of management of the cysts, the consensus of opinion is on the watchful observation of asymptomatic liver cysts and surgical treatment of symptomatic ones [7]. Aspiration of the cysts led to inevitable recurrence whereas deroofing led to a recurrence rate of 9% in one large series with long term follow –up [8]

The use of povidone iodine-soaked gauze during operation is a precaution against the cyst being a hydatid cyst. The situation may occur even in the presence of negative serological tests [9]. Povidone iodine, in addition to being bactericidal and scolicidal, affords a good colour contrast where fragments of laminated membrane or daughter cysts can be seen against its dark brown colour [10].

In a plea towards the conservative surgery for the non-parasitic liver cysts, partial cystectomy with omentoplasty has been done in all our patients except in one case of deroofing of the cyst. Partial cystectomy entailed removal of most of the cyst wall which is rather tough and can be manipulated after developing the plane of dissection between the cyst wall and the compressed liver tissue. The procedure is different from that of pericystectomy for hydatid cysts where more difficult dissection proceeds in a newly created non-existent plane [9].

The use of the greater omentum in the management of the cysts has definite advantages; it partly or completely obliterates the resulting cavity, seals minor biliary leaks or capillary ooze and fights infection [10]. In the present work, planned omentoplasty carefully detaching the mesocolon from the colonic wall and if necessary, interrupting some of the omental arcades afford greater length of available omentum allowing it to reach all liver cysts in the present work. Omentoplasty has been used by many surgeons in the treatment of hepatic hydatid cysts [10,11] and nonparasitic cysts [1]. It is important to consider the use of the omentum as a primary procedure and not as a second choice for its obvious merits.

Contrary to other workers who adopt more major procedures as liver resection for the treatment of the cysts [6,7,12], more conservative and safer procedures as partial cystectomy with omentoplasty as adopted in almost all of the children in the present work are equally effective with no recurrence in the follow-up periods up to six years. This view is shared by other authors as well [1,13].

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