Case Report

Large Falciform Ligament Cyst in a Child: A Rare Entity of Peritoneal Cysts and Review of the Literature

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Abstract

Peritoneal cysts are not uncommon in children – mesenteric/omental cysts being the commoner entity. Peritoneal cysts in the falciform ligament are a very rare entity reported in the literature. We present a 5-year-old boy who presented with pain upper central abdomen and few episodes of non-bilious vomiting for 1 year. He was stable on examination, with abdominal examination revealing the fullness of the abdomen with palpable generalised cystic mass which was mobile transversely. Ultrasound and contrast-enhanced computed tomography of the abdomen revealed intra-peritoneal cystic lesion measuring 13 cm × 11.5 cm × 9 cm with septations seen in the abdominal cavity from the epigastric region to the infraumbilical region (D11-L5 level). Laparoscopy showed a large cyst of the abdomen arising from the anterior abdominal wall, along the falciform ligament. The dark yellow fluid was aspirated and the cyst was excised leaving a part which was adherent to the anterior wall. Histopathology revealed cuboidal epithelium lined by the fibrous wall. The patient is doing well at 6 months follow-up. Falciform ligament cysts are very rare and laparoscopy can confirm the diagnosis as well as help in excision of the cyst with good results.

Keywords: Falciform ligament, mesenteric cysts, peritoneal cysts, peritoneum

Introduction

The peritoneum is a serous membrane covering most of the intra-abdominal organs and is composed of a mesothelial layer and a thin connective tissue layer. Falciform ligament consists of two closely applied layers of the peritoneum and attaches the anterior part of the liver to the ventral wall of the abdomen. Peritoneal cysts are found in children or adults, mesenteric/omental cysts being the commoner variety. Falciform ligament cysts are a very rare type of peritoneal cysts in children. They can range in size and up to 17.5 cm size has been reported.[1] They may be either incidentally detected or present with clinical features according to the size of the cyst as pain abdomen, mass abdomen or abdominal distension, dyspepsia and bloating and features of compression of surrounding structures such as non-bilious vomiting and jaundice.

Imagings such as ultrasonography (USG) and contrast-enhanced computed tomography (CECT) of the abdomen of falciform ligament cyst patients show an intra-abdominal cyst that is similar to mesenteric cysts and hence, diagnosis can be made only during surgical exploration. Very few literatures report this entity, of which only three are in children including this case [Table 1]. Most of such cases have been operated by laparotomy; only four cases including this have undergone laparoscopy. Falciform ligament cysts can be managed well by laparoscopy irrespective of their size.

Case Report

A 5-year-old boy presented to our outpatient department with a history of pain upper central abdomen and few episodes of non-bilious vomiting for 1 year. The abdominal pain was vague and relieved spontaneously. There was no history of trauma in the past. On examination, his general condition was good with stable vitals. Abdominal examination revealed the fullness of the abdomen with palpable generalised cystic mass which was mobile transversely [Figure 1]. There was no tenderness, guarding or rigidity.

Received: 01-04-2020 **Revised:** 09-06-2020 **Accepted:** 13-10-2020 **Available Online:** 19-12-2020

Access this article online

Quick Response Code:

Website: www.afrjpaedsurg.org

DOI: 10.4103/ajps.AJPS_21_20

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How to cite this article: Yhoshu E, Piplani R, Chaudhary G, Garg S. Large falciform ligament cyst in a child: A rare entity of peritoneal cysts and review of the literature. Afr J Paediatr Surg 2020;17:111-4.

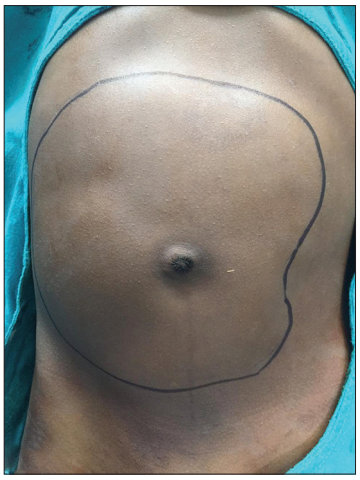

Figure 1: Abdominal examination revealing the generalised cystic mass seen and palpable (marked with black)

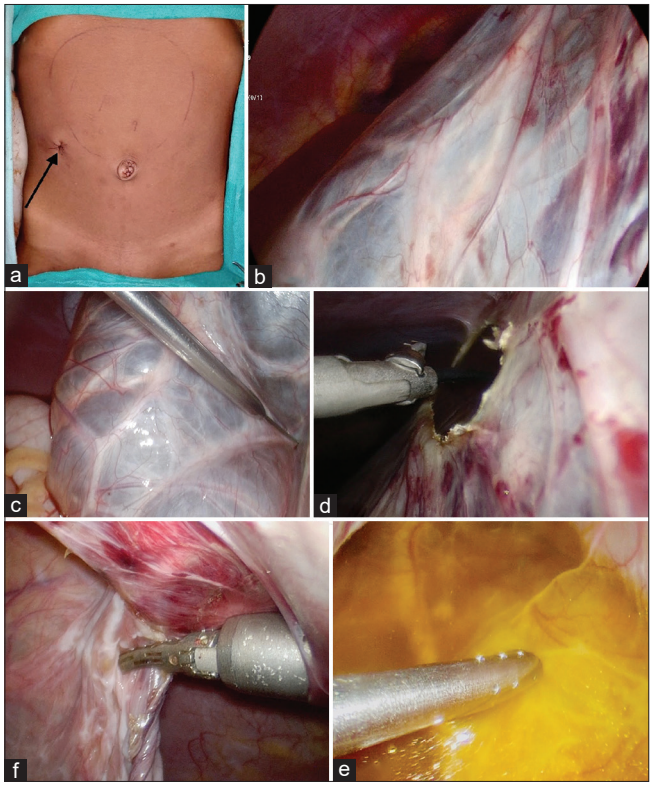

Figure 3: Intra-operative pictures: (a) Port sites (5 mm) – umbilical port for the camera and right lateral port for working instrument (black arrow), (b) Large intra-abdominal cyst from the anterior abdominal wall, (c) Aspiration of the fluid to decompress the cyst, (d) Cyst wall opened with harmonic scalpel, (e) Fluid emptied completely, (f) cyst wall excised

Blood tests were all normal (haemoglobin 12 g/dl, total leucocyte count 7500, normal electrolytes, amylase and lipase). Ultrasound of the abdomen revealed a large cystic swelling with multiple free-floating internal echoes in the epigastric region reaching up to the superior part of the pelvis. CECT of the abdomen revealed intra-peritoneal cystic lesion measuring 13 cm × 11.5 cm × 9 cm with septations

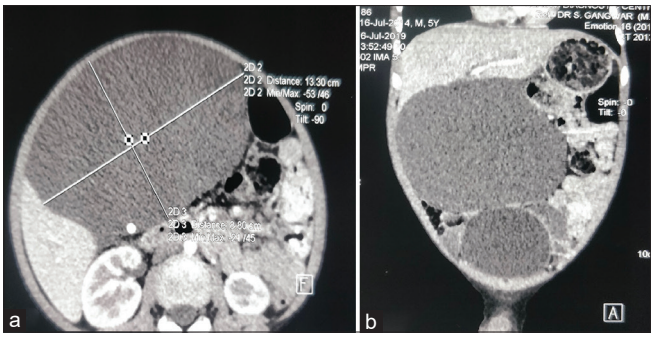

Figure 2: Contrast-enhanced computed tomography of the abdomen of the patient showing the large intra-abdominal cyst extent. (a) Transverse section, (b) Coronal section

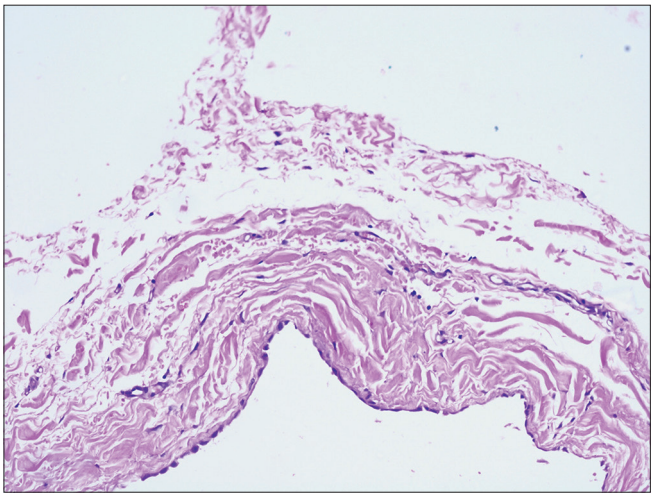

Figure 4: Photomicrograph showing cyst lined by cuboidal epithelial cells and wall is loose fibrocollagenous. H and E stain, ×20 view

seen in the abdominal cavity from the epigastric region to the infraumbilical region (D11-L5 level) [Figure 2a and b]. Hydatid serology was not done due to low suspicion of hydatid cyst. He was taken up for laparoscopy. Umbilical port 5 mm was used as a camera port and a second 5 mm port was placed in the right lateral abdominal wall (7 cm lateral to camera port) [Figure 3a].

The intra-operative findings were as follows: a large intra-peritoneal cyst arising from the anterior abdominal wall, along the falciform ligament measuring approximately 15 cm × 13 cm × 10 cm [Figure 3b and c]. Since the cyst was occupying most of the intra-peritoneal cavity, cyst content (dark yellow fluid) was aspirated and the cyst wall was excised gradually with a harmonic scalpel all around, leaving only a patch on the anterior abdominal wall along the falciform ligament, wherein it was densely adherent [Figure 3d-f].

Postoperatively, the patient improved gradually and was discharged after satisfactory oral intake on post-operative day 3. Histopathology revealed cyst lined by cuboidal epithelial cells and the wall of loose fibrocollagenous tissue [Figure 4].

Table 1: Tabulated list of literature on falciform ligament cyst showing the characteristics of the patients and the cyst

Authors	Year	Age of patient/sex	Clinical features	Management	Cyst size (cm)
Henderson MS *et al*.	1909	41 years/male	Pain abdomen	Laparotomy and total cyst excision	8
Chifoliau *et al*.	1926	49 years/male	Abdominal mass	Laparotomy and cyst excision	-
Wakeley and Macmyn	1937	54 years/female	Dyspepsia and abdominal mass	Laparotomy and cyst excision	5
Herrou	1937	31 years/female 32 years/male	Abdominal pain and dyspepsia	Laparotomy and cyst excision	Size of infant's head
Lightwood and Campbell	1939	4 months/male	Abdominal mass	Laparotomy and cyst excision	Size of infant's head
Brown	1948	26 years/male	Pain and abdominal mass	Laparotomy and cyst excision	12×10
Karabin	1951	24 years/female	Abdominal pain	Laparotomy and cyst excision	17.5×15×5
Gondring	1961	27 years/female	Abdominal mass and pain abdomen	Laparotomy and cyst excision	11×9×7
Ertaline *et al*.[2]	1984	27 years/female	Incidental finding in a case of adenocarcinoma of the colon	Laparotomy and resection of adenocarcinoma colon and falciform cyst excision	5
Lagoudianakis *et al*.[3]	2008	54 years/female	Right upper quadrant pain	Laparotomy and cyst excision	5
Patel *et al*.[4]	2009	61 years/female	Abdominal pain and bloating	Laparotomy and cyst excision	16×10
Abbas and Imran[5]	2011	11 years/male	Abdominal discomfort and distension	Laparoscopic excision of cyst (lymphatic cyst)	6
Carboni *et al*.[6]	2016	34 years/male	Pain abdomen, abdominal distension	Laparoscopic aspiration and cyst excision	10
Judi and Safarini[7]	2017	30 years/female	Upper abdominal distension and pain	Laparoscopy and excision of cyst	8×6
Index case	2020	5 years/male	Abdominal distension, pain abdomen and non-bilious vomiting	Laparoscopic partial excision/ deroofing	13×9.5

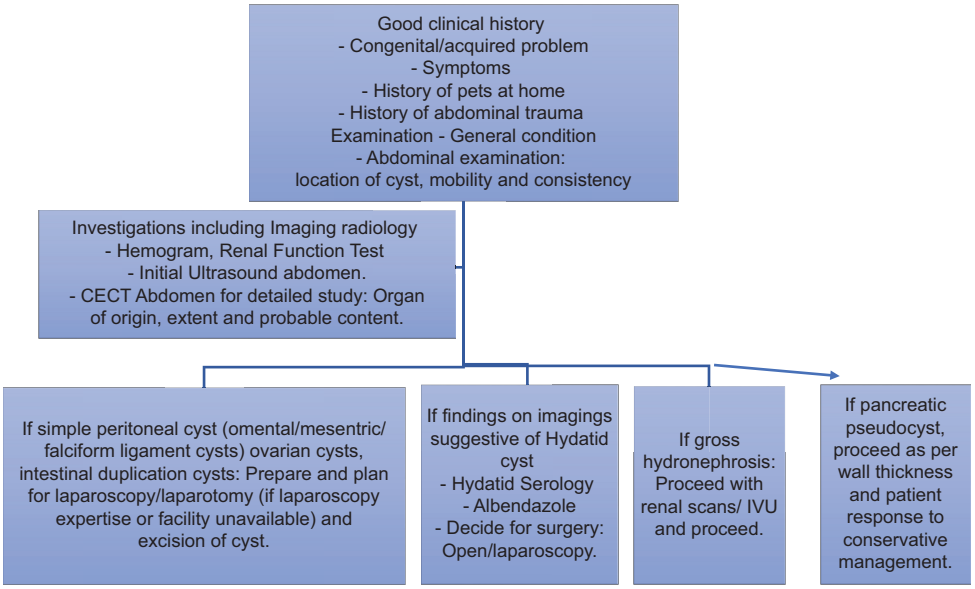

Figure 5: Algorithm for large intra-abdominal cysts

The patient has been on follow-up and is doing well at 6 months with no complaints of pain abdomen or swelling in the abdomen. An ultrasound of the abdomen was repeated at 6 months which revealed no residual collection or any intra-peritoneal fluid.

Discussion

Intra-abdominal cysts in children are not uncommon. They usually cause symptoms due to their size and location or are incidentally detected during imaging of the abdomen for some other complaints. The commoner large abdominal cysts include mesenteric and omental cysts, hydronephrosis, intestinal duplication cysts, lymphangioma, intra-abdominal abscess and ovarian cysts. Other diagnoses of intra-abdominal cysts include pancreatic pseudocyst, choledochal cysts, urachal cyst, hydatid cyst, etc., The diagnosis of such intra-abdominal cysts is not easy to differentiate and diagnosis can be suspected best on their location and the symptoms and area of pain they

are localised to. The management remains more or less a surgical intervention with excision of the cysts. An algorithm for the approach of a large intra-abdominal cyst has been provided [Figure 5].

The following is a table of case reports that we enlisted on falciform ligament cysts [Table 1]. We could find 16 cases, including our index case. Of these, only three of them are in children, the youngest being a 4-month-old male. There was abdominal pain in 11/16 cases (68.75%), abdominal distension or swelling in 8/16 (50%), dyspepsia in 4/16 (25%), non-bilious vomiting in our case only (6.25%) and incidentally detected in 1 (6.25%). The average age was 33.75 ± 17.94 years (4 months–61 years). The male-to-female ratio was 1:1.

The diagnosis is usually made partially by clinical assessment and imagings such as USG of the abdomen, CECT or magnetic resonance imaging of the abdomen. However, the exact organ of origin is difficult to assess. Definitive diagnosis is usually confirmed intraoperatively.

In the tabulated list of cases of falciform ligament cyst, laparotomy and total cyst excision were done in 12 cases, which included one patient with an adenocarcinoma of the colon and for whom resection of the carcinoma segment of the colon was also done.[2] The other four patients, including our patient, had undergone laparoscopy and excision of the cyst. There was variation in the size of the cysts intraoperatively, ranging from 5 cm to the largest of 17.5 cm in maximum dimension.

Case reports in the literature describe the fluid to be of serous in nature and cytology done showed proteinaceous background, foamy macrophages and no malignant cells.[7] The histopathology was described as flattened to cuboidal epithelium lined by a wall of fibrocollagenous tissue.

Patients usually recover well with excision of the cyst. None of the cases in literature had complications or recurrence after excision. Other treatment options that have been described include marsupialisation or partial excision, as done in our case wherein a part of the cyst wall along the falciform ligament was left *in situ* due to dense adherence.[4] Percutaneous drainage of such cysts is discouraged due to the risk of recurrence. There is no standard protocol of follow-up in such cases in the literature, but we believe a good clinical history and examination up to initial 3 months, which is repeated again at about 6 months along with an ultrasound of the abdomen can very well suggest the course and outcome of the disease.

Falciform ligament cysts are an uncommon entity of intra-abdominal cyst in children and definitive diagnosis can be made only during the surgery as clinical assessment and imagings resemble other commoner causes of intra-abdominal cysts. Laparoscopic excision is possible even in large cysts with a good result in the follow-up.

Authors' contribution

EY designed, did literature search and drafted the manuscript; RP operated, conceptualised and revised the manuscript critically; GC helped in literature search and writing the manuscript; SG contributed to the literature search, pathology details and images.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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