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Retroperitoneal and Mesenteric Cysts

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ABSTRACT

Retroperitoneal and mesenteric cysts are rare abdominal tumours. This report is a presentation of three cases. One patient had large retroperitoneal cyst which was accidentally discovered, another patient had mesenteric cyst presenting with abdominal pain, and the third patient had emergency admission due to infection of a large mesenteric cyst. The literature on this condition is reviewed.

Keywords: mesenteric cysts, retroperitoneal cysts

INTRODUCTION

Retroperitoneal, mesenteric and omental cysts are rare abdominal tumours, occurring in approximately 1 per 100,000 to 1 per 250,000 of hospitalised patients[1,2]. Over 800 cases were reported in the literature[3-5]. The rarity of these lesions has led to confusion about their nature, aetiology and classification. These cysts are generally grouped together because mesenteric and omental structures are merely anterior extensions of what was originally retroperitoneal[5]. The true cause of their development has not been proven. Obstruction of lymphatic vessels, the existence of ectopic lymphatic tissue and failure of the leaves of the mesentery to fuse properly are the main theories which have been suggested[2,5-7].

CASE 1

J M, a 20-year-old female patient, was referred to the hospital because she was found to have a large abdominal mass which was detected accidentally during a routine medical check-up for employment. Six months prior to admission, the patient lost 6 kg of her body weight and at the same time, noticed an abdominal swelling associated with lower abdominal discomfort. Abdominal examination revealed the presence of a large abdominal mass occupying the right hypochondrium, lumbar and iliac regions, descending into the pelvis and crossing beyond the midline. The mass was fixed and its upper and lower borders were ill-defined; it was dull on percussion apart from a small area of resonance due to a part of the bowel overlying the mass.

The results of various laboratory and haematological investigations were unremarkable, and the serology test for *Echinicoccus granulosus* was negative. A plain abdominal film showed a large soft tissue mass on the right side of the abdomen, with multiple specks of calcifications. IVU (Fig 1) showed that the right kidney excreted the dye normally, but was displaced and compressed upwards by the mass, and the right ureter was displaced medially beyond the midline. Ultrasound examination (Fig 2) showed the mass to be encapsulated and isoechoic with some hyperechoic foci due to calcifications. CT scan examination (Fig 3 a, b) revealed the mass to be 12 x 10 x 17 cm with a rim of calcification on the wall. The right kidney was displaced cranially and the bowel loops anteriorly. The diagnosis of a large retroperitoneal cystic mass was made.

At laparotomy, the large cystic mass was found to be retroperitoneal, pushing the caecum and the ascending colon upwards. It was attached to the right lobe of the liver, the stomach, the duodenum and the ascending colon, and extended down to the pelvis. After isolating the cyst area, 3 litres of thick yellowish fluid was aspirated. After decompression, it was possible to free the cyst from the attached nearby

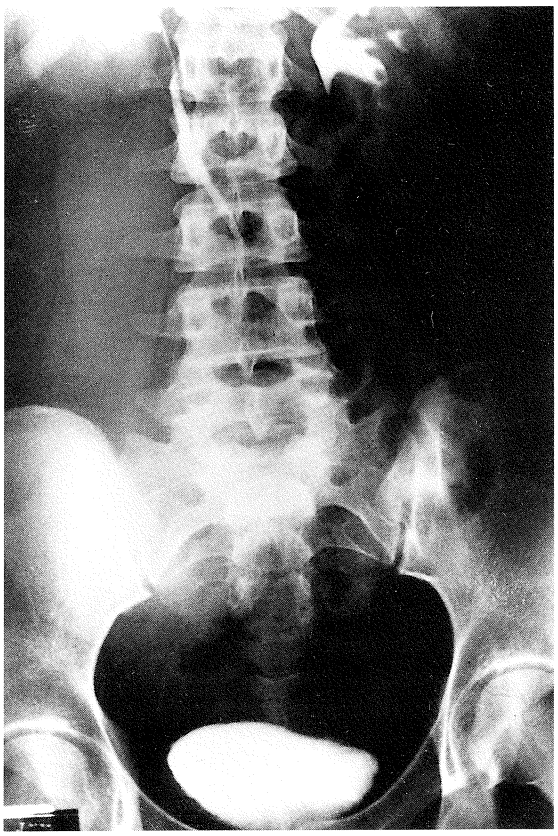

Fig 1 – IVU shows the soft tissue mass displacing the right kidney and ureter.

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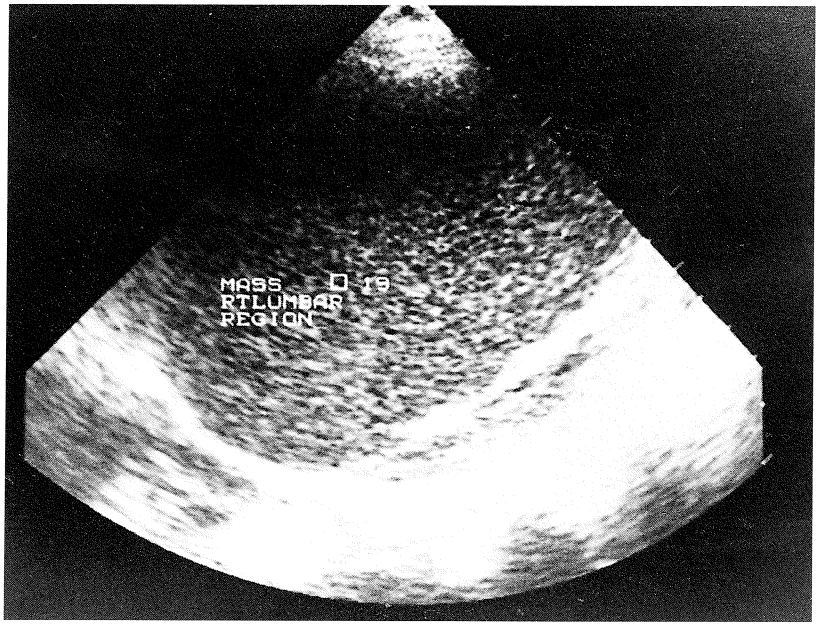

Fig 2 – US examination shows the large encapsulated cyst.

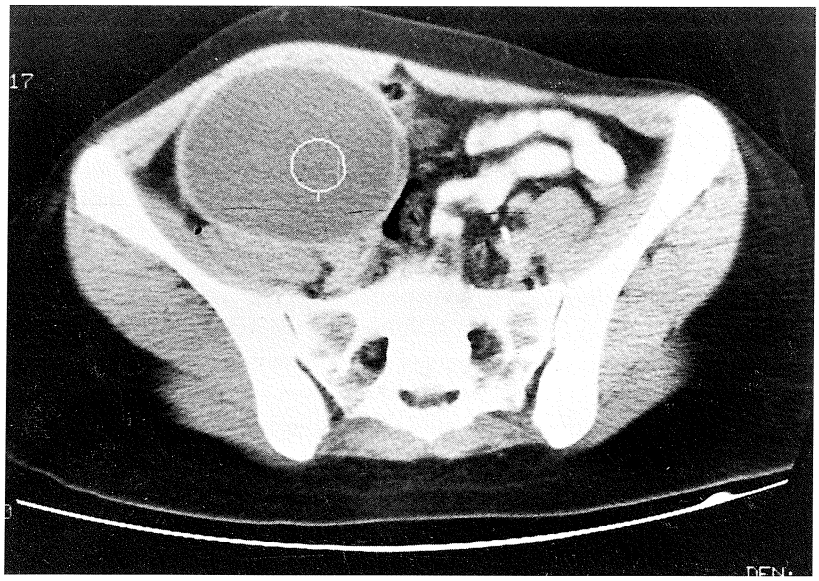

Fig 3a – CT scan examination of the upper section of the huge retroperitoneal cyst.

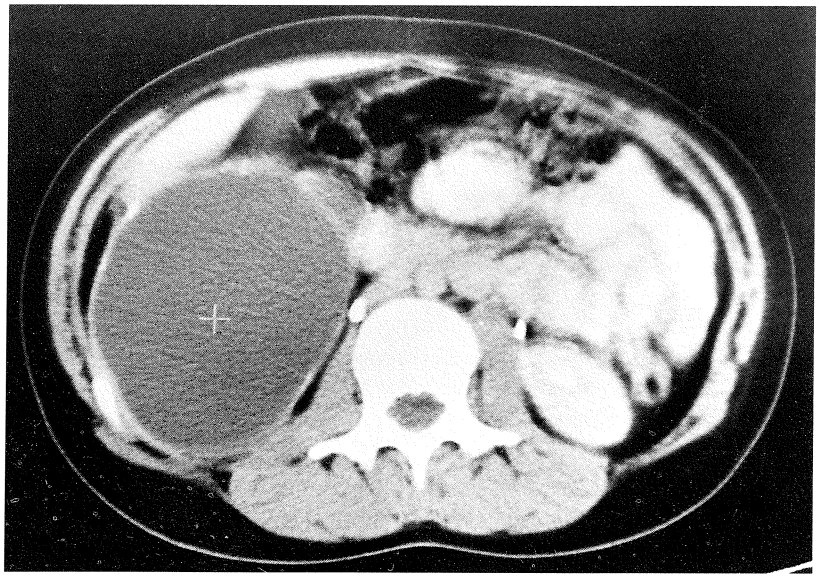

Fig 3b – Lower section of the huge retroperitoneal cyst.

structures, and remove it completely with a small rim of stomach wall which was closely adherent to the cyst which had to be resected with it. The defect in the stomach was repaired in two layers and following that, the patient had an uneventful recovery.

Examination of the fluid revealed the presence of histiocytes and a small number of chronic inflammatory cells in a proteineous background. No malignant cells or scolices were encountered. Histological examination showed the cyst wall to consist of dense fibrous tissue, abundant cholesterol crystals, foamy histiocytes and focal calcifications. No epithelium, muscle or other structures were found, therefore the nature of the cyst could not be determined. The excised piece of stomach wall did not show any abnormality.

CASE 2

M A S, a 32-year-old male patient, presented with a few months history of recurrent attacks of abdominal pain, and recent awareness of the presence of a mobile abdominal mass. He had experienced no change in his general health, and his bowel movements were normal. Abdominal examination revealed the presence of a mobile cystic mass which was roughly oval in shape and about 12 x 8 cm in size. It was thought to be connected to a loop of a small bowel. Enteroclysis study revealed normal findings, apart from an indentation of an ileal loop by the mass. Ultrasound examination confirmed the mass to be cystic. At laparotomy, the cystic mass was found to originate from the mesentery of the mid part of the ileum (Fig 4). After dissection, the mass was completely dissected of the mesentery without the need for bowel resection, following which the patient had a smooth recovery.

The cyst had a fairly thick dirty yellow capsule, and contained about one litre of thick yellow fluid. Histologically, the wall showed fibrous tissue with chronic inflammatory cells, no epithelium lining and no evidence of malignant change.

CASE 3

H M, a 55-year-old female patient, was admitted in an acute state with abdominal pain for one day. She looked ill, had a temperature of 38.5°C, a pulse of 100/min, and a blood pressure of 140/90 mm Hg. Abdominal examination revealed a large (roughly 30 x 20 cm), tender, fixed, and ill-defined right sided abdominal mass. Laboratory investigations showed leuckocytosis (15.0 x 10^9/L, predominantly neutrophils) and anaemia (Hb 90 g/L). Abdominal ultrasound examination showed a cystic mass which had thick contents and a thick wall closely encorporated with the bowel loops. The possibility of an infected cyst was raised. Its nature and origin were uncertain.

After preparation, blood transfusion and antibiotics administration (gentamicin 80 mg and metronidazole 500 mg), exploratory laparotomy was carried out. A large cyst was found within the small bowel mesentery and a few loops of small bowel were

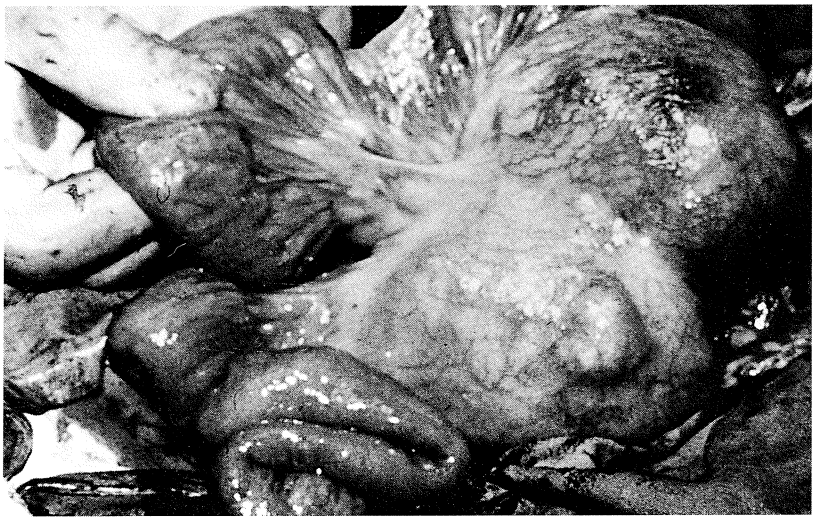

Fig 4 – Operative finding of the large mesentric cyst which was enucleated without the need for bowel resection.

adherent to it. After releasing these adhesions, dissection to achieve enucleation of the cyst failed due to the badly adherent cystic wall to the mesentery. The aspirate consisted of 4 litres of thick yellowish material. After evacuation, the depth and the attachment of the cyst were clearly identified. Its base was attached to the posterior abdominal wall and adherent bowel loops were surrounding it. A total excision of the cyst would have involved resection of most part of the small bowel. Therefore we decided to do a partial excision of the redundant part of the cystic wall, curette the inner lining carefully and then drain the residual cyst cavity with two drains. The patient had a slow recovery which was complicated by wound infection. The drains were removed after 2 weeks one at a time after they ceased to drain anything. The patient was discharged three weeks after the operation. *E coli* was cultured from the aspirate, and the histology of the excised wall showed thick fibrous tissue with inflammatory process and necrotic tissue. No lining epithelium or other specific findings were seen.

The patient was readmitted approximately two months later with cyst recollection, pain and fever. A second exploration was carried out, and this time the cyst was treated with marsipulisation. Post-operatively, the large residual cavity was treated with daily saline irrigation, packing and systemic antibiotics. Over the days, the sloughed necrotic wall was carefully excised while the size of the cavity gradually diminished until it totally healed within two months. During this time, nutrition was maintained orally and there was no bowel complications. To date, the patient has not experienced any cyst problem over a one year follow-up.

DISCUSSION

Mesenteric cysts may occur at any age but have the highest incidence in the fourth decade of life, about 75% of them being diagnosed after age 10[8,9]. In comparison, omental cysts occur more frequently in childhood, and nearly 70% of them are diagnosed before the age of 30, with a peak incidence around age 15[10]. Mesenteric cysts are commonly located in the ileal mesentery[2,5,11]. They may present in one of three ways[11]: (a) Asymptomatic – these patients usually have a painless, slow growing abdominal mass. Up to 40% of mesenteric cysts are found incidentally during abdominal surgery for other reasons. Weight loss is noted in some patients, as in our first case, but the cause is unknown[11,12]; (b) Chronic abdominal pain – many patients present with chronic diffuse non-localised abdominal pain, which could result from traction and stretching on the root of the mesentery and the peritoneum. Cysts may also produce pressure symptoms, causing chronic constant back pain, or colicky abdominal pain associated occasionally with nausea, vomiting, diarrhoea or constipation[11,12]; (c) Acute abdomen in the form of intestinal obstruction (volvulus, extrinsic compression or entrapment in the pelvis) and cyst rupture, haemorrhage, or infection. These complications occur in approximately one-third of adult patients and two-thirds of paediatric patients[1,13-15]. Wong et al[16] reported two cases of sudden deaths in 2 young female children due to small intestinal volvulus which were due to mesenteric defect and mesenteric cyst.

Our third case presented with acute abdomen as a result of cyst infection. Due to the size of the cyst and its location between the bowel loops within its mesentery, a widespread peritoneal irritation occurred. The source of infection was difficult to be explained. The presence of *E coli* in its contents indicates that the source was most likely from the bowel. Bacteria might have migrated through the lymphatics, and this supports the idea that the cysts were of lymphatic origin. Cultures after the second exploration revealed a mixture of micro-organisms. This is most likely due to contamination from the drains and the external marsipulisation. Enucleation was impossible to be carried out here, due to the reasons mentioned earlier. Knowing the drawbacks of partial excision and marsipulisation, we tried in the first operation, thorough cleaning, curettage and ample drainage. Unfortunately this was unsuccessful and recurrence developed. Marsipulisation is not without its problems. Besides the need for frequent dressing, long hospital stay and slow recovery, careful attention is needed to safeguard the bowel and the residual cavity as potential sources of septicaemia.

The most common physical finding with retroperitoneal or mesenteric cysts is a compressible abdominal mass. Mesenteric and omental cysts are usually mobile, as in our second case. However, in large, complicated and adherent cysts, mobility is not a feature as it was found in case three.

Barium studies and intravenous urography were the mainstay methods of diagnosis in the past. Accurate diagnosis was seldom made preoperatively[5]. Nowadays, with the wide use of ultrasound and computed tomography, correct diagnosis and localisation of these cysts could be made nearly in every case[17,18]. However, due to the difficulties of differentiation from other cystic lesions like hydatids, and the uncertainty of their nature, the correct diagnosis might only be reached at laparotomy and after histologic examination[19].

Macroscopically, mesenteric, retroperitoneal and omental cysts vary in shape and size from a few centimetres to a mass that occupies the whole abdomen[19-22]. The volume of the fluid has been reported as ranging from 75 mL to 8 litres, with an average of 2 litres[19,20]. The contents are either serous or chylous, but can be bloody in the presence of haemorrhage. In our first case, 3 litres of thick, yellow fluid was aspirated from the cyst. The second cyst contained approximately 1 litre of similar fluid, and the third cyst contained 4 litres of fluid. Thus the three cysts contained chylous fluid.

Microscopically, the cyst is lined by fibrous or single layered epithelial cells. Calcification of the wall is more likely to occur in cysts of high calcium contents, but this is unusual[20,21,23]. The cyst in case one had focal calcification of the wall, however, in none of the three cysts was a lining epithelium demonstrated.

Malignant changes were reported to develop in less than 3% of the cases and are more likely to be seen in the older age group. Several cases of sarcoma and a few cases of adenocarcinoma have been reported[20,24,25]. It is difficult to be certain whether these cysts had changed from benign to malignant or were malignant de novo. Barry et al[26] reported a 36-year-old female patient who had 2 previous excisions of benign mesenteric cyst. Apparently the excisions were incomplete, and 9 years later, the patient presented with an unresectable, metastatic adenocarcinoma. This is probably the first case documented to have a malignant transformation to adenocarcinoma as a result of a previously benign mesenteric cyst.

The surgical treatment of choice is complete enucleation. The next alternative would be the excision of the cyst with the resection of a portion of the adherent bowel. In our first case, part of the closely adherent stomach was excised. In the second case, it was possible to enucleate the cyst from the mesentery without bowel resection. Marsipulisation, partial excision or simple drainage of the cyst usually results in recurrence[1,8,10,27]. Unfortunately, this was the only method available to our third case. Following marsipulisation, careful and thorough cleaning, excision of the sloughed inner lining and patience contributed to the uneventful healing in this case. We do not recommend percutaneous aspiration, especially in areas where hydatid cysts are still common. In general, retroperitoneal cysts are technically more difficult to excise.

This is due to their ill-defined borders and their proximity to major blood vessels and other organs. Recurrence is therefore more likely with retroperitoneal cysts compared to mesenteric and omental cysts, in which complete excision is probably easier in most of the cases. Recently, with the widely used laparoscopic procedures, successful laparoscopic resection of mesenteric cysts were reported[28,29]. Depending on the operative procedure, mortalities ranging from 40% – 60% were reported in the late 1940s and 1950s[11,23]. Due to improved technology and care, the current expected mortality should be 0% – 3%[1,5].

CONCLUSION

Retroperitoneal, mesenteric and omental cysts are rare abdominal tumours. With an accurate history, a thorough clinical examination, a high index of suspicion, and the use of ultrasound and CT scan, a definitive diagnosis can be made. Although their clinical and radiological presentation are fairly similar, their CI appearances are specific. However, only histopathology can certify their aetiology and their benign nature. In view of the potential for development of symptoms and complications, we feel that any patient found to harbor such a cyst should undergo complete excision. This should carry negligible morbidity and mortality, and recurrence is extremely rare.

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