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Case Report

Mesothelial cyst in a young female: Case report and literature review

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Introduction

Mesenteric cysts are rare intra-abdominal benign tumors (1 in 100,000 cases in adults) with various clinical presentations [1,2]. They commonly originate from the small bowel mesentery, although a proportion has been found to originate from the mesocolon, and retroperitoneum [1,3]. The formation of mesenteric cysts depends on the histologic origin, where they could be classified into cysts of lymphatic origin, cysts of mesothelial origin, cysts of enteric origin, cysts of urogenital origin, dermoid cysts and pseudocysts [4,5]. Diagnosis is extremely difficult since. The Mesenteric cyst is usually asymptomatic, but if symptomatic, abdominal pain (82%), nausea and vomiting (45%), constipation (27%) are the most common presenting symptoms [2,3]. The clinical finding of abdominal mass is encountered in more than 61% of the patients [2,3]. As this condition is very rare and its symptomatology can resemble any other abdominal diseases, diagnosis is extremely difficult and incorrect preoperative diagnosis is often made. Hence, performing physical examination and conducting radiological investigations such as ultrasonography (USG) and computed tomography (CT) are important in making a correct diagnosis [2,3].

As well as cases of mesothelial cysts, they are typically asymptomatic but occasionally, their symptoms are vague and non-specific [6,7]. As mentioned above, imaging modalities such as USG, CT, and magnetic resonance imaging (MRI) are great in identifying the character, size, location, surrounding tissues and the wall and content of the cysts [7]. Surgery is the treatment of choice, as a complete resection with negative borders is curative and often prevents recurrence [3].

We report a case of a young female patient who presented with a vague abdominal symptom and a large cystic mass in lower abdomen. After proper evaluation, surgical exploration revealed a large simple mesothelial cyst.

Case report

A 31-year-old female patient medically free and mother of 2 children was transferred for further evaluation to our general surgery clinic following a computed tomography (CT) scan finding of large pelvic cyst. The patient was complaining of heaviness and intermittent vague lower abdominal pain for 3 months prior to her presentation. She had no history of abdominal distention, vomiting, diarrhea, melena, or mucoid stool. She also denied any history of abdominal trauma or weight loss, and her bladder and bowel habits were normal.

On clinical examination, the vital signs were stable and other systemic examination was within normal. Abdomen examination revealed lower abdominal fullness. Rectal examination was unremarkable.

All blood investigation including the compete blood count (CBC), renal function test, liver function test, coagulation profile and tumor markers were within normal limits including CA 19-9, CEA, alpha-fetoprotein and CA 125. The computed tomography (CT) scan raised the suspicion of lymphangioma. Further evaluation by the Magnetic resonance imaging (MRI) Figure 1 showed a large non-enhancing fluid intensity area occupying the pelvis and lower abdomen and measuring 7.4x13x40 cm. Clear fluid containing lesion is also seen around both the uterus and urinary bladder within the peritoneal reflection (within the peritoneal cavity) Figure 2. The cyst causes displacement of the small bowel loops superiorly. There is an extension of the cyst into the right side of the pelvic and abutting the right ovary, however it appears to be separated from ovarian tissue. The small bowel loops, small bowel mesentery and colon are unremarkable. There was no solid component which may represent a lymphangioma, but the possibility of omental cyst to be considered. The decision was made to do laparoscopic exploration and cyst resection.

During the operation, a large peritoneal cyst was found located in the lower abdomen, and attached to the dome of urinary bladder, the anterior abdominal and pelvic walls (Figure 3). Using the LigaSure high-energy device, the cyst was separated from its attachments. Cyst fluid was also aspirated and sent for cytopathology; the result was of negative for malignancy. After freeing all its attachments, the cyst was completely extracted through one of the 10-mm trocars.

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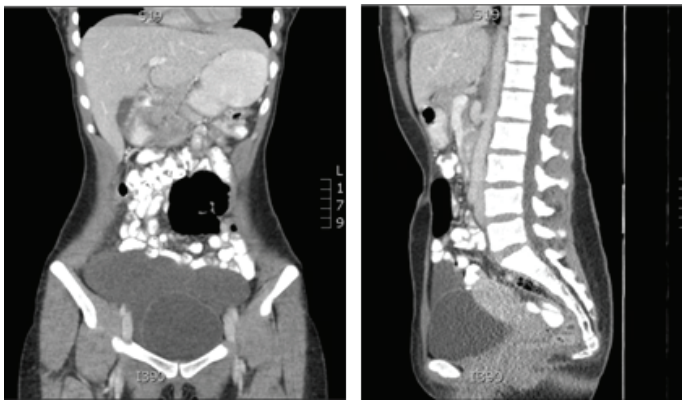

Figure 1. Computed tomography scan (sagittal and coronal views) showing the large fluid-filled multi-septated pelvic cyst.

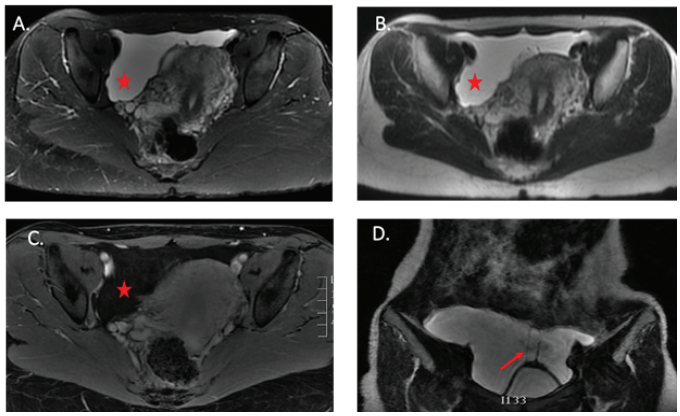

Figure 2. A. and B. Axial T2 with and without fat suppression. C. axial T1 post IV contrast. D. Coronal T2. There is a homogenous fluid signal intensity cyst, following the contour of the peritoneal cavity, deviating the uterus to the left with no fat content on the fat suppressed image and no enhancement of the cyst wall or internal septations (asterisk). Thin internal septations shown on the coronal view (arrow).

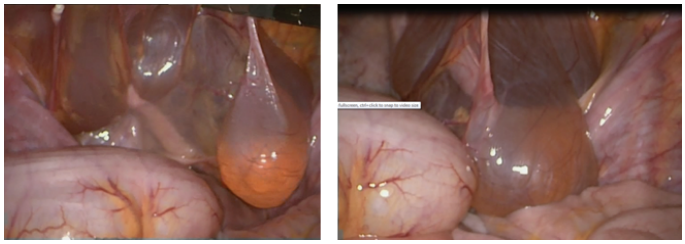

Figure 3. Intra-operative laparoscopic view of the cyst which is located in the lower abdomen, attached to the anterior abdominal wall, the dome of urinary bladder and pelvic peritoneum.

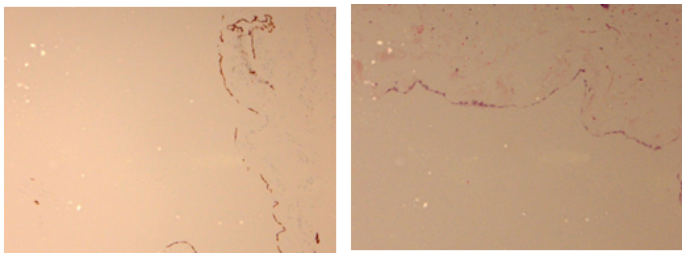

Figure 4. Histological section showing simple cystic structure lined by bland mesothelial cells (Calretinin+, CAM5.2+) with no atypia, consistent with simple omental/ mesothelial cyst.

The histopathology showed simple cystic structure lined by bland mesothelial cells (Calretinin+, CAM5.2+) with no atypia, consistent with simple omental/ mesothelial cyst (Figure 4). The patient was discharged home after 48 hours. At 6-month follow up, she was doing well, free of any symptoms with no evidence of recurrence.

Discussion

Mesothelial cyst is a very rare mesenteric cyst of mesothelial origin. Mesenteric cyst is defined as any cyst located in the mesentery and occurs within the abdominal cavity [2,3]. The exact etiology is still unidentified, but there are many theories including a growth of congenitally malformed or malposition lymphatic tissue, secondary to trauma, degenerating lymph nodes or a failure of the leaves of the mesentery to fuse properly [2,3]. It is suggested that more than one etiological mechanism may be involved in the development of mesenteric cysts. Although, the etiopathogenesis of mesothelial cyst is unclear. The suggested hypothesis proposes that, it results from congenital insufficient fusion of mesothelial-lined peritoneal surfaces, or as a result to chronic inflammatory processes triggering a reactive hyperplastic and dysplastic transformation of mesothelial cells. Other suggestions state a neoplastic origin of the peritoneal serosa without strict association with coexistent chronic inflammatory insult [8].

Mesenteric cyst can be classified based on the etiology, the contents of the cyst, or histological features of the cyst. According to the etiology, mesenteric cyst classified into Embryonic/ Developmental, Traumatic/Acquired, Neoplastic/Infective and Degenerative. Mesenteric cyst contents can be Serous, Chylous, Hemorrhagic or Chylolymphatic [9].

Mesothelial cysts are usually benign, they could present as malignant cysts. Presentation of these cysts are typically in younger age groups, though it can show in other age groups.8 As it often occurs in young to middle aged women as we stated previously, they generally have good prognosis in regard to age [6,7]. The histological feature to recognize malignant from benign mesothelial cysts is the degree of cellular growth and atypia [6].

Location of mesenteric cyst can be in any regions of the gastrointestinal tract from the duodenum to the rectum in the mesenteric or omentum with the possibility to spread to the retroperitoneal space [3]. The most common locations are the mesentery, the mesocolon, and may arise from the omenta [8,10]. They are distinguishable from other types of mesenteric, omental, and retroperitoneal cysts by the presence of mesothelial cells lining the inner surface of the cyst [8].

They vary in size and shape from a few centimeters to a size that may occupy most of the peritoneal cavity [3]. And as they grow larger in size, they cause a compression on the adjacent organs which leads to patient's discomfort; hence inducing the patient's symptoms and imposing medical help. As a result, the patient presents with various generalized symptoms in contrast to our case, where she had only abdominal pain [7,8]. Since the cyst is generally mobile, it proposes a dangerous outcome of presenting as a case of acute abdomen, where it can easily ensue to one of its complications from infection to rupture [8]. While the content of small intestine mesentery cysts is chylous, those originating from the colon is often serous.11 The fluid in this particular cyst was serous.

Mesenteric cysts usually asymptomatic but sometimes they may manifest with symptoms such as diffuse abdominal pain (82%), nausea and vomiting (45%), constipation (27%), and diarrhea (6%). Also, up to 61% of reported cases presented with abdominal mass [2,3]. Some patients may present with cyst complications such as torsion, rupture, hemorrhage, herniation of bowel into abdominal defect and obstruction. Malignant transformation is rare but has been described in up to 3% of adult cases [3].

Simple mesothelial cyst is one of 6 types of the histological features of mesenteric cyst. The cyst in this case is that of mesothelial origin

(simple mesothelial cyst), and this type is seen more frequently in young and middle-aged females; like our patient. It also presents with more indolent symptoms, and often recurs after excision.new 9 Other types include: (1) cysts of lymphatic origin (simple lymphatic cyst and lymphangioma), (2) cysts of enteric origin (enteric cyst and enteric duplication cyst), (3) cysts of urogenital origin, (4) mature cystic teratoma (dermoid cysts), and (5) pseudocysts (infectious and traumatic cysts) [11-13].

As most mesenteric cysts and mesothelial cysts, they are typically asymptomatic but occasionally, their symptoms are vague and non-specific [6,7]. They are frequently discovered incidentally in about 40% of the reported cases. Therefore, radiological studies such as ultrasonography (US), computed tomography (CT) and magnetic resonance imaging are extremely crucial in determining the diagnosis [5,6].

The diagnostic imaging method of choice is abdominal ultrasound. The US appearance is reported to be diverse but should be considered if an avascular oval mesenteric mass is visualized. Ultrasound can reveal a hypoechogenic cystic mass and show septa or debris. It is therefore superior to CT in demonstrating the internal nature of the cyst [13]. CT scan determines the cyst size, origin and its relations to surrounding organs in majority of the case [13]. Also, in acute cases CT is helpful for detecting signs of infection, rupture, or internal bleeding. Despite the previous methods, the correct preoperative diagnosis of mesothelial cyst in particular is difficult [6].

Under the microscope, they are thin walled, unilocular, usually with a serous content cyst. Thus, on US mesothelial cysts appear as anechoic round mass with acoustic enhancement. CT and MRI reveal a fluid-filled mass without a noticeable, presenting a low T1 signal and a high T2 signal in relation to their serous nature [8]. Those findings are unspecific, other types of mesenteric and omental cysts, such as lymphangioma, may show similar findings. This is also the case with cystic neoplasms of peritoneal origin such as cystic mesothelioma, cystic teratoma and cystic spindle cell tumor [8,14].

Mesothelial cysts are mostly confused with cystic lymphangioma, though, their differences can be made under the microscope. Positive results for Factor VIII and D2-40 will be found in accordance with cystic lymphangioma [6,15]. In contrast to benign mesothelioma where it shows positive results for total keratin, vimentin and ethidium monoazide [7]. As well as calretinin, an immunohistochemical marker, it distinguishes between both entities [16].

Early diagnosis and treatment are of vital importance to prevent complications. Acute abdomen as presentation of cyst complications is estimated to be 10% [13]. These complications include infection, rupture, hemorrhage, torsion, volvulus, obstructive uropathy, peritonitis usually from a hemorrhagic or an infective cyst and bowel obstruction. Among these complications, the most common one is obstruction of the small intestine which occurs as a consequence of compression of the cyst. Torsion and volvulus are less common complications [11-13].

Previously, the treatment options for mesothelial cysts included drainage, marsupialization and enucleation which thought to be the treatment of choice. Nowadays, the treatment of choice of mesenteric and mesothelial cysts is mainly surgical resection; either open or laparoscopic. Where the decision can depend on the size, location, and level of surgeon's experience in minimal access surgery [10]. Aspiration and marsupialization are not recommended because they are associated with high recurrence and infection rates, but marsupialization with careful follow-up may be necessary for multiple cysts or those difficult to excise completely, such as those located within the retroperitoneum [11,17.18].

The preferred technique involves open or laparoscopic enucleation of the mesenteric cyst by the atraumatic separation of the cyst from the surrounding leaves of mesentery. In case of suspicion of adhesions and enucleation cannot be performed safely, resection of adjacent organs may be necessary [17]. In this case, the cyst was closely adherent to the peritoneal covering of the bladder dome. However, it was possible to separate it by using the high energy device. Complete excision is the procedure of choice to prevent recurrence or malignant transformation which could occur in 3% of cases [18,19]. Recurrence rate is reported to be higher after partial wall excision than with total excision [3]. Although, the sole way to diagnose and treat mesothelial cysts specifically is to perform complete resection and send for histopathology [4,5,8,9]. Despite that, their recurrence rate is high and a follow up is usually recommended with CT guided cystic aspiration [8,20].

Conclusions

Mesenteric cyst is a rare intra-abdominal tumor, present with varied and non-specific symptoms. It must be considered in the differential diagnosis of a cystic lesion within the abdominal cavity. Ultrasonography and computed tomography are the most useful imaging modalities for diagnosing mesenteric cysts. Complete surgical excision is the treatment of choice as it is associated with good prognosis and low recurrence rate.

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