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Case Report

Congenital mesenteric cysts: rare but important entities in abdominal surgery

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ABSTRACT

Mesenteric cysts are rare, benign, intra-abdominal tumors with an incidence of 1 case per 2,50,000 hospital admission. They present with non-specific clinical symptoms and signs which mostly lead to misdiagnosis. In many conditions mesenteric cysts are discovered either accidentally during radiological examination or during laparotomy for management of complications. Mesenteric cysts are usually non-cancerous and can be lined by different kinds of tissues. The exact cause of mesenteric cysts is not known, but there are various theories regarding it. In children they are considered as congenital i.e., due to abnormalities in development of embryonic mesentery and in adults it might be due to lymphatic malformation, occult trauma or infection. Treatment of mesenteric cyst includes enucleation or surgical excision depending on type of cyst. Since the case is very rare, pre-operative diagnosis and treatment is a challenge. We report a case of five-year-old female child with enterogenous mesenteric cyst in the small intestine. The differentials of ultrasound showed para ovarian cyst or mesenteric cyst. Abdominal computed tomography (CT) revealed an attached cystic mass at mesentery measuring 96×28×17 mm (CC×AP×AR). The child underwent exploratory laparotomy with cyst excision and intestinal resection with end-to-end anastomosis of small intestine. The knowledge about these cysts is important because many times they go undiagnosed and cause serious complications like rupture, torsion or intestinal obstruction.

Keywords: Mesenteric cyst, Enterogenous mesenteric cyst, Exploratory laparotomy, Congenital abdominal cyst

INTRODUCTION

The Italian anatomist Benevieni reported first case of mesenteric cyst in 1507 following an autopsy on an 8-year-old boy.[1-3] Mesenteric cysts are rare abdominal cyst located in the mesentery of small intestine or colon.[1] They are uncommon benign tumors which turn out to be malignant in 3% reported cases.[3,4] The aetiology of these cysts is unknown.[5] Various theories are present regarding the aetiology of mesenteric cysts.[5] One suggests that the congenital mesenteric cyst arises from developmental defects of lymphatic vessels.[1] The other suggest that mesenteric cyst arises from benign proliferation of ectopic lymphatics in the mesentery.[1-3] Some cysts arise from vaginal remnants of urogenital apparatus.[1] Mesenteric cysts can appear anywhere in the mesentery of gastrointestinal tract from duodenum to rectum but most commonly in small intestine (66%), large intestine (33%) and retroperitoneum.[1,2,4] Currently, the incidence of mesenteric cysts in adults is 1 in 1,05,000 and in children is 1 in 20,000.[2] There are around 820 cases of mesenteric cyst reported till now.[6] In India, very few cases of mesenteric cyst are reported. The third case of mesenteric cyst from India was reported in 2013 and as per best of the knowledge and available English literature that was the first case in adults.[7] So, it's very important to report more

cases on mesenteric cyst. In most of cases, the mesenteric cysts are accidentally detected. They may present as an intestinal obstruction, pain abdomen, haemorrhage, and volvulus or may mimic a tumor such as teratoma.[2,8] We present a case of mesenteric cyst presenting with pain abdomen, abdominal mass and vomiting.

CASE REPORT

A 5-year-old girl, presented with history of diffuse, vague type of abdominal pain which was continuous and insidious in onset. It was associated with vomiting in the past 1 day - 2 episodes containing food particles, non-blood tinged, non-foul smelling and non-bilious. There was no history of fever, jaundice, bleeding per rectum and worm infestation. There was no family history of similar disease or any congenital anomaly. No previous history of surgery or medication.

On general physical examination, the vital parameters were within normal limits with no sign of pallor, icterus, clubbing, cyanosis, pedal oedema and lymphadenopathy.

On inspection, abdomen was distended. Umbilicus-central and inverted, hernial orifice intact. No scars, sinuses, engorged veins. No visible peristalsis. No abdominal distension. All regions moving equally with respiration. On palpatory examination it revealed an irregular shaped intra-abdominal mass which was freely mobile in a diagonal axis perpendicular to attachment of mesentery of size 10×7 cm in the right paraumbilical and right iliac region. The mass was cystic in consistency and non-tender. In leg raising test mass was not getting prominent. On percussion, mass was dull to percuss and surrounding area were resonant. No free fluid present. Puddle sign negative. On auscultation, bowel sounds were present. Caecal gurgle present. Tillaux triad was positive. A mid-abdominal cystic mass, the cystic mass moves perpendicular to root of mesentery and band of resonance around the cyst (Figure 1).

Figure 1: Pre-operative picture showing abdominal distention.

Laboratory tests showed haemoglobin count of 10.3 g%, PCV of 27.6%, WBC count of 5300/cm, and platelet count of 1,60,000/cm. Her blood differential showed 70% neutrophils, 22% lymphocytes, 6% monocytes, 2% eosinophils, and 0% basophils. Her liver function tests, basic metabolic panel, amylase and lipase levels, and urinalysis were within normal limits.

An abdominal computed tomography (CT) scan showed an intra-abdominal cystic mass attached at mesentery, measuring 96×28×17 mm (CC×AP×AR). Based on clinical features, ultrasonography (USG) and CT scan of abdomen, diagnosis of "mesenteric cyst" was made (Figure 2).

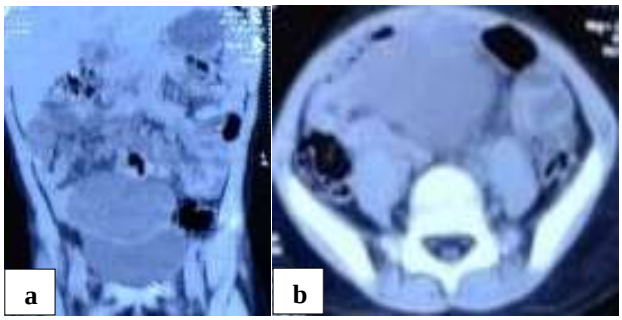

Figure 2: (a) Coronal reconstructed CT image of abdomen showing large cystic mass and (b) axial CT image at level of umbilicus also shows large cystic mass lesion.

The patient was taken up for exploratory laparotomy with cyst excision and end to end anastomosis of ileum under general anaesthesia. The exploratory laparotomy revealed mesenteric cyst attached to the intestine approximately 2 feet away from ileocecal junction. Cyst excision done with the small gut followed by end-to-end intestinal anastomosis. Post-operative period was uneventful and was treated with IV antibiotics and analgesics. In post-operative tests, patient had microcytic hypochromic anaemia with thrombocytosis. Within 2-3 days she recovered. She was fine throughout her hospital stay which extended 5 days after surgery. She was discharged in stable condition. The patient is now under regular follow up and remains symptom free (Figure 3).

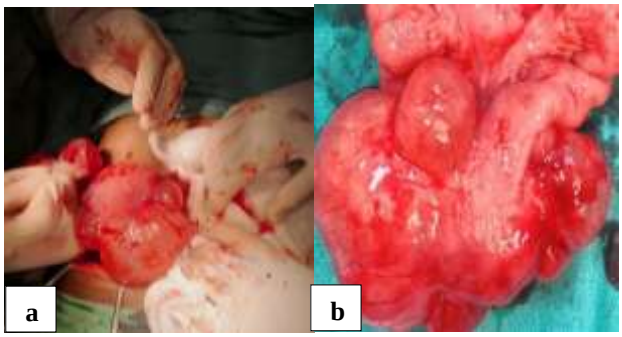

Figure 3 (a and b): The large intestinal cystic mass excised completely with end to end anastomosis of ileum.

Histopathological examination of specimen showed intestine measuring 39 cm in length with a cyst arising

from mesentery measuring 10×6.5×5 cm. Cut surface of cyst was multiloculated with mucoid material. Also, multiple grey white areas were seen in the cyst wall. Microscopic examination from sections studied from intestine shows normal histology of small intestine. Section studied from cyst showed cyst wall lined by single layer of flattened epithelial cells. The wall of the cyst showed chronic inflammatory cells along with aggregates of foamy macrophages. Congested and dilated blood vessels were seen (Figure 4).

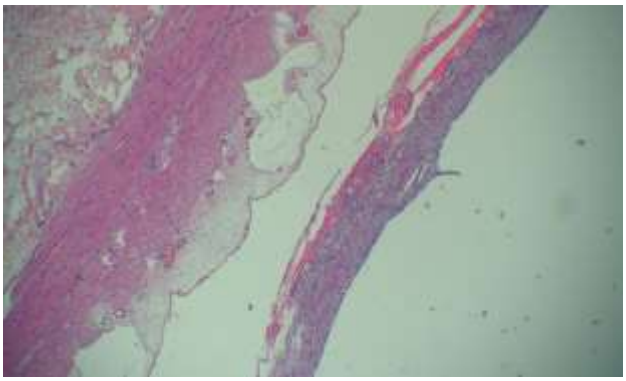

Figure 4: Histopathological examination showed cyst wall lined by single layer of flattened epithelial cells with occasional goblet and mucous secreting cells suggestive of enterogenous mesenteric cyst, H&E×400X.

DISCUSSION

In 1507, the Italian anatomist Benevieni made a groundbreaking discovery when he documented the first-ever case of a mesenteric cyst during an autopsy on an 8-year-old boy.[1-3,5] Von Rokitansky described a chylous mesenteric cyst in 1842. In 1852, Gairdner published the first report of an omental cyst. Finally, in 1880, Tillaux achieved a monumental milestone in the field of surgery by successfully performing the first known surgery to remove a cystic mass from the mesentery.[3,5] In 1883, Pean described the first instance of marsupialization for a mesenteric tumor.[4] These pivotal moments collectively shaped our understanding of abdominal conditions and paved the way for advancements in medicine and surgery.

Mesenteric cysts are rare, benign, intra-abdominal tumors with an incidence of 1 case per 2,50,000 hospital admission.[3] The female to male incidence is 2:1. Most often, the cysts are asymptomatic found accidentally during routine tests. Cases of mesenteric cysts are more common in children of below 15 years.[3] In symptomatic cases, they present with acute or vague abdominal pain, a palpable mass, abdominal distention, nausea and vomiting, constipation or diarrhea.[2,3,9]

Mesenteric cysts are rare abdominal growth, and their exact cause is not fully understood. However, several theories have been proposed to explain their possible origins. Some researchers believe that mesenteric cysts may result from congenital abnormalities in the development of lymphatic system within the mesentery. This theory suggests that cysts maybe present from birth but become noticeable later in life. Another theory suggests that mesenteric cyst could develop due to changes or enlargement of lymph node within the mesentery. Lymph nodes are part of lymphatic system, which helps the body fight infections, but when these nodes change, they might form cysts. Trauma or injury to the abdominal area could potentially lead to the development of mesenteric cysts as a secondary response to the damage. It's like an unintended consequence of an injury or accident. Some experts suggest that blockages or obstructions in the lymphatic vessels within the mesentery may contribute to the development of eccentric cysts.[1,3]

It's important to note that the exact cause of mesenteric cysts can vary from case to case, and more research is needed to fully understand their origins. Mesenteric cysts are generally benign but they can cause symptoms such as abdominal pain or discomfort, and in some cases surgical removal may be necessary if they become problematic or cause complications.

Investigations for mesenteric cyst typically involve a combination of imaging studies and clinical assessments. In our case, we mainly used imaging studies like ultrasound and CT scan for the diagnosis. Initially, differential diagnoses of this cyst were para ovarian cyst or mesenteric cyst. In order to cure the symptoms of cyst like pain abdomen and vomiting, patient was taken to exploratory laparotomy for the excision of cyst. Other investigations can also be done. Laboratory test are conducted for the signs of infection or inflammation. These tests can include complete blood count and inflammatory markers. MRI scan is one of the best methods of diagnosis.[9] The choice of investigation will depend on the specific circumstances of the patient and the suspected characteristics of the mesenteric cyst. Once the diagnosis is confirmed, the treatment plan can be determined, which may include observation, drainage or surgical removal of the cyst.

Generally, the treatment of choice for mesenteric cyst typically involves surgical resection. Since the early 1990s, Laparoscopic approach has been employed as a selective method. However, in instances where size is notably large or exhibits excessive adhesion to the surrounding tissues or the retroperitoneum, it may become necessary to conduct an open surgery technique. In approximately 20 to 60% of cases, in addition to cyst removal, resection and enteric anastomosis may be required.[2]

The preferred treatment for cystic masses in children typically involves complete surgical removal. This can be accomplished through various surgical approaches, including laparotomy, laparoscopy, or laparo-assisted surgery. It's essential to note that the choice of surgical approach should be individualized based on the patient's

specific condition, the size and complexity of the cyst, adhesions and complications.[10]

Laparoscopy and laparo-assisted surgery- minimally invasive options that are often preferred when feasible as they generally result in smaller incisions shorter hospital stays and quicker recovery times. However, in certain cases the advantages of laparotomy in terms of access and through exploration may overweigh the benefits of minimally invasive approach. The decision should be made after careful evaluation and consideration of all relevant factors.

Follow up care after congenital mesenteric cysts resection is essential to monitor the patient's recovery and ensure that there are no complications.

CONCLUSION

This case report documents a rare presentation of a mesenteric cyst which presented as Para ovarian cyst. It emphasizes the significance of accurate preoperative diagnosis and successful surgical intervention in managing such cases. Awareness of this condition is crucial to avoid misdiagnosis and potential complications associated with untreated mesenteric cysts. The diagnosis of mesenteric cyst is challenging as it mimics other pathologies like pancreatic pseudocysts or cystic tumors, pelvic diseases, and aortic aneurysms. A pre-operative diagnosis can be done mainly using imaging techniques. So, the knowledge of mesenteric cyst is necessary.

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