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Volvulus Due to Mesenteric Cysts in Infants and Children; A Case Report

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Abstract

Mesenteric cysts are defined as benign intra-abdominal tumors located in the mesentery. It was a rare disease with an incidence of 1:20 000 in children. The most common location was in the small bowel mesentery. Most patients with mesenteric cysts are asymptomatic and have unspecific symptoms like dyspepsia, abdominal enlargement, and abdominal pain. The fewer others could present with an acute abdomen. We describe two cases of volvulus due to the mesenteric cyst; one case in an infant and one case in a child. There is a different clinical presentation and histopathology between infants and children. In the infant, it presented with an acute abdomen, while in the child acute abdomen was not present. We found a chylous cyst in the child while the enterogenous cyst was present in the infant. We found a volvulus due to the mesentery cyst in the infant. This comparison of mesenteric cysts between the infant and the child could help to diagnose mesenteric cysts, especially in infants.

Keywords: Volvulus, Mesenteric cyst in infant, Mesenteric cyst in children, Mesenteric cyst

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Introduction

Mesenteric cysts are defined as benign intra-abdominal tumors located in the mesentery. It was a rare disease with an incidence of 1:20 000 in children. No incidence was found in infants. The etiology was still unknown.[1,2] most patients with mesenteric cysts are asymptomatic or present with unspecific symptoms like dyspepsia, nausea, vomiting, diarrhea, constipation, abdominal enlargement, and abdominal pain. Mass could be palpable or un-palpable based on its size. The mass could be huge and simulate ascites. The mesenteric cyst could be detected with abdominal sonography, computed tomography (CT) of the abdomen, magnetic resonance imaging (MRI), laparotomy, or laparoscopy. The definitive diagnosis is by histopathology.[3,4]

Less than 10% of patients with mesenteric cysts could present with an acute abdomen. The patient could come with severe abdominal pain with signs of intestinal obstruction. Torsion from mesentery cyst, rupture, appendicitis, and small bowel obstruction could be complications of mesentery cyst.[5,6]

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We describe two cases of mesenteric cysts that occurred in a child and in an infant. There were different clinical manifestations and histopathology. By comparing these two cases, we can differentiate mesenteric cysts in children and infants.

Case Presentation

Case 1: Mesenteric cyst in an infant

A 3-day-old female infant came to the emergency department with persistent bilious vomiting and a distended abdomen. The patient was born from gravida 1 para 0, 39 gestational weeks, by normal labor. Meconium was passed in the first 24 hours. Oral intake was inadequate due to bilious vomiting.

On the physical examination, we found abdominal distension with signs of obstruction and dehydration. We found the double bubble sign in the plain abdominal radiograph, so we suspected jejunoileal atresia. Then we do stomach decompression using orogastric tube, followed by fluid resuscitation and broad-spectrum antibiotics. We planned to do an upper gastrointestinal study based on our suggestion. The study showed that contrast only filled the gastric lumen, and there was gastric malrotation to the posterior (Figure 1).

We planned cito exploratory laparotomy and found the volvulus with the mesenteric cyst suspected to be the lead point of the volvulus. The cyst was $4 \times 4 \times 2$ cm in size. Then we performed a partial excision of the cyst because complete excision of the cyst was not feasible, no resection was needed for the bowel. There were no postoperative complications, oral intake was also increased gradually. Based on histopathology examination, we found a muscle layer and enteric mucosa that were supposed to be an enterogenous cyst with no evidence of malignancy. (Figure 2).

Case 2: Mesenteric cyst in a child

A 4-year-old boy presented with the slow development of abdominal enlargement in the past 3 months. It was followed by abdominal pain, nausea, and constipation in the last month. On the physical examination, we found abdominal distension without a sign of peritonitis. Normal bowel sound was present without a sign of intestinal obstruction. The abdominal radiography showed a soft tissue density at the center of the abdomen displacing bowel loops. On the CT scan with contrast, we found a unilocular cystic intraperitoneal tumor with dimensions $5.53 \times 9.32 \times 9.3$ cm in size (Figure 3).

Then we performed exploratory laparotomy and found a mesenteric cyst at the small intestine mesentery without another anomaly. A grossly 14.5 cm unicystic mass was found with milk-like fluid inside (chylous). Then we performed an excision of the cyst, which yielded a good result. He had good clinical recovery with no complications after surgery. No clinical symptoms appeared after surgery. In the histopathological evaluation, we found a mesenteric lymphatic cyst in which connective tissue of the cyst wall consisted of foamy cell macrophages with no evidence of malignancy (Figure 4).

Discussion

Mesenteric cysts are benign intra-abdominal tumors with unknown etiology. They arise from the multiplication of ectopic lymphatic channels

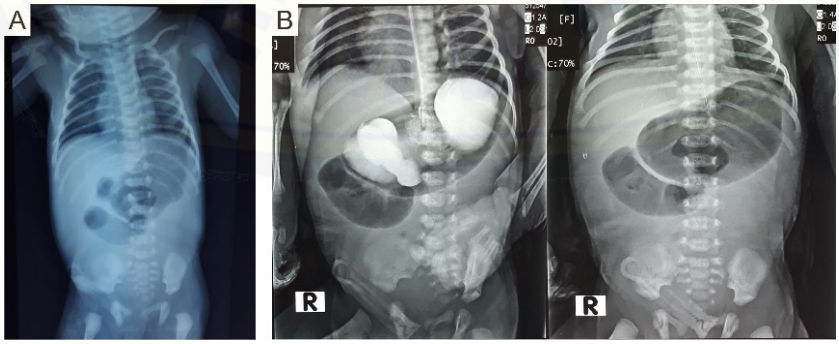

Figure 1. Abdominal radiograph and upper gastrointestinal examination of case 1. **A.** In the plain abdominal radiograph, we could see a double bubble sign in the gaster, so we suggested jejunum atresia in the beginning. **B.** In the upper gastrointestinal examination, we found that the contrast only filled the gastric lumen, and there was gastric malrotation to the posterior.

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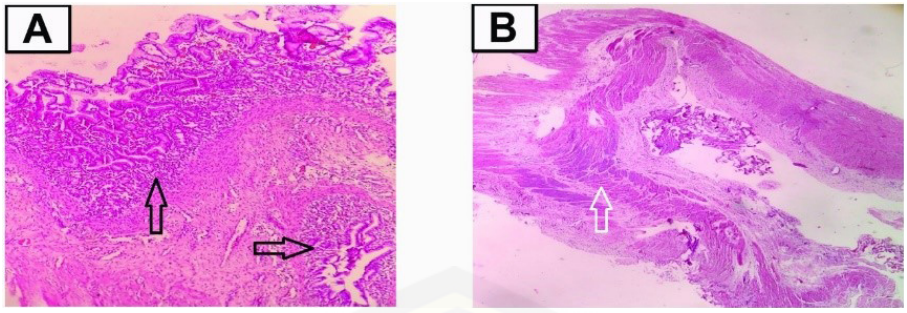

Figure 2. Histopathology of case 1. **A.** The inner part of the cyst wall contains a layer of tubular, mucinous glands like in the gaster (black arrow). **B.** Cyst wall consists of multiple layers of muscular tissue (white arrow)

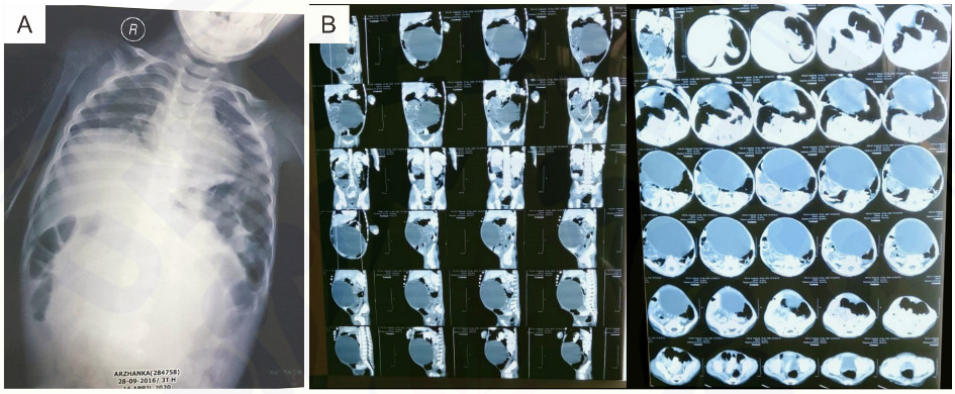

Figure 3. Abdominal radiograph and upper gastrointestinal examination of case 2. **A.** In the abdominal radiograph, we found a soft tissue density at the center of the abdomen displacing bowel loops. **B.** Abdominal tomogram shows a unilocular cystic intraperitoneal tumor with dimensions 5.53 × 9.32 × 9.3 cm in size.

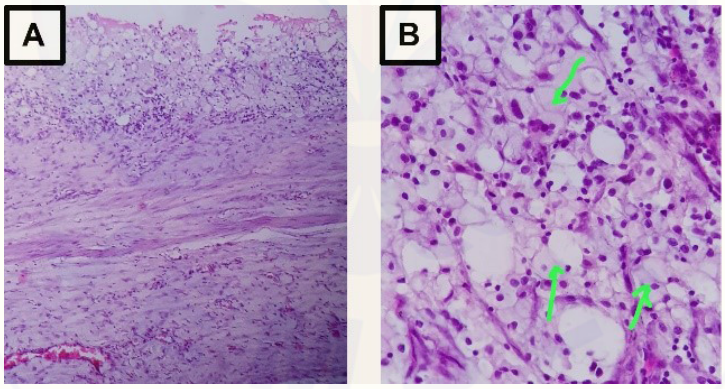

Figure 4. Histopathology of case 2. **A.** The cyst wall consists of connective tissues. **B.** Foamy cell macrophage (green arrow) was dominating, which filled the lumen of connective tissue

lacking communication with the remaining normal lymphatic system.[7] The incidence is 1:20 000 in children. Mesenteric cysts could occur anywhere in the gastrointestinal tract, extending from the stomach to the rectum. The most prevalent locations of the mesentery cyst are in the small bowel mesentery (60%), large bowel mesentery (24%), and 16% in the retro-peritoneum.[8] They are mostly located in the jejunoileal, followed by the sigmoid parts.[9]

Almost 90% of mesenteric cysts have an unspecific symptom. Unspecific abdominal pain is the most common symptom of the mesenteric cyst (82%), followed by nausea and vomiting (45%), constipation (27%), and diarrhea (6%). An abdominal mass is found

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in 61% of the patients at physical examination. Other symptoms could be abdominal distension, abdominal enlargement, bleeding per anal, and ascites.[10]

Less than 10% of patients with mesenteric cysts could present with an acute abdomen. An acute abdomen could happen due to secondary complications of the mesenteric cyst. Torsion, hemorrhage, bowel obstruction, or infection could happen as a secondary complication of the mesenteric cyst, which could present acute abdomen.[11] Jejunal atresia could present with a mesenteric cyst due to congenital malformation.[12] A cito operation is required as soon as possible to treat an acute abdomen. Volvulus is a rare complication of the mesenteric cyst, but in infants, its incidence could be high. Volvulus was found in 29% of patients with mesenteric cysts and constituted 45% of acute abdomen due to mesenteric cysts.[13,14]

The unequal distribution of intestinal gas with displacing bowel loops on the abdominal radiography can be an initial diagnostic tool to be suspicious of mesenteric cysts. Ultrasonography is a very sensitive and specific tool, which can be used to diagnose the disease even in the prenatal period but does not always help in diagnosis and differentiation pre-operatively. Abdominal CT and MRI can give a better picture of the mass.[15]

Based on the newest histopathological classification, mesenteric cysts are divided into five groups. There are cysts of lymphatic origin, mesothelial origin, enteric origin, urogenital origin, dermoid cyst, and non-pancreatic origin. The chylous cyst is defined as the milk-like fluid inside the cyst, and it is the most common type of mesenteric cysts. Lymphangioma type of lymphatic cyst is usually large and includes multiple cysts of several sizes. Cyst of enteric origin is recognized by an enteric mucosal lining. An enteric cyst is a duplication of the bowel that is pinched off during gestation and contains an enteric mucosa, muscle layer, and nerve plexus. It is linked to congenital malformation. Malignancy of mesenteric cysts is very rare, and only appears on mesothelial origin.[10,16]

Conclusion

Mesenteric cysts are very rare in children. In most cases, mesenteric cysts are asymptomatic. Mesenteric cysts in children are usually asymptomatic and have unspecific symptoms. An acute abdomen can perform in fewer cases, especially in infants. It can cause complications such as volvulus. This complication can appear as an acute abdomen symptom and need surgical treatment as soon as possible. Volvulus is the most complication of the mesenteric cyst with an acute abdomen. The incidence can be higher in infants. Cyst of enteric origin could perform in infants due to congenital malformation during gestation.

Conflict of Interest

The authors declare that there is no conflict of interest.

Ethical Approval

Informed consent was obtained from the parent of patients for publication of this report.

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