Early management of mesenteric cyst prevents catastrophes: A single centre analysis of 17 cases

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ABSTRACT

Background: Mesenteric cysts are rare intra-abdominal masses in the paediatric age group with varied presentation, ranging from an asymptomatic mass to acute abdomen. This study reviews our experience in the diagnosis and treatment of 17 mesenteric cysts in our centre, with especial reference to acute abdominal symptoms. **Patients and Methods:** Seventeen patients (age less than 10 years) with mesenteric cysts were managed in our hospital. The age ranged from 15 days to 10 years. Patients were admitted with acute or chronic symptoms. They were evaluated with complete history, clinical examination, blood investigations and radiological investigations (x-ray abdomen erect, ultrasound abdomen (USG) and computed tomography (CT) scan in selected cases) to reach a provisional diagnosis. The diagnosis was proven on laparotomy and histologically confirmed. **Results:** The main presenting symptoms were abdominal pain or lump. The most common mode of presentation was acute small intestinal obstruction. USG was not conclusive in all. Abdominal CT scan with intravenous contrast was diagnostic in nine patients. Five patients had volvulus on exploration. Cysts were located in small intestinal mesentery in 14 cases and three were in the sigmoid mesentery. Seven patients had complete excision, intestinal resection was required in four and marsupialisation with cauterisation of margins was done in six patients. Histologically, all were lymphangiomatous mesenteric cysts. **Conclusion:** The diagnosis of mesenteric cysts should be kept in mind in any patient presenting with acute abdominal symptoms. Small bowel volvulus with mesenteric cyst constituted a significant number in children with acute abdominal symptoms. Early diagnosis and treatment yields excellent outcome.

Key words: Acute abdomen, children, mesenteric

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INTRODUCTION

Mesenteric cysts are rare intra-abdominal masses. They are usually histologically benign cysts located in the mesentery and lined by endothelial cells. The incidence of this lesion in the paediatric age group (less than 10 year) has been reported as 1 in 20,000 admissions.[1] 30% are identified in children less than 15 years of age.[2] Approximately 830 cases have been reported in the literature.[3] The rarity of these conditions has also contributed to the fact that the correct preoperative diagnosis is infrequently made.[1]

This article reviews our experience in the diagnosis and treatment of 17 patients with mesenteric cysts at our centre especially with reference to acute abdominal symptoms.

PATIENTS AND METHODS

Seventeen cases (age less than 10 years) of mesenteric cyst were treated in our hospital over a period of five years. Patients were admitted with acute or chronic symptoms. They were evaluated with complete history, clinical examination, blood investigations and radiological investigations (x-ray abdomen erect, ultrasonography_abdomen) in all cases and computed tomography (CT) scan in a few cases to reach a preoperative diagnosis. The diagnosis was confirmed on laparotomy and also histologically proven.

RESULTS

We studied 17 patients of mesenteric cyst; all less than 10 years of age. In this series, the youngest patient was 15 days old (who was asymptomatic, diagnosed *in utero* as cystic mass in abdomen) and the oldest was a 10 year old child. There were six (35%) patients less than one year of age, and 14 (82%) patients less than five years of age. Only three (18%) patients were more than five years of age. There were 11 (65%) male and six (35%) female patients found in this study. Table 1 shows the male and female incidence in different age groups.

Children with mesenteric cyst may present with acute or chronic symptoms or may be asymptomatic. Most of the patients in this series presented with acute pain in abdomen and vomiting. Eleven patients (65%) had acute abdominal symptoms while five patients (29%) had chronic or sub acute symptom, one patient (6%) was asymptomatic. Nine (53%) patients presented with signs and symptoms of acute small bowel obstruction while two had acute pain in abdomen but no symptoms of obstruction. Table 2 shows the various presenting symptoms and signs.

All patients underwent erect abdominal radiograph which showed homogenous mass displacing bowel loops. USG done in all cases, which diagnosed cystic lesion in abdomen, was not able to provide conclusive diagnosis in any. CT scan abdomen with intravenous contrast [Figure 1] was done in 10 cases, which clinched the diagnosis in nine cases (90%). In the CT scan, we found rim of bowel over the margin of the cyst or bowel wall compressed between the two cystic structures, whirlpool sign with cystic mass suggested the volvulus.

Table 1: Male and female incidence in different age groups

Age Group (year)	Males	Females
0-1	4	2
1-5	4	4
5-10	3	0

Table 2: Presenting symptoms and signs

Symptoms	Number	Signs	Number
Pain	14	Mass in abdomen	16
Vomiting	11	Fever	4
Distentsion of abdomen	7	Tenderness	3
Constipation	2	Visible bowel loop	1
None	1	Bleeding per rectum	2



Figure 1: CT scan shows whirlpool sign suggestive of mesenteric cyst with small bowel volvulus

On exploration [Figure 2], five (29%) patients had volvulus of small bowel around the cyst [Figure 3] but fortunately no patient had intestinal gangrene. Volvulus constituted 45% of acute presentation of mesenteric cyst. Two patients, who had bleeding per rectum, had venous congestion of intestine. This congestion subsided after derotation of volvulus. Ten patients (59%) had single cyst, while seven (41%) had multiple cysts in the mesentery. The aspirated fluid of seven (41%) cases of mesenteric cyst was chylous, four (24%) haemorrhagic, four (24%) serous, while two (12%) had infected aspirate. Small bowel mesentery (82%) was most common site of origin for these cyst, (out of which eight (57%) from jejunal and six (43%) from ileal mesentery) while only three (18%) arose from the sigmoid mesentery. We did complete excision of cyst in seven (41%) cases, intestinal resection along with cyst excision was required in four (24%) and marsupialisation with cauterization of margins done in six (35%) patients. Post-operatively, patients had no complications. All patients were confirmed

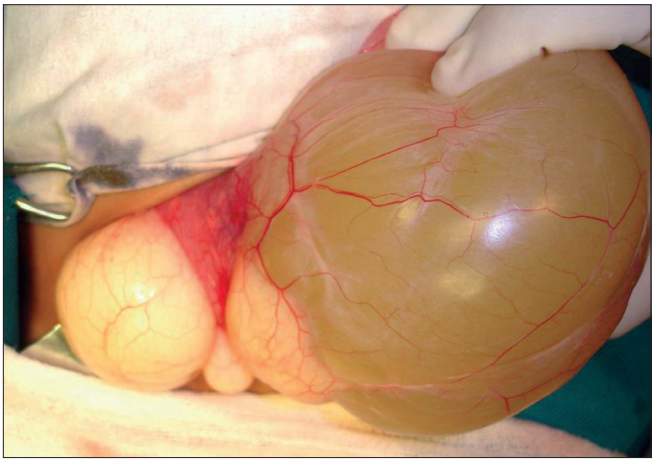


Figure 2: Mesenteric cyst on exploration

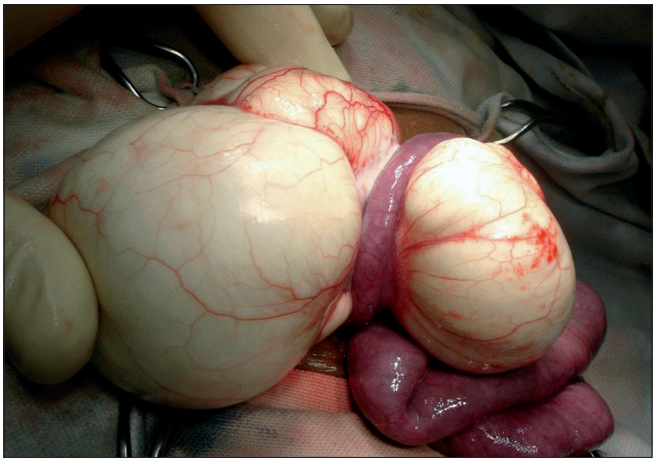


Figure 3: Small bowel volvulus around mesenteric cyst

histologically, to have cystic lymphangiomatous mesenteric cysts. There was no evidence of malignancy. Patients were regularly followed up for three years and no recurrence was found.

DISCUSSION

Mesenteric cysts are rare benign abdominal masses in the paediatric age group. This entity was first described in 1507 by Florentine anatomist Benevieni, while performing an autopsy on an 8 year old boy.[1] In 1842 Rokitansky published the first accurate description of a chylous cyst.[1] The first surgical excision was successfully performed by Tillaux in 1980.[4]

A mesenteric cyst is defined as any cyst located in the mesentery; it may or may not extend into the retroperitoneum, which has a recognizable lining of endothelium or mesothelial cell.[2] The precise cause of mesenteric cyst is still not clear. The most accepted theory, proposed by Gross, is benign proliferation of ectopic lymphatics in the mesentery that lack communication with the reminder of the lymphatic system.[2,5-6] A Viola *et al.* study hypothesises that mesenteric cystic lymphangioma is an acquired anomaly due to chronic intermittent volvulus.[7-8] We had not seen any evidence of malrotation in any of our patients on investigations or at surgery. This is in contrast to hypothesis of acquired origin of mesenteric cyst. Jeffrey *et al.* have also observed the same findings.[9]

The most widely recognized classification was proposed in 1950 by Beahrs *et al.*[10] According to them, mesenteric cysts are of four types: developmental, traumatic, infective and neoplastic.[5] Developmental cysts include enterogenous, urogenital remnant, dermoid and chylo-lymphatic cysts.[11] De Perrot *et al.* propose a classification, based on histopathological features and their origin, into six groups: lymphatic origin, mesothelial origin, enteric origin, urogenital origin, dermoid cyst and non pancreatic pseudocyst.[10] Mesenteric cysts in the paediatric age group occur more often in males (62.5%) and most cases were younger than 10 years, 75% patients were less than five years of age.[6] In the Chung *et al.* Study - 53% cases were more than five years of age and the number of male patients was predominant.[12] Males were more in the paediatric age group as suggested by many authors. In our series we also found higher incidence in males, most of the patients were less than five years of age. The youngest patient in our series was 15 days and oldest was 10 years old.

The clinical history and findings on physical examination may suggest the possibility of cyst.[5] Abdominal pain was the most common presenting symptom in largest personal series by Walker and Putnam[13] and Chung *et al.*[12] as in our series. According to a large review of the literature by de Perrot *et al.,* pain (82%), nausea and vomiting (45%), constipation (27%), or diarrhoea (6%) were the presenting symptoms while an abdominal mass was the clinical finding in up to 61% of the patients.[10] Egozi *et al.* suggest the most common presenting symptoms to be abdominal distension, pain and vomiting.[14] There may be huge mesenteric cysts filling the abdominal cavity and simulating ascitis.[6] In our series, we found that the most common presentation was acute abdominal symptoms like pain, vomiting, and distension of abdomen. Clinical examination reveals mass in abdomen in most cases. If a definitive mass is palpable, mesenteric cysts are generally movable in the transverse plane.

A variety of diagnostic modalities can be used to confirm the presence of a mesenteric cyst, but USG and CT scan tend to be the favoured methods.[15] According to a study by Senocak *et al.* abdominal USG is the most reliable diagnostic study in experienced hands. In suspected cases, the diagnosis should be confirmed with CT scan.[16] CT scan abdomen with intravenous contrast provides more information regarding location, extent and nature of the cyst. CT scan with oral contrast helps to show the relationship of cyst with intestine, to reach a conclusive diagnosis.

USG and CT scan are highly sensitive in the diagnosis of abdominal lymphangioma. CT demonstrates a septate cystic mass of variable sizes.[17] CT scan abdomen with contrast shows whirlpool sign with cystic mass in cases of mesenteric cyst with volvulus[8-9] as we found in our series.

Mesenteric cyst can occur anywhere in the mesentery of gastrointestinal tract from duodenum to rectum. In a review series of 162 patients, 60% of mesenteric cysts occurred in the small-bowel mesentery, 24% in the large-bowel mesentery, and 14.5% in the retroperitoneum;[1] 50-60% of mesenteric cyst are occurs in the mesentery of ileum.[12] In our series, the most common location was small intestinal mesentery. Volvulus was found in significant number of patients that warranted emergency surgical intervention.

Complete excision of cyst with or without bowel resection is the procedure of choice in various literatures. If complete excision, even with bowel resection is not possible then other option is partial

excision with marsupialisation of remaining cyst cavity. Approximately 10% of patients require this procedure.[1] In our series complete excision was possible in 41% of cases; intestinal resection was required in 24% and marsupialisation with cauterization of margins done in 35% of patients. Laparoscopic excision of mesenteric cyst has also been reported.[3,18]

Patient diagnosed by prenatal investigations should be operated electively as early as possible after confirmed postnatal diagnosis, to prevent complications related to mesenteric cyst like volvulus, intestinal obstruction, haemorrhage and infection.

CONCLUSION

Mesenteric cysts are rare, benign, abdominal masses in the paediatric age group. There are many complications related to mesenteric cysts, which require urgent treatment like volvulus, haemorrhage, infection. Small bowel volvulus with mesenteric cyst constitutes a significant number of patients with acute abdominal symptoms. Pre operative evaluation includes USG and CT scan. Complete excision of cyst is the treatment of choice. Our study's take-home message is that diagnosis of this rare entity should be kept in mind for every patient presenting with acute abdominal symptoms as early diagnosis and treatment yields excellent outcome.

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