

Mesenteric Lymphangioma Complicated by Small-Bowel Volvulus in a Child: A Case Report and Review of the Literature

Yoshino ASAMI^{*1†}, Eri TEI^{*1†}, Hitoshi HIRAKAWA^{*1}, Masaharu MORI^{*2}, Satoshi YAMAKI^{*2},
Naoko KOMATSUZAKI^{*2}, Aya UNNO^{*2}, Takaya HORIE^{*2}, Ryotaro OHIZUMI^{*2},
Koji IDENAWA^{*2} and Toshihiko WATANABE^{*2}

^{*1}Department of Pediatric Surgery, Tokai University Hachioji Hospital, Tokyo, Japan

^{*2}Department of Pediatric Surgery, Tokai University School of medicine, Kanagawa, Japan

[†]These authors contributed equally to this work.

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Introduction: Mesenteric lymphangioma is a rare cystic lesion that may present as acute abdomen due to events such as axial torsion. This is a case report of a small bowel mesenteric lymphangioma presented with axial torsion, which required emergency surgery after repeated abdominal symptoms and hospital visits failed to identify the lesion. This report includes a review of the literature.

Case Presentation: A 7-year-old boy was presented with abdominal pain and vomiting. Abdominal ultrasound and contrast-enhanced CT revealed the whirlpool sign, leading to a diagnosis of small bowel volvulus. Emergency surgery was performed. A multilocular cyst measuring approximately 8 cm in diameter was identified in the mesentery of the small bowel, approximately 150 cm proximal to the ileocecal junction. The mesentery exhibited volvulus. A partial small bowel resection and cystectomy were performed. Pathological examination revealed irregularly dilated lymphatic lumens with endothelial cells positive for CD31 and D2-40, resulting in a diagnosis of mesenteric lymphangioma.

Conclusions: Surgical resection is the standard treatment for mesenteric lymphangioma. Even when symptoms improve with conservative management, this disease carries the potential for serious complications requiring emergency surgery. Therefore, patients presented with abdominal symptoms, this condition should be considered, and early intervention should be contemplated.

Key words: mesenteric lymphangioma; lymphatic malformation; acute abdomen; small bowel volvulus; recurrent abdominal symptoms

INTRODUCTION

Mesenteric lymphangioma is a rare lymphatic malformation characterized by cystic dilatation of lymphatic vessels. While lymphangiomas frequently occur in children, the most common site is the neck; those originating from the small bowel mesentery are extremely rare.

Although mesenteric lymphangioma often remains asymptomatic, it frequently presents as acute abdomen triggered by complications such as torsion, intestinal obstruction, hemorrhage, or rupture, often being discovered only when it becomes a condition requiring emergency surgery.

We report a pediatric case of mesenteric lymphangioma of the small intestine, which presented with recurrent abdominal symptoms over more than a year without diagnosis and ultimately required emergency surgery for acute abdomen. This report includes a review of the literature.

CASE PRESENTATION

A 7-year-old boy was presented to our hospital with recurring abdominal pain and vomiting. One year pri-

or, he visited another hospital's emergency department for abdominal pain. He underwent plain abdominal radiography, ultrasound, and CT scanning, but no significant abnormalities were identified, and he was sent home. One month prior, he experienced severe abdominal pain again, which resolved spontaneously without additional testing. On the day of presentation, persistent pain around the umbilicus was noted. An enema was administered but provided no relief, followed by recurrent vomiting. As abdominal pain persisted the next day, he visited a local physician who noted an abdominal mass and referred him to our hospital.

On arrival, his temperature was 37.5°C. Bowel sounds were diminished, and no signs of peritoneal irritations were present. Laboratory investigations showed a white blood cell count of 13,600 cells/mm³, a hemoglobin of 12.4 g/dL, creatine kinase (CK) of 604 IU/L, blood urea nitrogen (BUN) of 8 mg/dL, creatinine of 0.38 mg/dL, and an elevated C-reactive protein (CRP) level of 4.697 mg/dL.

Abdominal ultrasound revealed a whirlpool sign, with the mesentery appearing swirled, and the vessels and mesenteric lymph nodes in the same region were

similarly entangled. This finding strongly suggested mesenteric axis torsion (Fig. 1). Contrast-enhanced CT revealed a whirlpool sign near the pancreatic head, suggestive of small bowel axial torsion (Fig. 2a), and a multilocular cystic lesion approximately 7 cm in diameter within the pelvis, with unclear continuity to the bowel (Fig. 2b). Based on these findings, small bowel axial torsion was diagnosed, and emergency surgery was performed.

At laparotomy, a yellow, multilocular cystic lesion was identified on the mesentery of the ileum, approximately 150 cm from the ileocecal junction. The small intestine was twisted clockwise and appeared dark brown (Fig. 3a). After detorsion, the intestinal mucosa

color improved, and no necrotic areas were observed (Fig. 3b). Although no necrosis was present, the cyst was firmly adherent to the mesentery. Therefore, cystectomy and partial small bowel resection were performed.

Pathologically, the resected specimen was an 80×55 mm multilocular cyst containing serous fluid (Fig. 4a). Histologically, irregularly enlarged tubular structures of varying sizes were densely distributed from the muscularis propria to the subserosal layer. Immunohistochemistry showed endothelial cells were positive for CD31 and D2-40 (Fig. 4b, 4c). Based on these findings, the diagnosis was mesenteric lymphangioma.



Fig. 1 Ultrasonographic findings.
Whirlpool sign in the mesentery, suggestive of small bowel volvulus requiring urgent surgical evaluation.

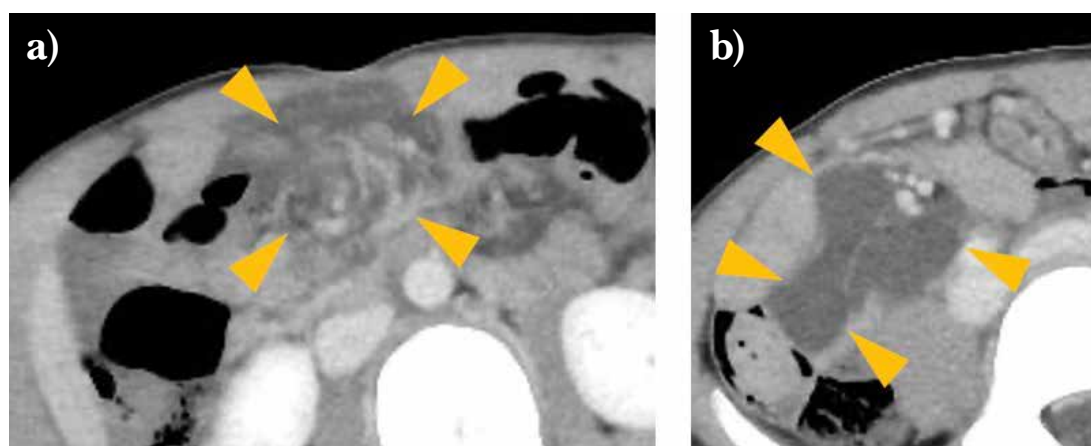


Fig. 2 Preoperative computed tomography (CT) findings.
(a) A whirlpool sign near the pancreatic head, consistent with twisting of the mesenteric vessels and indicative of small bowel volvulus. (yellow arrow)
(b) A multiloculated cystic lesion in the pelvis with unclear continuity to the bowel, raising suspicion of a mesenteric origin. (yellow arrow)

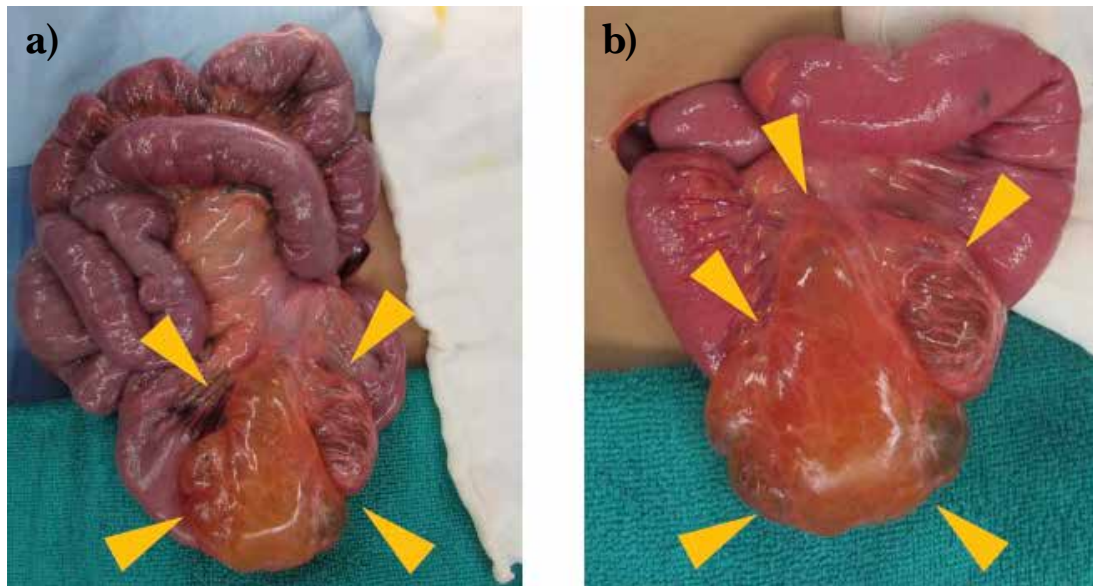


Fig. 3 Intraoperative findings.

- (a) An approximately 8-cm yellow, thin-walled multiloculated cyst arising from the small-bowel mesentery about 150 cm proximal to the terminal ileum. The small bowel was twisted clockwise around the cyst and appeared dark brown, indicating compromised perfusion. (yellow arrow)
 (b) Improvement in bowel color and perfusion after detorsion, supporting the diagnosis of reversible small bowel volvulus. (yellow arrow)

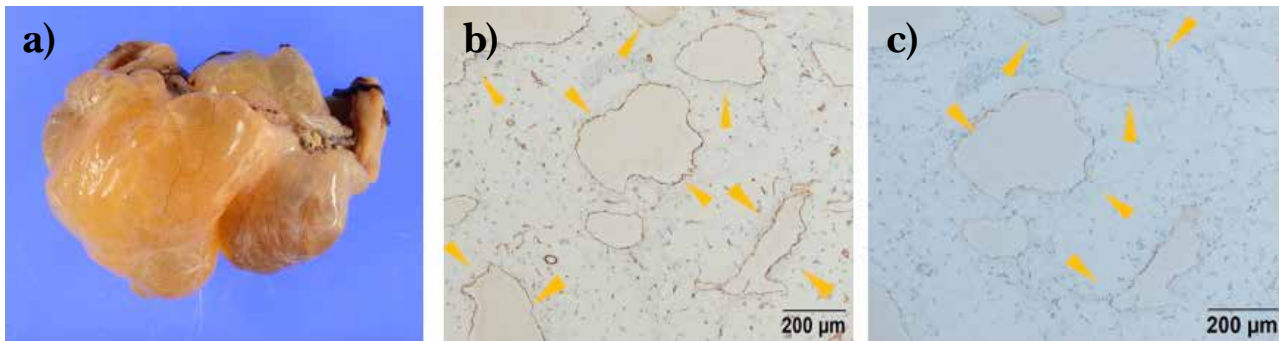


Fig. 4 Histopathological findings.

- (a) Gross appearance of the resected specimen showing an 80 × 55 mm multiloculated cystic mass in the jejunal mesentery.
 (b) Microscopic examination demonstrating numerous irregularly dilated lymphatic channels extending from the muscularis propria to the subserosa (hematoxylin and eosin staining). (yellow arrow)
 (c) Immunohistochemical staining showing endothelial cells positive for CD31 and D2-40, confirming the diagnosis of mesenteric lymphangioma. (yellow arrow)

The postoperative course was uneventful, and the patient was discharged on the 12th postoperative day. The patient remains under outpatient follow-up with no evidence of recurrence.

DISCUSSION

Lymphangioma is a tumorous lesion primarily composed of irregularly dilated lymphatic cysts of varying sizes. The most common sites for lymphatic malformations are the neck (approximately 70%) and axilla (approximately 20%), with intra-abdominal occurrence reported to be only about 5% [1]. Among intra-abdominal lymphatic malformations, those originating from the mesentery of the small intestine are reported to constitute only about 1% [2] making them extremely rare. One reason for this rarity is the clinical characteristic of this disease: it often progresses asymptotically and is frequently discovered only when symptoms develop.

The causes of occurrence are thought to be congenital factors, such as the absence of connections or communication in lymphatic tissue during the fetal period or the proliferation of ectopic lymphatic tissue [3], or acquired factors, such as obstruction or stasis of lymphatic vessels due to trauma or inflammation [4].

In this case, given the young age at onset and the absence of a history of trauma, it is considered congenital. Retrospective review of the CT scan from another hospital's emergency department visits one year prior showed no clear cystic components but did reveal a whirlpool sign. While the connection between the abdominal symptoms one month prior and the torsion remain unclear, it is inferred that the mesenteric lymphangioma was already present at least one year ago and gradually enlarged, leading to axial torsion.

We searched PubMed (2010–2025) for pediatric mesenteric lymphangiomas and extracted 35 cases to the best of our ability. The age distribution was as

Table 1 Summary of pediatric mesenteric lymphangioma cases over the past 15 years.

Year	Author	Age	Sex	Symptoms	Emergency Surgery	Reason for Surgery	Intestinal Resection
2011	Khattala K	12y	F	abdominal distension, vomiting, mass	—	mass	Yes
2012	Prabhu SM	2y	M	recurrent pain, vomiting for 1 year	—	volvulus	No
		9y	M	recurrent pain, vomiting for 4 year	—	volvulus	Yes
		1y	M	recurrent vomiting for 1 year	—	volvulus	Yes
2012	Suthiwartnarueput W	2y	M	abdominal distension, vomiting for 1 year	Yes	volvulus	Yes
2012	Rami M	12y	F	recurrent pain, abdominal distension, vomiting, obstipation for 2 year	No	mass	Yes
		10y	M	pain, fever	Yes	bleeding	Yes
		11y	F	recurrent pain, abdominal distension, obstipation for 1 year	No	mass	Yes
2016	Guida E	5y	M	pain, abdominal distension, vomiting	Yes	volvulus	Yes
2016	Li H	4y	M	pain, abdominal distension, vomiting	—	mass, intestinal obstruction	Yes
2017	Hanganu E	0y	M	abdominal distension, mass	—	—	No
2018	Heredea R	4y	F	pain, abdominal distension, vomiting	—	—	Yes
2019	Gunadi	3y	M	vomiting, mass	—	—	No
		4y	M	recurrent pain, abdominal distension, vomiting for 1 year	—	volvulus	No
		3y	F	mass, weight loss	No	mass	No
		1y	F	pain, vomiting, mass	—	mass	No
2020	Patoulas I	3m	M	pain, vomiting	No	mass	Yes
2020	Kusuma FSP	4y	M	recurrent pain, mass for 2 year	No	mass	Yes
2023	Zhang Z	4y	M	pain, vomiting	—	—	No
2023	Chen Q	6y	F	vomiting	No	volvulus	Yes
		1y	M	—	No	—	No
		7y	F	pain, fever	No	infection	Yes
		4y	M	pain	No	infection	No
		3y	F	pain, fever	No	infection	Yes
		4y	M	abdominal distension	No	—	No
		5y	M	—	No	—	No
		12y	M	pain	No	—	No
		8y	F	pain, fever	No	infection	No
2023	Ali AK	3m	M	abdominal distension, vomiting, obstipation, fever	Yes	mass, intestinal obstruction	No
2025	Ayoub A	2y	M	abdominal distension • vomiting, obstipation	Yes	volvulus	Yes
2025	Amara A	7y	F	abdominal distension • vomiting, obstipation	Yes	Volvulus	Yes
2025	Li J	4y	F	pain	No	—	Yes
2025	Mojahid A	12y	F	pain, abdominal distension, vomiting, obstipation	Yes	Volvulus	Yes

follows: infants (under 1 year) 2 cases, toddlers (1–6 years) 17 cases, school-age children (6–12 years) 11 cases, and adolescents (12 years and older) 5 cases. The most common symptom was abdominal pain (20 cases), followed by vomiting/nausea (19 cases), abdominal distension (14 cases), constipation (6 cases), abdominal mass (6 cases), fever (5 cases), and weight loss (1 case). A significant finding was that at least 7 cases required emergency surgery, with axial torsion being the most frequent cause (5 cases). Furthermore, it is noteworthy that in 7 cases (20%), recurrent abdominal pain and

vomiting similar to the present case were present, yet diagnosis was not reached, ultimately requiring surgery [5–11]. In these cases, diagnosis took several months to years from symptom onset, suggesting diagnostic difficulties common to the present case [5–21] (Table 1).

The primary treatment option is complete surgical resection. The recurrence rate is 0% in cases with complete surgical resection (intra-abdominal lymphangioma), whereas recurrence rates are reported to be 40% in cases of incomplete resection and 100%

with sclerotherapy, making surgical treatment the principle choice [22]. However, surgical resection may be difficult to choose in cases where the lesion is extensive and significant bowel resection is anticipated [23]. While sclerotherapy may be a good option for lymphangiomas near the body surface, its applicability is limited for intra-abdominal lesions. However, Chaudhry *et al.* [24] achieved high success rates using ultrasound-guided sclerotherapy with doxycycline for intra-abdominal lymphangiomas, suggesting it may be an effective treatment in selected cases.

Mesenteric lymphangiomas can grow rapidly, potentially increasing the risk of axial torsion [25]. Reports also exist of infection, hemorrhage, and rupture of the cystic contents [23, 25]. Infection may cause adhesions with surrounding tissues, potentially increasing surgical difficulty and the risk of complications. Although this condition is a malformation classified as benign, as mentioned earlier, reports exist of infiltration into adjacent organs and progression within the intestinal wall [27]. The longer treatment is delayed, the higher the likelihood of requiring bowel resection; indeed, in this literature review, bowel resection was performed in 54% of cases (19 patients). These factors support the desirability of early intervention when feasible.

However, because this condition often presents with nonspecific symptoms, early diagnosis is often difficult, and in many cases the disease has already progressed to an acute abdomen or a condition requiring bowel resection. In children with recurrent abdominal symptoms such as abdominal pain and vomiting, this condition should be considered as one of the differential diagnoses, and careful evaluation with CT and ultrasonography is important. Furthermore, even when symptoms temporarily improve with conservative treatment after the diagnosis is established, surgical intervention should be considered in a timely manner, even in the absence of immediate urgency, given the clinical characteristics of this condition, including the risk of acute complications such as volvulus, bowel obstruction, and infection.

DISCLOSURE

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Y.A. wrote the manuscript. E.T. contributed to the conception and revised the manuscript. All authors read and approved the final manuscript.

HUMAN ETHICS

This case report is for academic communication only and not for other purposes. The patient provided informed consent, and patient anonymity was preserved. The approval of our institutional ethics committee was unnecessary for a clinical case report.

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