Small bowel volvulus induced by mesenteric lymphangioma in an infant

A fourteen-year-old male child presented at the Emergency Department of our hospital with severe abdominal pain and vomiting. During the clinical examination there was abdominal distension and a palpable abdominal mass was determined.

Imaging Findings:

On radiographic imaging there were atypical hydroaeric levels. Ultrasonography revealed a large anechoic cystic mass in the lower abdomen with septations. On CT examination a dilated small bowel was seen tapering with a beaked appearance at the centre and this continued to a collapsed small bowel that abutted a cystic mass in the pelvic cavity. A thin fatty layer between the mass and the small bowel suggested that the mass probably originated from the mesentery rather than the bowel loop. The findings were suggestive of a small bowel volvulus and we presumed that the cystic mesenteric mass was the cause of the volvulus.

A surgical operation revealed a mass consisted of well-defined locules filled with clear fluid. There was no communication between the cystic mass and the small bowel. A segmental resection of the small bowel was performed and end-to-end anastomosis followed.

The mass was pathologically confirmed as being a mesenteric lymphangioma.

Discussion:

Lymphangioma is a congenital malformation of the lymphatic vessels found usually in the head and neck of young patients. Lymphangioma of the small-bowel mesentery is an extremely rare entity having been reported for less than 1% of all lymphangiomas of the body [1]. In general they are commoner in children, 40% usually present by age 1 and 80% by age 5 (in our case the child was 14 years old) [2]. Volvulus usually is the result of bands, adhesions, Meckel's diverticulum, internal hernia, Ascariasis, ileal atresia, meconium ileus, enterointerostomy, leiomyoma of the mesentery and following operations while mesenteric lymphangioma is described rarely.

It is believed that there is a congenital developmental defect of the lymphatics so that there are blind-ended
Lymphatic sacs which lack proper connections with the venous system that lead to dilatation and the creation of cystic masses [3]. There are also some other theories suggesting that it can be caused by abdominal trauma, inflammation, abdominal surgery, radiation lymphatic obstruction or lymphatic degeneration [4].

The most common symptom is a palpable abdominal mass and abdominal distension because of bowel obstruction and volvulus induced by the compression or rotation of the mass [5]. There are cases in the literature of asymptomatic patients [6] or cases of organ dysfunction because of infiltration into surrounding viscera [4, 7]. Ultrasound or computed tomography (CT) usually confirms the presence of a cystic multi-loculated mass with thin septations and clear fluid. Multi-planar CT can show the small bowel obstruction, the whirl sign of the mesenteric vessels and small bowel around the mesenteric vessels and the relation with the cystic masses of the mesenterium. Calcification may occur but is uncommon. Also it helps to exclude other causes of intra-abdominal masses such as enteric duplication cyst, enteric cyst, non-pancreatic pseudocyst, cystic teratoma.

The signal pattern of lymphangiomas on MRI resembles that of fluid: low signal intensity on T1-weighted images and high signal intensity on T2-weighted images.

Because there is overlap in imaging features between pathological entities, CT and MRI might be insufficient to provide a definite diagnosis and a surgeon has to make the final diagnosis.

According to Kurtz et al in 1986, correct preoperative diagnosis is made in only 25% of cases [8]. The improvement of the imaging modalities and the multi-slice CT with 3D reconstructions improve the accuracy of the diagnosis [9], but still in many cases the differential diagnosis is only made after laparotomy [10].

**Differential Diagnosis List:** Small bowel volvulus in an infant induced by mesenteric lymphangioma, Mesenteric lymphangioma, Enteric duplication cyst, Non-pancreatic pseudocyst, Cystic teratoma, Reactive ascites, Duplication cysts arising from the bladder

**Final Diagnosis:** Small bowel volvulus in an infant induced by mesenteric lymphangioma

**References:**


Description: CT axial image, without intravenous contrast administration, at the level of kidneys shows marked dilatation of fluid-filled small bowel loops with hydroaeric levels. Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: CT axial image, with intravenous contrast administration, at the lower level of the aorta, shows marked dilatation of fluid-filled small bowel loops and some fluid at the right paracolic gutter.

Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus.
Figure 2

Description: CT axial image, at the level of superior aperture of pelvis, shows marked dilatation of fluid-filled small bowel loop which is tapered with beaked appearance (left arrow) and this eventually collapsed (right arrow) Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: Axial CT image, at the level of pelvis, shows whirling of small bowel and mesenteric vessels. Small bowel loop at left side tapers with beaked appearance and there is a collapsed bowel loop within whirling. Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: Axial CT image, at level of pelvis, shows whirling of small bowel and mesenteric vessels. Small bowel loop at left side tapers with beaked appearance. Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus

Description: Serial axial CT image, at level of pelvis, show the collapsed bowel loop (pink arrow) within whirling (white arrow) and the relation with the upper part of a cystic mass on the left (yellow arrow). Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: Axial CT image, at level of pelvis, shows the collapsed bowel loop (whirl sign) and the relation with the upper part of a cystic mass on the left. Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: Axial CT scan, at pelvis level, shows lobulated, fluid-attenuating mass with thin wall.
Origin: Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
**Description:** Axial CT scan, at pelvis level, shows lobulated, fluid-attenuating mass. **Origin:** Metaxa L., Department of Radiology, Limassol General Hospital, Cyprus
Description: During the operation, multiple well-defined locules on the mesenterium without communication with the lumen of the small bowel. Origin: Euaggelidou D., Surgical Clinic, Limassol General Hospital, Cyprus
Description: After the operation. Segment of the small bowel with multiple well defined locules on the mesenterium which don't communicate with the lumen of the small bowel. Origin: Euaggelidou D., Surgical Clinic, Limassol General Hospital, Cyprus