Giant mesenteric cyst of gastric origin: a case report with imaging findings

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We present a very rare case of a giant gastric mesenteric cyst with ultrasonography (US) and computed tomography (CT) findings. An eight-year-old boy was referred for treatment of an intraabdominal cyst, known to exist for six years. On abdominal US, a giant, thin-walled, unilocular intraabdominal cyst was demonstrated, extending from the epigastric region to the pelvis and measuring 18x15x6 cm. In contrast-enhanced abdominal CT, the cyst was demonstrated as a giant, unilocular, hypodense, non-enhancing structure, located dominantly on the right side of the abdomen. During open surgery, the cyst was found to originate from the mesentery-serosa of the gastric antrum and was filled with serous fluid. The cyst was excised totally. Both surgery and pathology confirmed the diagnosis of mesenteric cyst, originating from the stomach. The patient was discharged in good health. US and CT were effective in defining the features of the giant gastric mesenteric cyst and in narrowing the differential diagnosis in favor of mesenteric cyst.

Key words: ultrasonography, computed tomography, mesenteric cyst, gastric antrum, pediatrics.

Mesothelial cysts (mesenteric/omental cysts), which are thin-walled cysts with serous, occasionally chylous/hemorrhagic fluid contents, develop due to failure of the mesothelial peritoneal surfaces to coalesce. They are lined by mesothelial cells and surrounded by a thin layer of fibrous tissue[1]. Mesenteric cysts are rare intraabdominal masses in childhood, and gastric involvement is exceedingly rare. A very rare case of large gastric mesenteric cyst in an adult was reported[2], but to our knowledge, no giant gastric mesenteric cyst having a size similar to that of our case has been reported in a pediatric patient before. Our purpose is to present the ultrasonography (US) and computed tomography (CT) findings and to demonstrate the intraoperative appearances of a giant gastric mesenteric cyst.

Case Report

An eight-year-old boy with complaints of fullness and distension of the abdomen was referred to our hospital for treatment of a known chronic intraabdominal cyst. History and medical records of the patient revealed that the cyst had been demonstrated with US and CT six years ago, when the boy was two years old, and an open surgery had been planned to be done in the future. On the physical examination of the abdomen, there was dullness upon percussion, and fullness was felt on palpation in the right upper quadrant. There was no tenderness or rebound. His remaining systemic examination was normal. His body temperature was 36.7°C. His hemoglobin was 129 g/L (12.9 g/dl), white blood cells $5.63x10^9$/L ($5640/mm^3$), platelets $378x10^9$/L ($378,000/mm^3$), mean corpuscular volume (MCV) 84 fl, creatinine 0.20 mg/dl (N: 0.3–0.7), blood urea nitrogen (BUN) 26 mg/dl (N: 13–50), alanine aminotransferase (ALT) 21 U/L (N: 0–39), and aspartate aminotransferase (AST) 28 U/L (N: 0–51). Abdominal US examination was performed with 3–3.5 MHz convex and 7.5–8 MHz linear probes. Contrast-enhanced abdominal CT was done afterwards. On US, a giant, rather thin-walled, unilocular

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intraabdominal cyst was demonstrated with low-level internal echoes and with regular margins, extending from the epigastric region to the pelvis and measuring 18x15x6 cm (Figs. 1a, 1b). As compared with the previous size of the cyst, which was measured as 9x9x4 cm with US and CT six years ago, it was thought to show slow but persistent grow. In the differential diagnosis, a giant intraabdominal cyst with benign features, probably a mesenteric cyst, was considered first, but its organ of origin could not be determined. On contrast-enhanced CT, a giant, unilocular, hypodense, non-enhancing intraabdominal cystic structure with regular margins and cystic content with a density consistent with serous fluid was detected dominantly on the right side of the abdomen. It showed no luminal communication with the stomach or intestines and displaced the intestines to the periphery (Fig. 2). Surgical planning was done and the patient underwent open surgery. During the surgery, the cyst was found to originate from the mesentery-serosa of the gastric antrum and was filled with serous fluid (Figs. 3a, 3b). The cyst was excised totally without any complication. After surgical removal, histopathological examination of the cyst was reported as benign cyst. Both surgery and pathology confirmed the diagnosis of mesenteric cyst originating from the stomach. No complication occurred during the postoperative period, and the patient was discharged in good health.

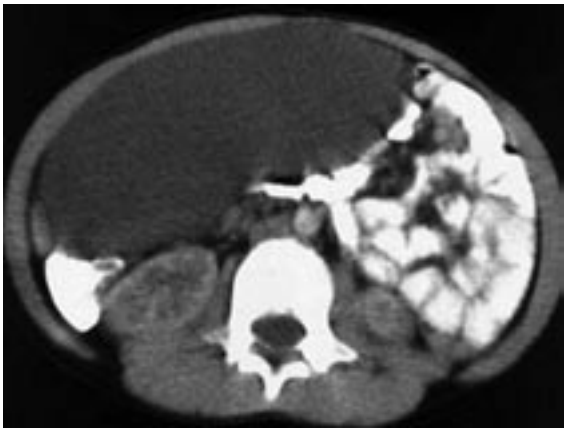
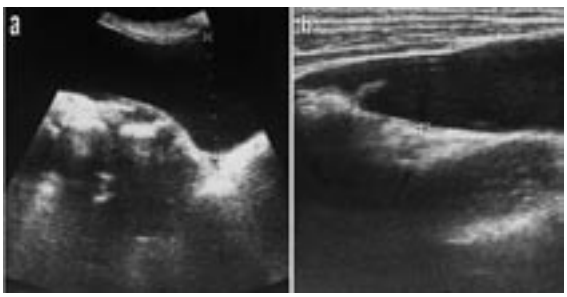


Figure 2. Contrast-enhanced abdominal CT, axial image. Giant, unilocular gastric mesenteric cyst with regular margins without contrast enhancement is localized mainly on the right side of the abdomen, displacing the intestines to the periphery.

Discussion

In long-term retrospective studies conducted in different centers, mesenteric cysts were reported to be rare cystic intraabdominal masses in the pediatric age group[3-5]. As an example, Bliss et al.[4] reported only 10 pediatric patients with mesenteric cysts over a period of 14 years in their institution. Mesenteric cysts are more frequent in small bowel mesentery[4-6], and gastric involvement is very rare. In their series including 15 cases of mesenteric cysts that were detected and treated over 20 years, Chung et al.[5] reported two cases of mesenteric cysts that were located in the gastrocolic ligament. However, in our case, the giant cyst was originating directly from the mesentery-serosa of the gastric antrum, as a very rare entity.

Clinically, mesenteric cysts can be considered as an origin of abdominal pain in children, particularly after exclusion of more common



Figures 1. a, b. Sagittal US image with 3.5 MHz convex probe demonstrates giant gastric mesenteric cyst (a). With 7.5 MHz linear probe, the cyst was shown to have a relatively thin wall and lack of typical bowel wall layers, differentiating it from a duplication cyst (b).

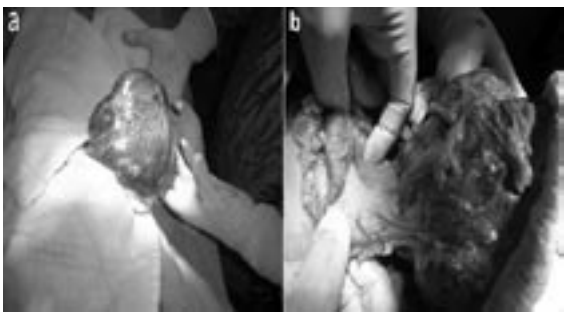


Figure 3. a, b. Intraoperative appearances of the giant gastric mesenteric cyst. The thin-walled, rather translucent cyst was found to be directly originating from the mesentery-serosa of the gastric antrum.

diagnoses. They are usually reported to be symptomatic in pediatric patients. Abdominal pain was reported to be the most common presenting symptom in pediatric patients with mesenteric cysts by some authors[4,5], whereas Egozi and Ricketts[3] and Senocak et al.[6] reported that abdominal distension was the most common presenting symptom followed by abdominal pain in their pediatric patients with mesenteric and omental cysts. In our case, the presenting symptom was fullness and distension of the abdomen without pain.

Although US demonstrates mesenteric cysts typically having appearances of well-defined, unilocular, anechoic masses, mesenteric cysts with a honeycomb pattern of internal echoes and the appearance of loculated, septated ascites were reported[7]. In some rare cases, giant mesenteric cysts were reported to mimic ascites [7-9], but careful interpretation of sonographic findings will prevent making an erroneous diagnosis. Differential diagnosis of a mesenteric cyst is usually made with cystic lymphangioma, nonpancreatic pseudocyst, duplication cyst, and enteric cyst[1].

As imaging is concerned, the usefulness of US in detection and in making the differential diagnosis of giant cystic abdominal masses, like giant mesenteric cyst, in children is well known since the early periods of clinical application of US[10], and US has been used reliably to detect mesenteric cysts[4-6]. Though the role of US in our case was limited since we could not detect the organ of origin, it was possible with US to rule out ascites, to demonstrate the benign characteristics of the cyst and to narrow the differential diagnosis in favor of mesenteric cyst. CT has been in use to image and define mesenteric masses, including mesenteric cyst, since the early periods of CT applications[11]. Though our first choice imaging modality was US in the present case and in other pediatric patients, CT was more effective than US in demonstrating the relationship of the cyst with neighboring structures and organs. With these features, CT further helped to narrow the differential diagnosis. Magnetic resonance imaging can also be used for imaging cystic mesenteric and omental masses[12].

In conclusion, if a large intraabdominal cyst is detected on US in a pediatric patient, giant mesenteric cyst should also be considered in the differential diagnosis, and the possibility of its gastric origin may be considered, though it is rare. US and CT were effective in defining the features of the giant cyst, in making the differential diagnosis and also in the planning of the surgical operation in this pediatric case of giant gastric mesenteric cyst.

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