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Ultrasonographic Demonstration of Gastric Duplication in Infancy

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Abstract. A case of gastric duplication in an infant is reported. Preoperative ultrasound demonstrated a cystic mass lesion with a thin inner echogenic (mucosa) and a wider outer hypoechoic rim (muscle layer). These findings correlated well with the resected specimen.

Key words: Gastric duplication – Ultrasound, pediatric – Abdominal masses

Ultrasound has become the modality of first choice in diagnostic imaging of abdominal masses in infancy and childhood. We report the ultrasonographic characteristics of gastric duplication in an infant, who presented with a palpable mass in the left upper quadrant of the abdomen.

Case Report

7 day old baby girl with multiple congenital anomalies (cleft palate, supernumerary nipples, congenital heart disease (patent ductus arteriosus, atrial and ventricular septum defects) and chromosome study consistent with Turner's syndrome). At physical examination a mass was palpated in the left upper quadrant of the abdomen and thought to be the enlarged left kidney. This finding initiated an ultrasound examination which was performed bedside using a high resolution sectoral real time scanner (Advanced Technology Laboratories, Inc., Bellevue, Washington). The palpable abdominal mass was found to be cystic. Both kidneys were normal.

After this initial emergency study, the baby was re-examined twice, also with static imaging using a digital gray-scale scanner (Unirad, Denver, Colorado). At both occasions the cystic mass remained unchanged and it was clearly demonstrated that the lesion did not originate from the left kidney, left liver lobe or the spleen. The mass was located anteriorly in the left upper quadrant. It measured 4.5 × 3 × 2 cm, was smooth and well defined. It also had a thin highly echogenic internal border which was surrounded by a 10 mm wide anechoic rim (Fig. 1). This appearance of the lesion led us to the preoperative diagnosis of a gastrointestinal duplication. The outer anechoic rim was thought to represent the muscular wall and the inner highly echogenic border mucosal lining of the duplication cyst. Subsequent barium studies showed that the smooth mass lesion involved the greater curvature of the antrum and also displaced the duodenum and transverse colon. There were no calcifications in this mass (Fig. 2).

At surgery a gastric duplication originating from the greater curvature was found. Additionally, the child had malrotation of the intestine and pancreatic deviation with the tail of the pancreas at the ligamentum of Treitz.

Discussion

Gastric duplications are rare. Besides being of gastric origin, they may arise from the duodenum [4], pancreas [2, 5], or they may occur without any communication with the gastrointestinal tract [3]. They are usually located to the epigastrium but intra-athoracic occurrence of gastric duplication cyst arising from the duodenum has been reported [4]. Because gastric duplication may be associated with complications such as abdominal pain, vomiting, hemorrhage or fistula formation [5], their early recognition is important. When the gastrointestinal duplication presents ultrasonographically as a simple cystic [1, 2] or echogenic [3] mass, differential diagnosis from any other cystic or solid abdominal lesion is impossible. The solid components in a duplication cyst are apparently caused by hemorrhage and inspissated material in the cyst [3]. The ultrasonographic findings in our case, however, seem to be more specific for gastric duplication. They correlate well with pathology (Fig. 3) and have also been reported earlier in one patient [3]. The anechoic peripheral rim of the cyst corresponds to the smooth muscle layer of the duplication; these findings suggest the gastric origin of the duplication. The thin echogenic layer reflects

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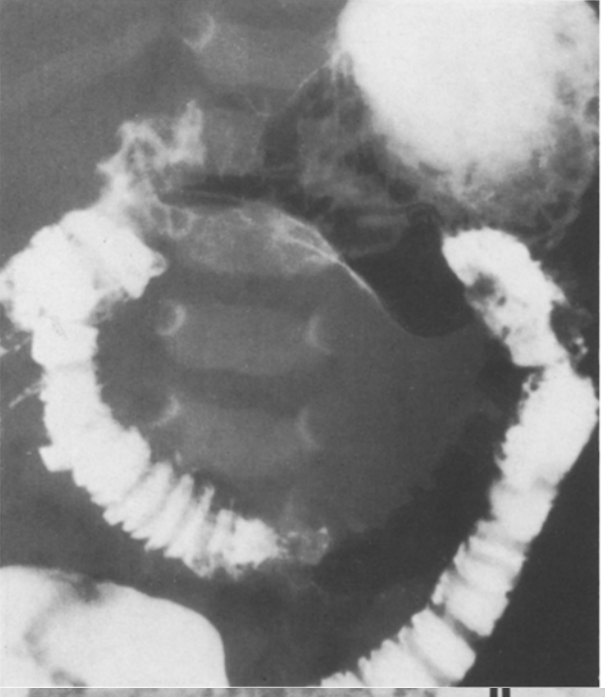

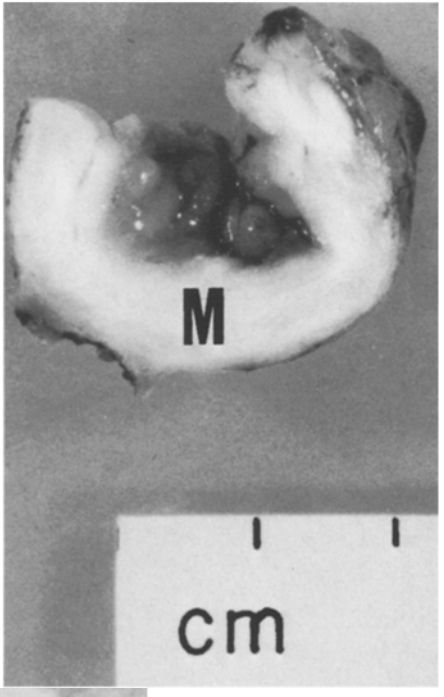

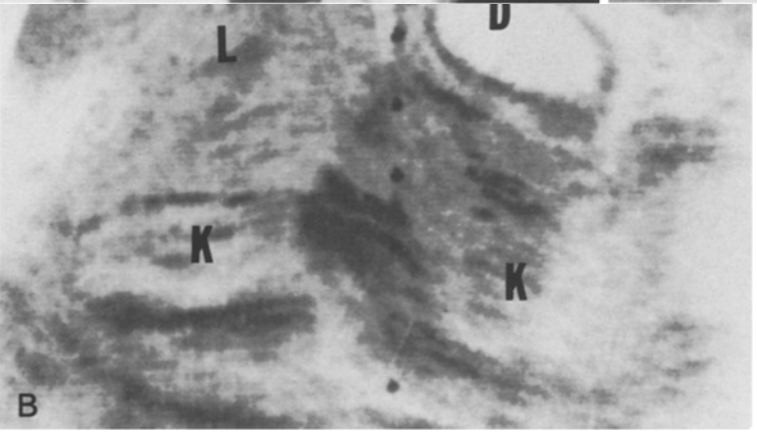

Fig. 1 A and B. Mass lesion anteriorly in the left upper quadrant of the abdomen. Its widest diameter is approximately 4.5 cm, it is anechoic but contains a thin echogenic inner lining. The outer anechoic wall is about 10 mm wide. (**A** anterior longitudinal and **B** transverse scan; D-duplication; K-kidneys, L-liver; S-stomach)

Fig. 2. The epigastric mass compresses and displaces the antrum, duodenum and transverse colon

Fig. 3. Cross section of the specimen of the resected gastric duplication. The muscle layer (M) corresponds to the outer anechoic rim seen on ultrasound. The inner lining was typical gastric mucosa. The cyst was filled with viscous fluid

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2

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the echoes from the mucosal lining of the duplication. Because we are not aware of any other abdominal mass lesion with similar ultrasonograhic appearance we believe that these findings are characteristic for certain gastric duplication cysts. By contrast, in the presence of echogenic, mixed or entirely cystic lesions this specific diagnosis cannot be made.

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