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CYSTIC DUPLICATION OF THE STOMACH IN CHILDREN (Clinical Case)

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Abstract
A 1-year-old patient was hospitalized for further examination of a cystic formation in the abdominal cavity, detected in the child at the age of 6-7 months. After that, the patient underwent CT of the abdominal cavity and retroperitoneal space, which determined a cystic formation in the area of the adrenal gland of the left kidney, and the child was referred to our clinic. After conducting MSCT of the abdominal cavity, a differential series was established between a spleen cyst and a duplication of the stomach. On control ultrasound, negative dynamics in size were subsequently revealed. Indications for surgical treatment were established. Histologically confirmed the variant of duplication of the stomach.
Conclusion: The multimodal approach allows timely diagnosis of the presented pathology, differential diagnosis of stomach duplication with rare localization and determination of indications for surgical treatment.

Keywords: Gastric duplication, children, surgical treatment.

Introduction

Gastrointestinal tract (GIT) duplications are rare congenital anomalies that share an anatomical connection with a specific part of the digestive system. They are lined with mucosa, contain a well-developed smooth muscle layer, and occur with an incidence of approximately 1 in 4,500 live births [1,4-5,9]. According to the literature, most GIT duplications are diagnosed before the age of two and are observed in both sexes, with a slight predominance in males.

Congenital gastric malformations represent a heterogeneous group of disorders with various topographic and anatomical presentations. Gastric duplications can be either complete or incomplete (cystic or diverticular) and may or may not communicate with the gastric lumen. These duplications are relatively rare, accounting for only 3.8–7% of all gastrointestinal duplications [2,4,10]. Unlike other localizations, gastric duplication is more frequently observed in females. The duplicated segment shares a common muscular layer and blood supply with the stomach and rarely communicates with its lumen. Most frequently, gastric duplications present as closed cystic structures located along the greater curvature or antral region of the stomach, accumulating fluid.

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The inner lining may consist of gastric, jejunal, ileal, or colonic mucosa. In approximately 10% of cases, ectopic pancreatic tissue is found within the duplication. The gastric mucosa within the duplication may secrete hydrochloric acid and pepsin, leading to inflammation and complications [1-2,6,11].

The diagnosis of gastric cystic duplications is based on four key criteria:

1. The presence of an epithelial lining characteristic of the digestive tract.
2. The presence of an outer smooth muscle layer.
3. Vascularization derived from gastric blood vessels.
4. A structural connection with the stomach, making the cyst an anatomical continuation of the organ [3].

The preferred treatment for gastrointestinal duplications is early complete excision to prevent complications, including potential malignant transformation. Early surgical intervention with resection of the duplication minimizes the risk of inflammation and perforation [1,7]. Given the potential for late complications, surgeons must have a thorough understanding of the anatomy of duplications and the spectrum of available surgical interventions. In rare cases where complete excision is hazardous, alternative procedures such as mucosal removal or fenestration may be considered. Incomplete resection can lead to severe complications, including recurrence of cystic duplication, inflammation, meningitis (in neuroenteric duplications), gastrointestinal bleeding, and perforation [8].

Objective

This study aims to highlight the diagnostic and therapeutic approach to gastric duplication using a rare clinical case.

Materials and Methods

This study is based on an analysis of clinical, instrumental, and histological data obtained from a pediatric patient treated at the Children's Republican Clinical Hospital No. 2 in Tashkent. The case report focuses on the diagnostic process and surgical management of a rare congenital anomaly—non-communicating cystic duplication of the stomach.

Results and Discussion

A single case of cystic gastric duplication was observed in a 1-year-old female patient who was admitted to the elective surgery department of Children's Republican Clinical Hospital No. 2 in Tashkent with complaints of epigastric pain and recurrent fever.

Case History. Since the age of 6–7 months, the patient had experienced persistent epigastric pain. An ultrasound (US) examination performed in her hometown revealed a cystic mass near the left adrenal gland. A subsequent computed tomography (CT) scan of the abdomen and retroperitoneal space confirmed the presence of a cystic lesion in the left adrenal region, leading to her referral to our hospital.Upon admission, the patient was asymptomatic, and her clinical status was unremarkable. The following examinations were conducted:

Ultrasound findings: Normal liver size and structure, homogeneous gallbladder, normal common bile duct (0.3 cm), portal vein (0.5 cm), pancreas, and kidneys. The spleen measured 8 × 3.5 cm

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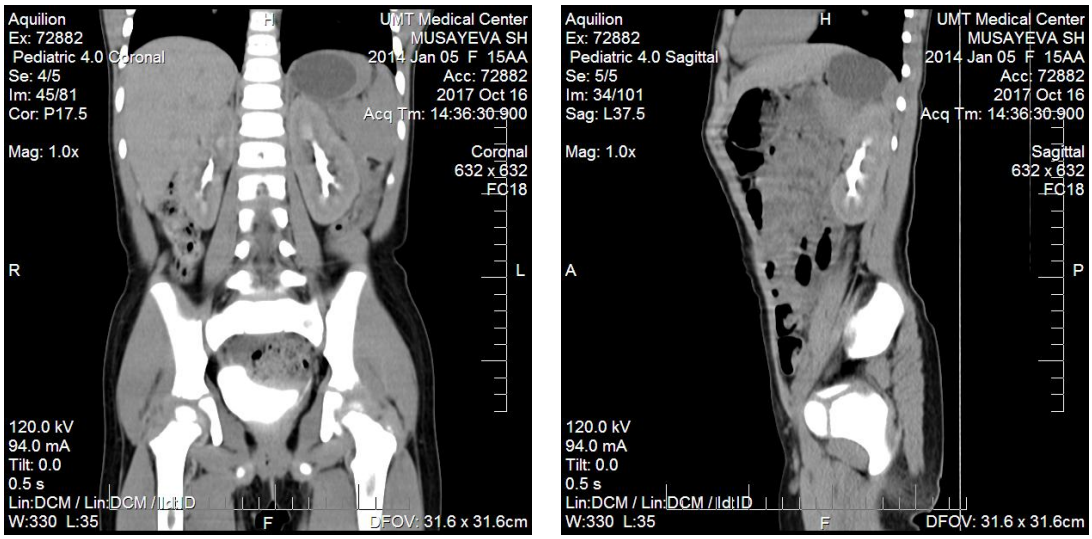
with normal echogenicity. A 4.4 × 3.5 cm predominantly cystic heterogeneous mass was detected near the lower pole of the spleen. No retroperitoneal lymphadenopathy was observed.

Multislice computed tomography (MSCT) findings: A 4.0 × 4.9 × 3.9 cm cystic lesion was identified between the left diaphragmatic dome, the proximal stomach, and the spleen. The spleen exhibited a horseshoe shape. No pathological changes were detected in the abdominal organs, lymph nodes, or bones (Fig. 1a, b).



a **b**

Fig. 1

Laboratory Tests. Hemoglobin: 113 g/L, Erythrocytes: 5.06 × 10^{12}/L, Leukocytes: 5.1 × 10^{9}/L, Platelets: 184 × 10^{9}/L, Erythrocyte sedimentation rate (ESR): 5 mm/h, Reticulocytes: 2‰, Blood amylase: 8 U/L, Total protein: 50.8 g/L, Blood glucose: 4.4 mmol/L, Bilirubin: 11.6 mmol/L, Urea: 5.4 mmol/L, Residual nitrogen: 21.5 mmol/L, Creatinine: 94 µmol/L, Aspartate aminotransferase (AST): 0.2 mmol/mL, Alanine aminotransferase (ALT): 0.2 mmol/mL.

Endocrinological and Oncological Assessments**.** Alpha-amylase: 48 U/L (normal range: 28–100 U/L), Glucose: 4.7 mmol/L, ACTH: 29.3 ng/mL (normal range: <50 ng/mL),Cortisol: 421.7 nmol/L (normal range: 260–720 nmol/L), Neuron-specific enolase: 22.67 ng/mL (normal range: <13.2 ng/mL). Based on clinical, laboratory, and imaging findings, a preliminary diagnosis of pancreatic cyst was made.

Surgical Intervention. Exploratory laparotomy revealed a 3.0 × 4.0 × 5.0 cm cystic mass along the posterior gastric wall, sharing a common serosal covering with the stomach (Fig. 2a). The cyst was closely adjacent to the left diaphragmatic dome, splenic hilum, and pancreatic tail. The cyst contained a gelatinous, light-yellow fluid with white debris (Fig. 2b). The cyst wall consisted of serosa and an outer muscular layer derived from the stomach. No communication with the gastric lumen was observed. Complete excision of the cyst was performed, with closure of the remaining gastric wall using interrupted sutures (Fig. 2c).

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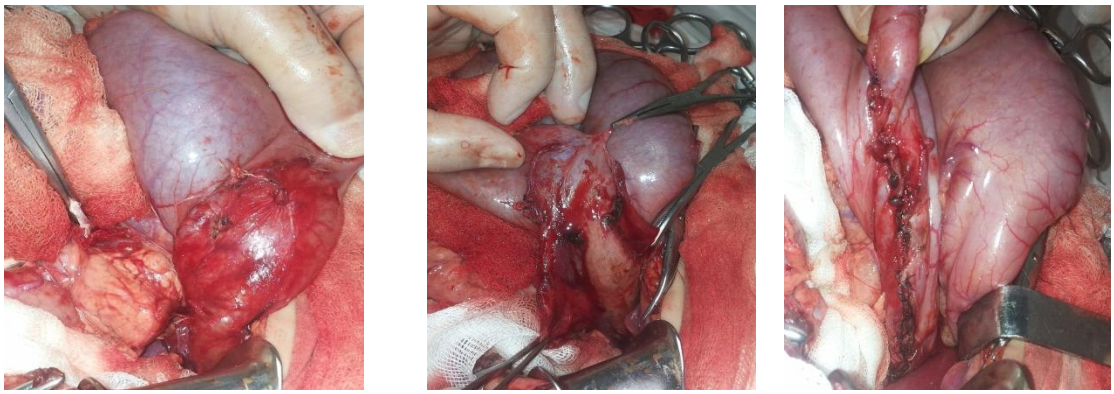

a b c

Fig. 2

Histological Findings. The cyst wall exhibited gastric tissue characteristics, including a muscular layer. The mucosa showed signs of hypoplasia and focal changes.

Postoperative Course.The surgical wound healed by primary intention. Sutures were removed on postoperative day 9. Follow-up US examination revealed no residual pathological formations. The patient was discharged in satisfactory condition on postoperative day 10. Six months later, follow-up MSCT showed no abnormalities, and the patient remained asymptomatic.

Conclusions

1. The clinical presentation of gastric duplications varies widely and depends on size, location, the presence of ectopic mucosa, and communication with the gastric lumen.
2. MSCT and MRI are the most effective diagnostic tools, particularly for complex anatomical cases.
3. Whenever possible, complete resection of the duplication is recommended. In cases where close adherence to the gastric wall precludes full excision, partial resection with mucosal ablation or coagulation should be considered to prevent recurrence.

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