

## Gastric adenocarcinoma in a girl masquerading as Koch's abdomen

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### Abstract

This is a rare case of a pediatric gastric adenocarcinoma which presented like gastric outlet obstruction and mimicked strongly like tuberculosis. Malignancy could not be diagnosed until the post-operative biopsy report.

**Keywords:** Pediatric gastric carcinoma, Gastric adenocarcinoma, Gastric outlet obstruction, Tuberculosis.

### Introduction

Malignancies of gastrointestinal tract accounts for only 1.2% of pediatric malignancies.<sup>1</sup> Gastric carcinoma is extremely rare in children representing only 0.05% of all gastrointestinal malignancies.<sup>2</sup> Here, we report a case of gastric cancer presenting with gastric outlet obstruction that mimicked clinically as abdominal tuberculosis. It was difficult to diagnose the condition pre-operatively and even intra-operatively. Malignancy was confirmed only on biopsy. The reason for publishing the case is (1) difficulty to diagnose malignancy pre-operatively, (2) need for having stronger suspicion for malignancy in cases of pediatric gastric outlet obstruction.

### Case Report

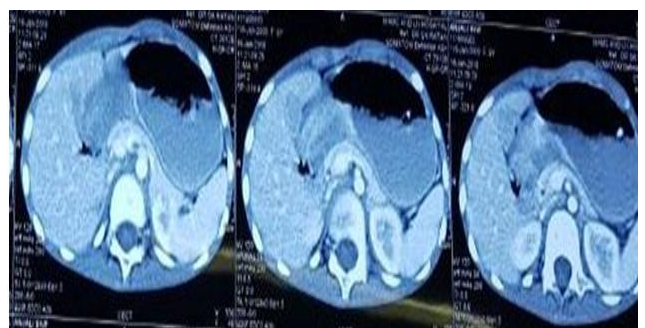
A 9-year-old girl presented with progressive intermittent non bilious vomiting for 3 months. There was associated non colicky upper abdominal pain and weight loss. There was no history of fever, altered bowel habit, or hematemesis. She had no contact with tuberculosis and there was no family history of tuberculosis as well. On examination, the girl was emaciated, anemic and severely dehydrated. There was no lymphadenopathy or jaundice. Her vital signs were normal and anthropometric findings were as follows, weight was 18.9 kg (<5th percentile for age and sex) and height was 137.5 cm (on the 50th percentile). Abdominal examination was grossly normal. We could not find palpable masses, organomegaly, or ascites. Other systemic examination was unremarkable.

Hematological investigations revealed anemia, hyponatremia (130 mmol/L), hypokalemia (2.8 mmol/L), hypocalcemia (7.9 g%) and alkalosis (pH 7.59). Ultrasound of the abdomen revealed a segment of about 3.5 X 0.8 cms concentric mural thickening seen in pylorus suggestive of hypertrophic pyloric stenosis and other organs were normal. A working diagnosis of gastric outlet obstruction was made which was corroborated on Barium meal (Fig. 1).



**Fig. 1: Barium meal shows obstruction at pylorus.**

Next, we performed an upper gastrointestinal endoscopy, which showed narrowed and deformed pylorus and scope was not negotiable beyond it, suggestive of gastric outlet obstruction. Test for *Helicobacter pylori* was negative. The biopsy which was taken from the antrum revealed mild chronic gastritis with foveolar hyperplasia. Possibility of Menetrier's disease based on the microscopic features was kept and a CECT abdomen was done which revealed symmetric circumferential mural thickening involving the pylorus for an approximate length of 3.2 cm with maximum mural thickness of 1.3cms with proximal overdistended stomach. No obvious mass was noted in the pylorus, distal segment of duodenum and rest of bowel was normal. Liver, Gall bladder, Spleen and Pancreas were normal. Mild to moderate free fluid was seen in abdomen and it was suggestive of a benign cause (Fig. 2).



**Fig. 2: CECT abdomen revealed symmetric circumferential mural thickening involving the pylorus**

The child underwent laparotomy with a plan of performing pyloroplasty / Bilroth surgery. The pylorus was thickened and regular and it appeared benign. Mild ascites was present which was collected and sent for cytology. Other solid organs were inspected, and metastasis ruled out. The peritoneum and omentum was studded with multiple nodules which appeared tubercular and biopsy was taken from both. Resection of the pylorus with Roux en Y retrocolic gastrojejunostomy was done (Fig. 3). The histopathology report contrasted with our clinical diagnosis and it confirmed gastric adenocarcinoma. The histopathology of the omental and peritoneal deposits turned out to be metastasis. On further doing immuno histochemistry with synaptochrome, Neurone Specific Enolase (NSE) was focally positive suggesting gastric adenocarcinoma with focal neuroendocrine differentiation.

Girl was started on ECF regime (Epirubicin, Cis Platin, 5FU). However, the clinical course in post-operative period was quite fulminant and she could not tolerate this regime beyond one cycle. She developed a recurrence in the form of an abdominal lump which was confirmed by sonography, in just around a month and she finally expired due to cachexia, dehydration and dyselectrolytemia.



**Fig. 3: Resected pylorus**

## Discussion

Gastric adenocarcinoma (GAC) primarily affects patients in the 50-to-70-year age group and is uncommon before the fifth decade of life. Worldwide, there is a large geographic difference in gastric cancer incidence. The rarity of gastric cancer in pediatric age group, unawareness of pediatricians about the possibility of gastric carcinoma in children, and non specificity of initial gastrointestinal symptoms lead to significant delay in diagnosis and late initiation of appropriate medical therapy and surgical management.<sup>3</sup> Consequently, gastric cancer in children has a more fatal course and is associated with a more worse prognosis than adults. The reported 5-year disease free survival rate in adults is approximately 15%.<sup>1</sup> Among the pediatric cases reported in the literature, median survival after diagnosis is approximately 5 months. The only 2 long term survivors free of disease, 30 and 102 months after

surgical resection,<sup>4,5</sup> had localized disease that had been completely removed by surgery.

The etiology of gastric cancer has been demonstrated to be multifactorial, infection with *Helicobacter pylori* being the most important risk factor.<sup>6</sup> In children GAC develops either as de novo occurrence, as part of the hereditary polyposis syndromes, or after treatment of gastric lymphomas.<sup>1</sup> In our case the child had no polyposis or a prior history of lymphoma, thus it is likely to be a de novo occurrence.

Pediatric patient gets *H. pylori* infection at a very early age. It is related to a much higher risk to develop gastric carcinoma especially in the setting of a positive family history of gastric carcinoma.<sup>7</sup> Other risk factors such as high intake of salt, smoked food, nitrates and carbohydrates, alcohol consumption, smoking, blood groups, and family history of carcinoma are associated with gastric adenocarcinoma in adults, but their role in children is unknown.<sup>5</sup> In our case there was no identifiable risk factors for the GAC. Because gastric adenocarcinoma rarely affects children, the management of this disease in children is not well-established and must be based on the principles used in adults for the time being. Radical gastrectomy with extended lymph node dissection is the only curative management in patients with localized gastric adenocarcinoma. However, recurrence within 2 years is still quite common.<sup>1,5,8</sup> Symptoms of gastric carcinoma vary according to the location and extent of the tumor, with tumor arising at cardia of the stomach presenting with dysphagia<sup>9</sup> and tumors distal to the cardia are manifesting nonspecific gastro intestinal symptoms like abdominal pain, loss of appetite, weight loss, vomiting, heart burn, anorexia, fatigue, and malaise.<sup>4</sup> The differential diagnosis of pediatric gastric tumors should include [gastrointestinal stromal tumors], and although rare, other tumors, such as hemangioma, lymphoma, squamous cell carcinoma, carcinoids, leiomyoma, Peutz-Jeghers-type polyps of the stomach, leiomyosarcoma, lipoma, and teratoma should be considered.<sup>10</sup>

Other differential diagnoses of gastric outlet obstruction that need to be considered include infectious cause (tuberculosis, brucellosis, fungal infection), cicatricial gastric ulcer/duodenal ulcer, gastric bezoars, antral web, neoplastic lesions (lymphoma), and inflammatory lesions including Crohn's disease, eosinophilic gastritis, and chronic granulomatous disease.<sup>11</sup>

Occurrence of gastric cancer in young people motivated molecular studies that identified inherited mutations in the E-cadherin/CDH1 gene described in several ethnic groups.<sup>12-14</sup>

## Conclusion

GAC in children is quite rare and in this case its presentation, investigations and intra-operative findings resembled tuberculosis. In spite of the authors having years of experience in the surgical field, intra-operative findings could not be differentiated from tuberculosis. With this publication we intend to create awareness regarding GAC in

children and wish to emphasize that it must be kept as a differential diagnosis in cases of gastric outlet obstruction. We strongly recommend the use of frozen section regularly which could alter the plan of treatment in such cases.

**Conflict of Interest:** None.

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