

# Extensive metastases from Gastric Adenocarcinoma In a teen male presenting as anemia

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## Abstract

Gastric carcinoma is the most common gastrointestinal malignancies worldwide, but is extremely rare in teenagers. We report a case gastric adenocarcinoma in a 13-year male who presented with anemia. He also found to have multiple hepatic metastases and ascites. A review of the literature was done.

## INTRODUCTION

Gastric adenocarcinoma is extremely rare in children with only a few reported cases in the literature. We report a case of moderate to poorly differentiated adenocarcinoma of stomach in a 13 year old boy with extensive metastases presenting as anemia.

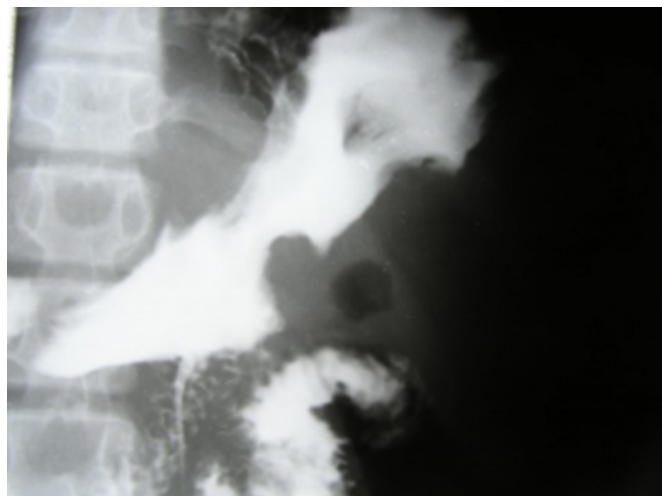
## CASE REPORT

A 13-year-old boy presented with complaints of vomiting, weight loss and generalized weakness. Cytological examination of blood showed iron deficiency anemia with a hemoglobin of 6.5 g/dl. Stools were positive for occult blood. The rest of the hematological findings were non-contributory. Barium studies showed a large irregular lobulated mass in the body of stomach and there was no gastric outlet obstruction (Fig. 1). An ultrasound showed a large mass with bowel signature in the epigastric area; there were multiple hepatic metastases, lymphadenopathy and ascites (Fig 2). Esophagogastroduodenoscopy showed a large ulcerated mass in the anterior and posterior walls of the body and along the greater curvature of stomach; the surface of the mass was friable; there was significant bleeding noted at the base of ulcer (Fig 3). A biopsy showed moderate to poorly differentiated adenocarcinoma of stomach (Fig 4). A computer tomography study revealed a large mass in the body of stomach along the anterior and posterior walls and along the greater curvature with local extension into the perigastric area, the gastro-splenic ligament, the transverse mesocolon, the transverse colon, the pancreatic body and the deep layer of the adjacent anterior parietal wall; there were multiple hepatic metastases, lymphadenopathies, and ascites (Fig 6). The anemia was corrected by blood transfusion. He

was offered palliative chemotherapy but he couldn't afford it due to financial constraints. He received best supportive care for 2 months until he died.

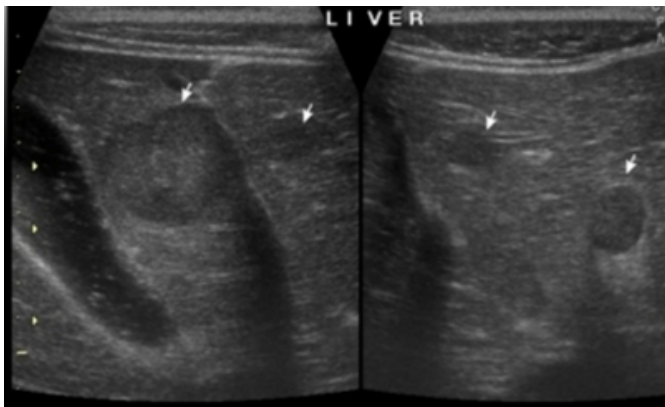
## Figure 1

Figure 1: Barium studies large irregular lobulated mass in the body of stomach.



**Figure 2**

Figure 2: USG showing Hepatic metastases.



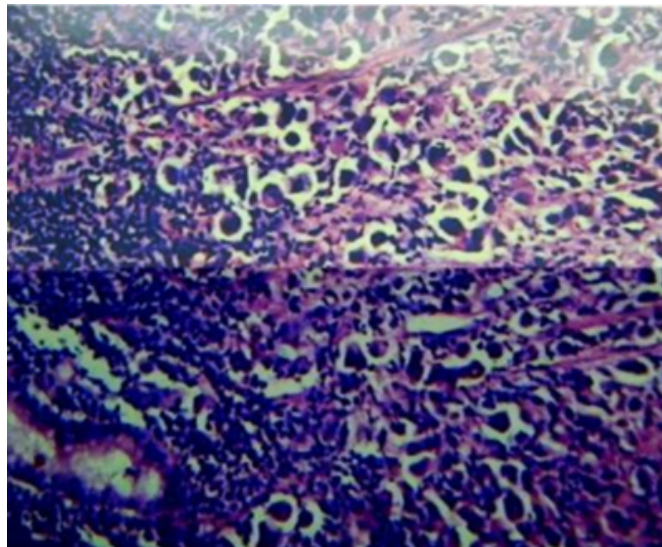
**Figure 3**

Figure 3: OGD Ulcerated mass over stomach



**Figure 4**

Figure 4: Biopsy - poorly differentiated adenocarcinoma of stomach.



**Figure 5**

Figure 5: Computer Tomography - large mass in the body of stomach with surrounding extension with multiple hepatic metastases, lymphadenopathy and ascites.



## **DISCUSSION**

Gastric carcinoma is the most common gastrointestinal malignancies worldwide and is the world's second most common cause of death due to cancer with over one million new cases per year; nearly two thirds occur in the developing countries, with high risk areas being Central and South Africa and Eastern Asia and also Japan [1]. Though the overall rate of gastric carcinoma is decreasing, an alarming trend exists; adenocarcinoma of the gastric cardia has

increased outpacing increase in other tumours like melanoma, bronchogenic carcinoma, NHL, and others [2]. It is more common in lower socio-economic groups and has some predisposing conditions. Patients with pernicious anemia have a twenty times increased risk than that of the general population. Intestinal metaplasia (replacement of the gastric epithelium by intestinal epithelium containing Goblet cells) appears to be a precursor and this in turn may result from known carcinogens and after gastric resection for a benign gastric ulcer [2]. Gastric cancer is thought to result from a combination of environmental factors and accumulation of specific genetic alterations, and consequently mainly affects older patients (>50 years of age). Some authors have postulated that gastric cancer can be related to chronic infection with *Helicobacter pylori*. Also Epstein-Barr virus is suspected to have some etiological role. Fewer than 10% of patients present with the disease before the age of 45 years and these young patients are thought to develop carcinomas with a different molecular genetic profile from that of sporadic carcinomas occurring at a later age. There are few reports to suggest that early onset gastric carcinomas appear to have characteristics distinct from gastric carcinomas occurring at a later age like absence of MSI (microsatellite instability), mutations in E-cadherin (CDH1), TP53 or RUNX3 genes, or absence of Epstein-Barr virus infection [3].

Symptoms of gastric cancer are non specific. Patients may have complaints of weight loss, fatigue or gastric discomfort. The diagnosis is performed by barium studies, endoscopy and biopsy; Computerized tomography imaging is done mainly for evaluation of local and distant spread.

This cancer is treated by surgical removal of the tumor, with or without adjuvant chemotherapy. The prognosis is generally poor with an average five-year survival of less than 20%. If the tumor is localized to the stomach (stage I & II), survival may be up to 60%, but only 18 % of all patients will be diagnosed at these early stages. Incidence of adenocarcinoma in various positions of stomach is as follows: 64% in antrum, 27% in body, 6% in cardia and fundus, and 3% in the whole stomach.

There are four macroscopic varieties of gastric adenocarcinoma. The ulcerative variety accounts for the majority of cases. Polypoid variety accounts for approximately 10%, Scirrhus type accounts for 10%. And the superficial type is uncommon.

Approximately 90% of primary gastric malignancies are

adenocarcinomas with 10% due to NHL and leiomyosarcomas. Gastric adenocarcinoma may be subdivided into two categories: A diffuse type in which cell cohesion is absent; resulting in individual cells infiltrating and thickening the stomach wall without forming a discrete mass. It is common in younger patients and is associated with poor prognosis. An intestinal type characterised by cohesive neoplastic cells forming gland like tubular structures. It is frequently ulcerative, more commonly appears in the antrum and lesser curvature, and tends to predominate in the high-risk geographical regions [4]. Barium studies show the gastric mass as an irregular polypoidal filling defect or as linitis plastica. Antral carcinomas are usually associated with outlet obstruction. Ultrasonography shows the mass with bowel signature due to wall thickening. On computerized tomography, the gastric carcinoma is usually seen as focal area of wall thickening and may show focal, sessile, lobulated, polypoid tumors, or infiltrating lesions. Linitis plastica is seen as diffusely, uniformly thickened gastric wall with reduced gastric lumen. Usually gastric carcinoma occurs in the elderly. It is extremely rare in a younger age group. There are few case reports of childhood / adolescence gastric adenocarcinoma. These tend to have extremely poor prognosis due to incidence of undifferentiated tumors and advanced stage at the time of diagnosis [5].

There have been few reports of gastric cancer in young age, as young as 20 months of age [6], and the patients have not survived for more than a few months from diagnosis despite of chemotherapy. Most of these cases present in late stage with widespread metastases [7]. There is controversy regarding the differences in the clinicopathological characteristics of gastric cancer between young and older patients. The prevalence of this disease is higher in young female than in adult females; a family history of gastric cancer may be more common in children with gastric cancer than in adults; proximal location and involvement of the entire stomach may be more common in childhood gastric cancers than in adults, and diffuse cancers and poorly differentiated carcinomas may be more prevalent than in adult populations. [8]

In our case the patient did not have any premalignant conditions of the stomach or a family history of carcinoma. There was no signs of protein energy malnutrition, *Helicobacter Pylori* and genetic assay were not done in this case. He presented with anemia, which was due to iron deficiency secondary to melena. At the time of diagnosis he

had widespread metastases to the liver and the lymph nodes and the patient died within 2 months after diagnosis, again stressing the fact that the childhood gastric cancers are more aggressive with poor prognosis.

Gastric carcinoma needs to be considered in any patient with persistent gastro-intestinal symptoms, iron deficiency anemia and melena, even in the young.

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