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RESEARCH ARTICLE
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CASE REPORT: EMPHYSEMATOUS GASTRITIS ASSOCIATED WITH PELVIC ABSCESS

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ABSTRACT

Emphysematous gastritis (EG) is an uncommon ailment of the stomach caused by gas-forming microbes, distinguished by the unique presentation of intramural gas bubbles on computed tomography scan (CT-Scan). Over the years, the management of EG has mainly shifted from urgent exploratory laparotomy, with or without gastrectomy, to a more conservative approach, such as esophago gastroduodenoscopy, and a complete course of broad-spectrum antibiotics. While opting for conservative treatment has improved the survival rate, EG continues to be a disease of high mortality, often elusive in its presentation and difficult to diagnose early. Traditionally, EG is often associated with other comorbidities such as diabetes, cancer, immunosuppression, chronic obstructive pulmonary disease and renal failure, the case we present in this report belongs to a rare demographic of an otherwise healthy fifteen year old girl. A fifteen year old girl presents to the Emergency Department with the complaint of severe epigastric abdominal pain and abdominal distension for five days. She was vitally stable and well-oriented but visibly in discomfort due to her pain. Blood tests were unremarkable save for a high level of lipase, leading us to suspect pancreatitis. Eventual CT Scan with IV and oral contract depicted pelvic collection and air in the stomach wall making the diagnosis of emphysematous gastritis (EG).

Keywords: Emphysematous gastritis, computed tomography, epigastric abdominal pain, abdominal distension, lipase, rare demographic

INTRODUCTION

Emphysematous gastritis is a severe form of gastritis, the hallmark of which is intramural gas, due to infection of the gastric wall. The several risk factors associated with EG include ingestion of corrosive substances, alcohol abuse, diabetes, past abdominal surgery, and immuno-supression [1]. Since it was first described by Fraenkel in 1889 [3], there have been 68 cases of EG reported in the PubMed search with just 9 cases reported in those under 18 [1]. Only three cases of emphysematous gastritis in the adolescent demographic have been reported so far [4][5][6].

CASE PRESENTATION

A 15 year old girl presented to the Emergency Department with the complaint of burning epigastric pain which began 5 days ago and gradually worsened in severity, not relieved by any over the counter medication she usually tries. The patient also described feeling epigastric fullness which began and worsened alongside the pain. She further explained that for the past 2 years whenever she felt mildly bloated she self-medicated with Omeprazole 40 mg once or sometimes even twice a day. She had a blood pressure of 80/60, pulse rate 110b/min, temperature of 37 C, a saturation of 98 and a normal respiratory rate. She was in visible distress due to her pain. No episodes of vomiting, diarrhea or any changes to appetite or bowel habits were reported. On examination, the abdomen was tense but non-tender in the epigastric region along with audible gut sounds. Two large bore IV lines were maintained and routine emergency management was administered, along with a nasogastric tube which produced 300 ml of feculent aspirate. The blood tests revealed the following;

Hb	15.4 g/dL
Platelets	414x10^9/L
WBCs	14.7x10^9/L
Neutrophils	90%
Albumin	4.1 g/dL
INR	1.04
T. Bilirubin	0.5 mg/dL
D. Bilirubin	0.12 mg/dL
ALT	14 U/L
ALP	87 U/L
GGT	10 U/L

Amylase	445 U/L
Lipase	570 U/L
Urea	35 mg/dL
Creatinine	1.34 mg/dL
CRP	177.03 ng/dL
LDH	537 U/L
RBS	79 mg/dL
Na	139 mEq/L
K	4 mEq/L
Cl	105mEq/L

No significant findings on examination and imaging of the chest were noted. X-ray of the abdomen showed distension and the stomach, and small and large bowel loops(Fig.1). The ABGs were as follows;

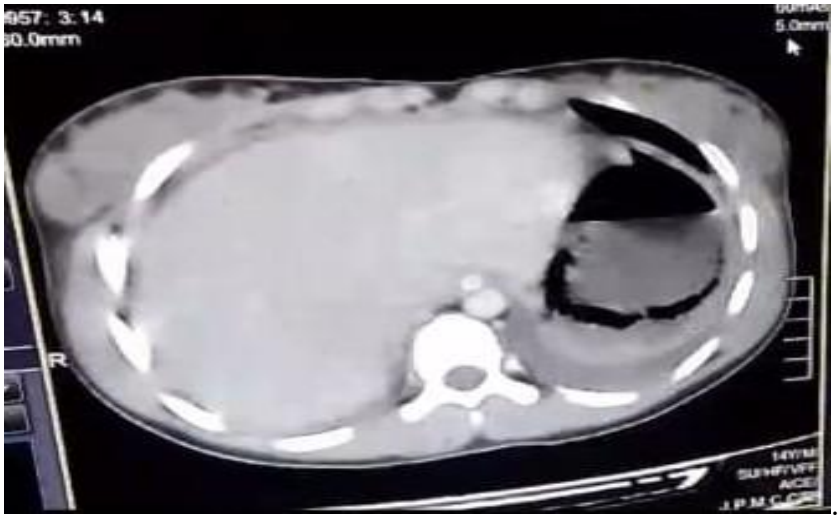
pH	pCO2	pO2	cHCO3-	SO2	Hct	BE
7.42	23.9mmHg	114mmHg	15.2	98	27	-7.1mmol/L

Abdominal CT Scan with IV and oral contrast was arranged showing pelvic collection(Fig.2), severe distension of the stomach (Fig.3) along with intramural air bubbles(Fig.4), establishing diagnosis of emphysematous gastritis.

Fig. 2 CT scan shows pelvic collection

Fig.3 CT scan shows gastric distension

Fig4 Emphysematous stomach wall with intramural air



A treatment plan focused on conservative management through intravenous fluid resuscitation, pain medication and the broad-spectrum antibiotics (IV Meropenem 1gm/day). The patient did not show signs of improvement and on hospital day 4, she underwent exploratory laparotomy alongwith peritoneal washout and drain placement.
300 ml of pus was drained from the pelvis and pus flakes were removed from the pelvic region and splenic flexure, and a sample of pus was sent for lab testing.
The stomach was massively distended, with its anterior wall edematous and purulent(Fig.5A)(Fig.5B), however no sign of perforation was observed. The abdomen was irrigated with normal saline, and pelvic and sub hepatic drains were placed.

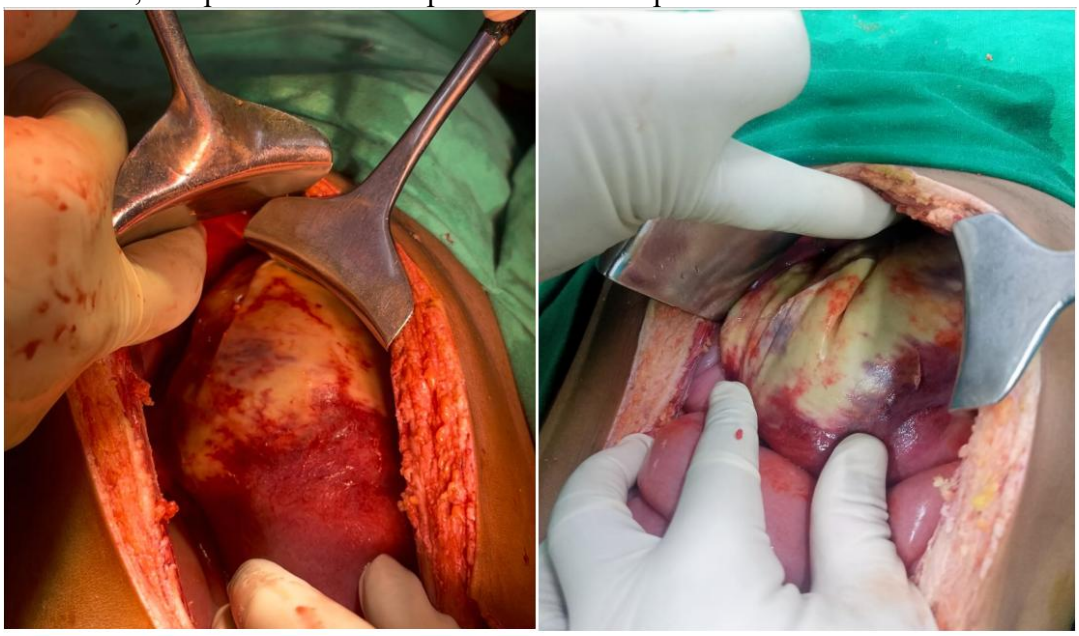


Fig.5 A Fig.5 B

Stomach wall covered in purulent exudate

DISCUSSION

Emphysematous gastritis is a mostly fatal disease with a poor prognosis, and with unclear guidelines on its management, the survival of the patient depends mostly on its early diagnosis and readily available imaging modality. This pathology is associated with predisposing factors as previously mentioned, however in this particular case it has emerged in an otherwise young healthy female, paired with a pelvic abscess which in our knowledge is the first case of its kind. Most cases of EG

recorded in those under 18 have been in infants and children under 2 with concomitant congenital disease and immunosuppressive states [7][8][9]. The adolescent sub group has seldom appeared with this specific ailment save for the three cases referred to earlier [4][5][6].

Emphysematous gastritis tends to be overlooked as a cause of abdominal pain due to its rarity and misleading lab results, such as our patient who has an increase in lipase and amylase but on CT scan her pancreas appeared normal. This exact phenomenon was reported by a group of doctors in 2009 involving a sixteen year old boy [5]. Over the years, many microbial agents have been isolated as a cause of EG including *Streptococci, Escherichia coli, Enterobacter species , Clostridium perfringens , and Staphylococcus aureus* [1] as well as *Pseudomonas aeruginosa*, *Klebsiella* aerogenes, *Proteus species*, *Candida* [2] and *Mucormycosis* [10]. .Treatment should focus on eliminating gas-forming bacteria from the stomach since conservative management is associated with better outcomes of mortality, as deduced by a study in 2017 [11]. Surgical intervention is best reserved in the event of necrosis of the bowel wall, or perforation. However we had the peculiar findings of EG alongside pelvic abscess, and a patient with signs of systemic toxicity, leaving us with no choice but to surgically explore the patient.

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