An Exceptional Presentation of "Watermelon Stomach" in a 30-Year-Old Cirrhotic Male

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Summary

Gastric antral vascular ectasia (GAVE) is an unusual cause of chronic upper gastrointestinal bleeding commonly described in elderly females, with associated autoimmune diseases, and in cirrhotic males. The entity is characterized by angioectasia in the pyloric antrum, giving its classic streaky "watermelon stripe" appearance. This report highlights the rare presentation of a 30-year-old male with liver cirrhosis, who presented with anemia and fatigability. Diagnosis of GAVE was made using endoscopy, and trials of argon plasma coagulation were administered. Following this, an antrectomy was performed since there was a further drop in hemoglobin. The patient made a full recovery with no subsequent dependence on blood transfusions. GAVE can be mistakenly underdiagnosed as a treatable cause of occult gastrointestinal bleeding. This report mandates caution on endoscopy for younger patients with an upper gastrointestinal bleed while taking other more common causes of gastrointestinal bleeding (peptic ulcers, esophageal varices, and non-steroidal anti-inflammatory drugs [NSAID]-induced gastritis) into account.

Keywords: Watermelon stomach, Gastric antral vascular ectasia, Argon plasma coagulation, Endoscopy, Antrectomy

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Introduction

Gastric antral vascular ectasia (GAVE) is an uncommon cause of upper gastrointestinal bleeding that can manifest as chronic iron deficiency anemia requiring serial transfusions (1). The entity is predominantly found in older females and in older males with cirrhosis (2). It is typically uncommon in young patients (3). Patients with cirrhosis, autoimmune disorders, chronic renal failure, diabetes mellitus have the most prominent comorbid connection with GAVE (4, 5). GAVE is traditionally diagnosed and widely managed endoscopically (1). Active bleeding episodes have been observed to be frequent in patients in the absence of cirrhosis, necessitating repeated endoscopic ablations (5, 6). Definitive surgical therapy is reserved for cases refractory to endoscopic ablation (1).

In this case report, we discuss the identification, disease course, and management of this compelling entity in a young cirrhotic male. It prompts the idea of being aware of GAVE as an early differential in young patients with an upper gastrointestinal bleed and a possible aggressive surgical approach for a cure.

Case presentation

A 30-year-old man presented with a 3-month history of fatigability and one episode of melena. He was an alcoholic, although he reported abstinence for 4 years.

There was no history of acid reflux, difficulty in swallowing, or change in appetite. The patient had an unremarkable past surgical and medical history.

On examination, he was moderately well nourished and had pallor and bilateral pedal edema. He was hemodynamically stable. Cardiopulmonary and abdominal examination was unremarkable. Digital rectal examination revealed no melena.

Blood tests showed microcytic, hypochromic anemia, with a hemoglobin of 3.6 g/dL (reference range, 13–17 g/dL) and a hematocrit of 11.7% (reference range, 38.3–44.9%). Iron and folate deficiency was found on anemia workup. Biochemistry panel revealed normal renal and hepatic function. Prothrombin time was normal, and the international normalized ratio (INR) was 1.11. He was Child-Pugh 6A with a model for end-stage liver disease (MELD) score of 8.

Considering his principally upper gastrointestinal symptoms, an endoscopic evaluation was performed. Colonoscopy was unremarkable.

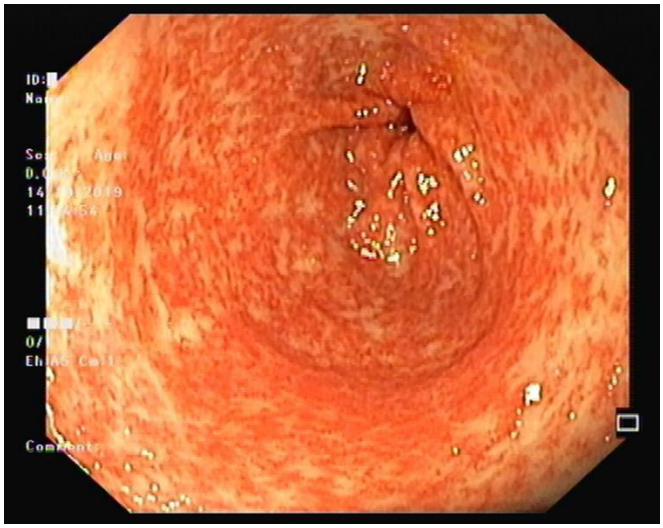

Figure 1: Oesophago-gastro-duodenoscopy showing punctate erythematous lesions in antrum with active ooze.

Esophagogastroduodenoscopy (EGD) (Figure 1) demonstrated several intense punctate angioectasia, with a diffuse ooze in the antrum indicative of possible GAVE. A duodenal biopsy obtained showed chronic duodenitis with no evidence of H. pylori or dysplasia. Contrast-enhanced computed tomography (CECT) of the abdomen was suggestive of a shrunken liver with splenomegaly, and an unremarkable abdominal angiographic study.

As the presentation was not of the classic “Watermelon stripes”, we considered a diagnosis of antral gastritis. However, with a lack of erosive lesions and a predominant picture of diffuse angioectasia, antral gastritis was ruled out.

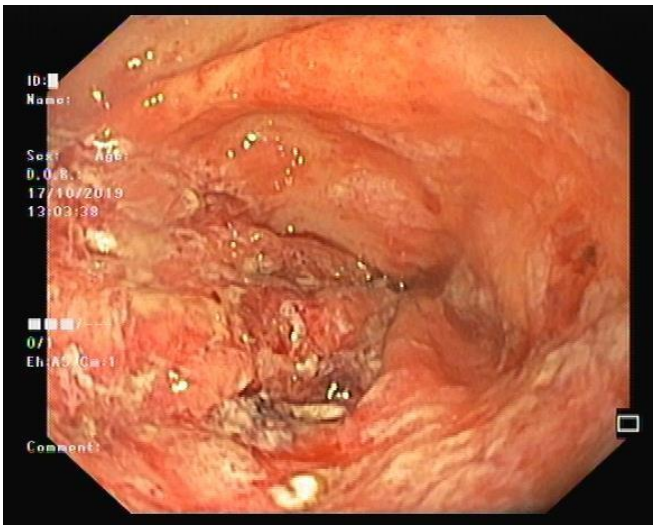

Figure 2: Following 2 trials of Argon plasma coagulation.

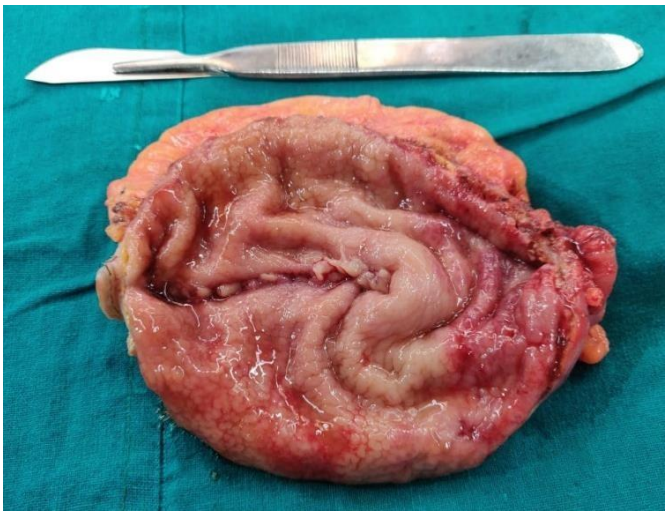

Figure 3: Antrectomy gross specimen had an edematous and thickened mucosa with multiple hemorrhagic spots.

The patient was resuscitated with fluids and packed red cell transfusions. Following this, he underwent two trials of argon plasma coagulation (APC) (Figure 2). However, he continued to be symptomatic with a recurrence of melena and a drop in hemoglobin to pre-

transfusion levels. The patient underwent an uncomplicated antrectomy with gastrojejunostomy. The gross specimen had an edematous and thickened mucosa with multiple hemorrhagic spots (Figure 3). On microscopy, fibromuscular hyperplasia of the lamina propria with numerous ectatic and congested capillaries with fibrin thrombi was seen (Figures 4 and 5). These histological features are characteristic of GAVE.

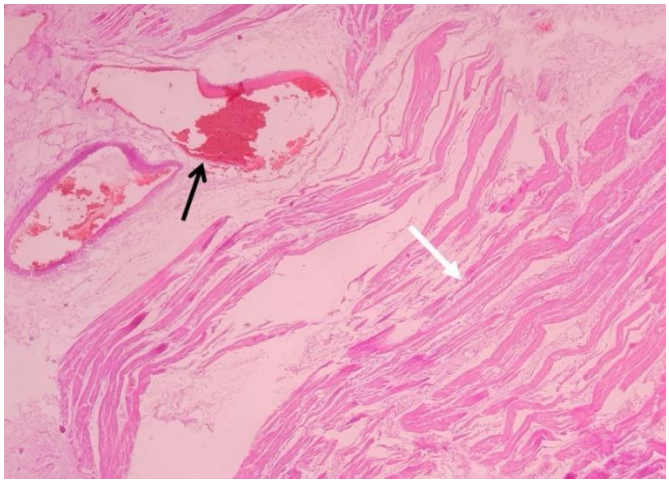

Figure 4: Histology of antrectomy specimen showing characteristic features of GAVE- fibromuscular hyperplasia (white arrow) and fibrin thrombi within vessels (black arrow).

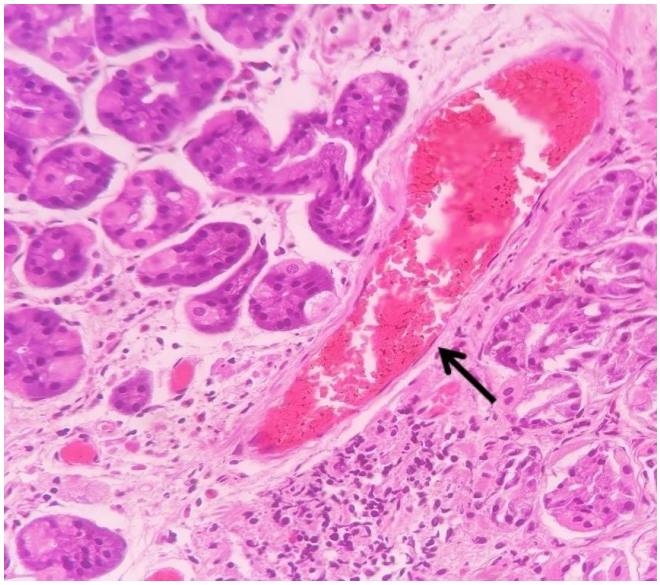

Figure 5: Histology demonstrating congestion of vessels in submucosa (black arrow).

He had an uneventful post-operative recovery. To reduce gastric secretions and prevent re-bleeding, he was given Pantoprazole infusion till the 3rd post-operative day. With supportive care, the patient went on to make a full recovery and was discharged on the 11th post-operative day.

At 3 months post-antrectomy, the patient had resumed his routine work and was symptom-free. However, at 1-year follow-up, he returned with melena and pallor. Oesophago-gastro-duodenoscopy (OGD) revealed efferent loop tiny angioectasia. This was attributed to his background of chronic liver disease. Due to financial issues, he was unable to seek further treatment.

Discussion

Since its discovery in 1953 by Rider et al. (7), GAVE has been studied in much detail. It is an acquired disease known to cause transfusion-dependent chronic iron deficiency anemia. GAVE can manifest as either chronic occult or acute overt gastrointestinal blood loss and accounts for 4% of non-variceal gastrointestinal bleed (4).

The average age of presentation is 73 years in non-cirrhotics, with a predominance in females (71%). In patients with cirrhosis, GAVE is more frequently encountered in males (75%), averaging 65–68 years (2). GAVE is rarely seen in younger patients (3). It frequently manifests in patients with comorbid conditions—liver cirrhosis (30%) and autoimmune diseases (60%) such as Reynaud's phenomenon, systemic sclerosis, Sjogren's syndrome, and systemic lupus erythematosus (4, 8, 9). However, it is intriguing to note that portal hypertension has no causal role, and the reduction of portal pressure does not affect the prognosis of the disease (4, 10).

Diagnosis is made conclusively by either pathognomonic endoscopic appearances based upon epidemiologic variants (6). Diffuse punctate angioectasia are seen predominantly in cirrhotic patients, comparable to our case (6). By contrast, non-cirrhotic patients, and those with autoimmune diseases present with classic erythematous columns converging at the pylorus, widely known as "watermelon stomach" (6). Typical histological changes include capillary ectasia with fibrin thrombi, spindle cell proliferation, and fibro-hyalinosis (2). These histological findings

remain consistent in both patients with and without cirrhosis, despite the dissimilar endoscopic appearance (5). It has also been observed that the risk of active bleeding is more in GAVE patients without cirrhosis than in their counterparts with cirrhosis (5, 6). The non-cirrhotic cohort demands repeated endoscopic interventions to tackle bleeding (5). Our patient, a young male, although with cirrhosis, failed to respond to repeated endoscopic treatments.

A thorough grasp of the pathophysiology of GAVE is lacking as most studies are small-scale. Widely accepted theories suggest a prolapse of loosely attached antral mucosa secondary to mechanical stress caused by powerful gastric peristalsis, leading to fibromuscular hyperplasia and vascular ectasia (4). A buildup of vasodilatory hormones such as gastrin, prostaglandin E2, vasoactive inhibitory peptide (VIP), and 5-hydroxytryptamine secondary to alterations in liver functioning have been postulated (4). Interestingly, a differing level of these neurohumoral factors is noted in GAVE patients with and without cirrhosis (5). However, the clinical value of this is undetermined.

Portal hypertensive gastropathy (PHG) endoscopically resembles GAVE. These two entities need to be distinguished due to their differing treatments. PHG typically involves the fundus and corpus of the stomach and gives a snakeskin or mosaic-like pattern of cherry red to brown-black spots (4). PHG responds well to measures that lower the portal pressure. Other conditions that present like GAVE and need distinguishing include synchronous entities such as antral gastritis with erythematous erosive lesions, or other infrequent ones like Dieulafoy lesions, Cameron lesions, and upper gastrointestinal tumors.

Proposed therapeutic alternatives include surgical, endoscopic, and medical approaches. However, management is often challenging for the clinician and long-drawn for the patient. With advances in endoscopic thermal techniques, surgery is considered as the last resort. Interestingly, a study by Novitsky et al. (1) proposes an earlier, more aggressive surgical approach for a definite cure and elimination of transfusion dependence, with no reported post-operative recurrence in a 48-month follow-up. In the same study, the 30-day mortality rate was 6.6%, with multiple organ failure as the leading cause (1). Surgery is thus not the preferred approach in patients with a background of cirrhosis, portal hypertension or diabetes, due to the associated morbidity and mortality (1, 10, 11). Antrectomy is the most performed procedure (89%) (4), with others being Billroth I, Billroth II, and Roux-en-Y gastrojejunostomy.

The use of medical therapy is not warranted as an alternative to invasive therapy due to limited long-term clinical efficacy and a lack of consensus on the drug of choice. Drugs such as corticosteroids, hormonal therapy (estrogen–progesterone), octreotide, and tranexamic acid have been used with no lasting benefits and an unfavorable side-effect profile (4).

Endoscopic ablation is still the mainstay in the management of GAVE. APC is a popular noncontact thermoablative endoscopic technique that uses ionized gas to deliver high-frequency current to target tissues. It is suitable for superficial vascular lesions due to the limited depth of penetration (0.5–3 mm) (4). It has been efficacious in 90–100% of cases (4, 13). Adverse events include abdominal discomfort secondary to argon gas distension and gastric outlet obstruction, with a low risk of perforation (12). An average of 2.5 sessions may be needed to achieve the eradication of ectasia (4, 13). Neodymium–yttrium–aluminum garnet (Nd: YAG) laser coagulation has been successfully used in reducing transfusions in 50–80% of patients with an average of 3 sessions for satisfactory results (9). Complications are uncommon but include gastric perforation, pyloric stenosis, and hyperplastic polyps (12). Other disadvantages are higher cost and a longer training course. Both Nd: YAG and APC can be used over larger surface areas, however, APC is cheaper, and easier to learn and use with a favorable side-effect profile. Considering the financial toll that the repeated transfusions and APC sessions took on our patient, a definitive antrectomy was considered for a long-term cure.

Techniques such as cryotherapy (which causes mucosal necrosis using nitrous oxide), endoscopic band ligation, and radiofrequency ablation (the HALO90 system) have been used with promising results (14). More extensive

prospective studies are needed for testing endoscopic modalities, to achieve adequate response with the added aim of reducing the cost and number of treatment sessions.

Conclusion

GAVE is a rare cause of chronic occult gastrointestinal bleeding. It is unusually seen in a younger population. The key learning point in GAVE is that it is an underdiagnosed but treatable condition and warrants great vigilance on endoscopy for early diagnosis. Younger age at presentation, although atypical, should be contemplated in patients with cirrhosis and upper gastrointestinal bleed. APC is an effectual endoscopic modality. However, considering the unpredictable risk of recurrence in GAVE, retreatment with APC or a definitive antrectomy are tailorable options to come.

Ethical consideration

Informed consent was acquired from the patient for publication of the case report.

Author contributions

RS led in the conceptualization and writing of the first draft. All other authors contributed equally to reviewing and editing the original draft.

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