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Gastric Antral Vascular Ectasia - a Rare Cause of Massive Gastrointestinal Bleeding in a Healthy Child, Managed by Argon Plasma Coagulation

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Abstract

Upper gastrointestinal (UGI) bleeding in the form of massive hematemesis and melena in children is mostly due to variceal causes or peptic ulcer disease. Vascular angiodysplasia (AD) is a rare etiology of hematemesis and melena in children. Commonly Gastrointestinal angiodysplasia can be encountered secondary to liver cirrhosis and vascular inflammatory disease. Here we report a case of a 3-year-old previously healthy boy without any underlying pathology who presented with hematemesis and melena due to gastric vascular antral ectasia diagnosed by Esophagogastroduodenoscopy (EGD) and managed by argon plasma coagulation (APC). He was discharged for 3 days post-procedure with the recovery of Hb level and remitted tarry stool. No re-bleeding has been documented after that. Vascular AD can be an etiology of gastrointestinal bleeding in children even without cirrhosis. APC is an effective and safe therapy for symptomatic AD in children.

Keywords: *Melena, Hematemesis, Vascular ectasia, Children.*

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Introduction

Among all episodes of gastrointestinal bleeding in children, as much as 20 percent of them come from a UGI source.[1] The most common causes of UGI bleeding in children vary depending upon age and geographic setting. In Western countries, the most common causes are Mallory-Weiss tears, gastric and duodenal ulcers, esophagitis, gastritis, and varices.[2-3] In India and some other parts of the world, the predominant cause is variceal bleeding.[4]

Massive UGI bleeding is characteristic of a variceal hemorrhage from portal hypertension. Rarely, severe acute UGI bleeding is from an artery, either from an overlying peptic ulcer, vascular ectasia or a Dieulafoy lesion.[5,6] AD is an important etiology of non-variceal gastrointestinal bleeding with symptoms (vascular ectasia, Angiectasia and arteriovenous malformation) and debating hypothesis of pathophysiology. It is usually described as abnormal, ectasic and tortuous vessels within mucosal or submucosal layers of the GI tract.[7]

Argon plasma coagulation (APC) is non-contact electrocoagulation using high-energy monopolar energy to ignite argon gas into plasma to cauterize and devitalize vascular tissues to achieve hemostasis or debulking tumors.[8] It is appreciated for its minimal tissue vaporization and penetration, which limit the risk of perforation. This technique has been applied to treat gastrointestinal (GI) vascular malformation (gastric vascular ectasia, angiodysplasia (AD), arteriovenous malformations, and Dieulafoy's lesions), Barrett's esophagus, Zenker's diverticulum, malignant lesions (ablation, debulking), complex fistula, and even for pulmonary and dermatologic diseases.[7,9-10]

Case Report:

Our patient, a 3-year-old previously healthy boy, only issue of his parents, was admitted through accident and emergency department with hematemesis once followed by melena for last 3 days. Prior to this illness, he had h/o low grade fever with cough and cold for 2 days. With these complaints he was admitted to a district level hospital for 2 days, and laboratory tests showed Hb 5.8 gm/dl. He was treated with parenteral

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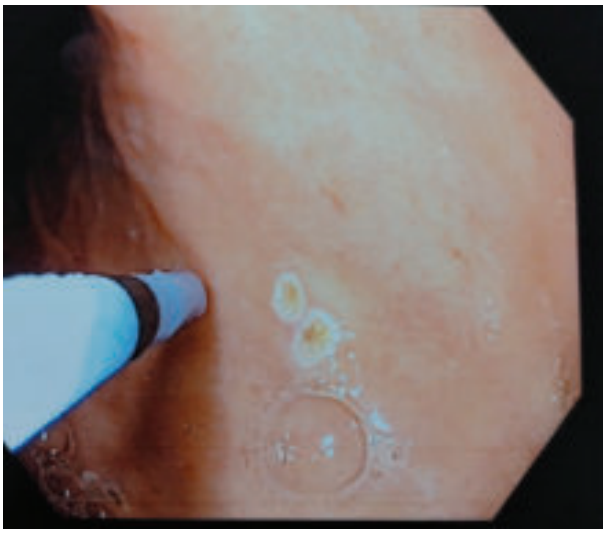

Figure 1 *Endoscopic findings and APC management of patient*

antibiotics, tranexamic acid and whole blood transfusions on two occasions. After that he was referred to our hospital for further evaluation and management. In our institute an extensive evaluation has been carried out. Regarding past illnesses, he had no previous h/o jaundice, dehydration, or any bleeding manifestations, no underlying chronic disease, or any offending medication history. His perinatal history was uneventful.

On physical findings, at admission, he was conscious, oriented, afebrile, lethargic, dehydrated, mild tachycardia, mildly pale, BP within normal limit, anicteric and capillary refilling time normal. Per abdominal examination revealed soft nontender abdomen without any organomegaly with active bowel sound. His blood reports showed nothing significant except anemia (Table I). USG of whole abdomen showed normal and Meckle's scan was negative. Gastroenterology consultation has been taken, EGD and colonoscopy were done. EGD showed gastric antral vascular ectasia with superficial gastritis. After that, he was managed with endoscopic APC under deep sedation. In short term follow up, he had no further gastrointestinal bleeding and was hemodynamically stable on discharge.

Table I

Laboratory tests have done

Investigations	Findings
CBC	Hb-9.2 gm/dl, MCV-84 fL, MCH-28pg,TWBC-7.9/cumm, Neutrphils-28%, Lymphocytes-57%,Plt-173000/cumm,Reticulocyte-2.07%,CRP-1.05 mg/dL
Reticulocyte count	2.07%
Liver function tests	Normal
USG OF W/A	Mild SplenomegalyTrace interloop fluid
EGD	Gastric Ectasia
Colonoscopy	Normal
Anti HBs	Positive
ANTI HCV	Negative
Direct Coomb's test	Negative
Creatinine	0.50 mg/dl
Electrolytes	Na- 138, K- 4.6, Cl-101, HCO3-22
DIC profile	PT-13.4, INR-1.13APTT-30Fibrinogen level-158.4 mg/dlD-Dimer-1443 μg/L
Meckel's Scan	No evidence of ectopic gastric mucosa
Occult Blood test	Positive

Discussion

This study presented a young kid with upper GI hemorrhages, diagnosed as gastric vascular ectasia, and was treated with APC. Recently from this hospital another case had a 4-year-old boy with Dieulafoy lesion reported who presented with hematemesis and melena and was treated with APC.[11]

There is another case report, a14-year-old boy, a known case of perinatal hypoxic cerebral palsy, presented paediatric emergency with acute melaena and blood staining around feeding gastrostomy site. Physical examination revealed pallor. After initial evaluation upper and lower GI endoscopy revealed antral vascular ectasia and managed the child with elemental hydrolyzed formula.[12]

The incidence of gastrointestinal AD in children was unclear due to its rarity and low diagnostic awareness. Therefore, AD is not a common differential diagnosis for GI bleeding in children; in addition, due to invasiveness of endoscopy, it may be waived for children, especially in infants.[13]Angiodysplasia may occur at any site from esophagus to rectum.[8] In our case, it was found in gastric antrum.

Vascular ectasia (Gastrointestinal angiodysplasia) can be encountered in cases with cirrhosis, aortic stenosis, inflammatory gastrointestinal conditions, von Willebrand disease or vascular damage, and degenerative changes. However, it may occur in patients without any underlying disease, maybe due to genetic abnormality.[14] Our case also presented melena without any underlying pathology. Patients with gastric vascular antral ectasia (GAVE) in the absence of cirrhosis are at higher risk for active GI bleeding and require more frequent endoscopic treatment than similar patients with cirrhosis.[15]

Computed tomography angiogram is a sensitive, specific, and minimally invasive tool for the diagnosis of angiodysplasia. It has 66% diagnostic accuracy.[16] However, Endoscopy and angiography are still standard diagnostic modalities for angiodysplasia as well as for therapeutic purposes, though these two modalities seem too invasive in pediatric populations.[13]

Initial management for GI bleeding from vascular ectasia is to stabilize the patient hemodynamically with blood transfusion, proton pump inhibitor (PPI) and to control bleeding by tranexamic acid or intravenous octreotide. Specific treatment is APC by Endoscopy. As recurrent GI bleeding may occur from vascular ectasia and may be fatal, surgical resection of that segment would be treatment of choice. In the presenting case, he was managed initially with conservative treatment followed by Endoscopic APC.

Conclusion

Gastric vascular ectasia (GVE) is an uncommon cause of gastrointestinal bleeding in children. APC is a therapeutic option for such children. This case report demonstrated the applicability, safety profile, and potential of APC in treating pediatric gastric vascular ectasia in children in Bangladesh.

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