CLINICAL CASE

Treating Gastric Antral Vascular Ectasia – When Argon Therapy Is Not Enough

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Received 4 December 2015; accepted 3 January 2016
Available online 23 February 2016

KEYWORDS
Endoscopy
Gastrointestinal;
Gastric Antral
Vascular Ectasia;
Argon Plasma
Coagulation;
Ligation

Abstract Gastric antral vascular ectasia (GAVE) is a capillary-type vascular malformation of the gastric antrum and an infrequent cause of chronic gastrointestinal blood loss and iron deficiency anemia.

The authors describe a case report of GAVE in a female cirrhotic patient presenting with severe symptomatic iron deficiency anemia. After failure of argon plasma coagulation (APC), the patient was treated with endoscopic band ligation (EBL) with resolution of anemia, without new episodes of rebleeding and no need for further hospitalizations or transfusion requirements.

Even though APC is the current treatment of choice for GAVE recurrence-free survival at one year is achieved in less than 50% of the patients and failed therapy has been described in up to 14% of the patients. EBL has been reported to be a relatively easy technique for GAVE therapy and has been shown to be safe and effective with lower complication rates in comparison with APC. This technique may in the future be used as the initial endoscopic treatment to eradicate GAVE.

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PALAVRAS-CHAVE
Endoscopia
Gastrointestinal;
Ectasia Vascular do Antro Gástrico;

Tratamento da Ectasia Vascular do Antro Gástrico – Quando a Terapêutica com Árgon É Insuficiente

Resumo A ectasia vascular do antro gástrico (GAVE) é uma malformação vascular e uma causa infrequente de anemia por défice de ferro. Os autores descrevem um caso de doente do sexo feminino com antecedentes de cirrose hepática alcoólica com diagnóstico de GAVE após estudo

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http://dx.doi.org/10.1016/j.jpge.2016.01.002
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1. Introduction

Gastric antral vascular ectasia (GAVE) is a capillary-type vascular malformation of the gastric antrum and an infrequent cause of chronic gastrointestinal blood loss and iron deficiency anemia. GAVE is responsible for up to 4% of non-variceal upper gastrointestinal (GI) bleeding and 6% of upper GI bleeding in cirrhotic patients.1,3

Most cases are idiopathic, but it is frequently associated with other clinical conditions, such as cirrhosis and autoimmune diseases,1 with a prevalence reported in cirrhotic patients of 12%2 and reaching 30% in patients with liver failure.3

At oesophagogastroduodenoscopy (OGD), GAVE may appear as multiple longitudinal streaks that converge at the pyloric orifice, with a “watermelon” pattern (stripe type), or as multiple erythematous spots (diffuse or granular type).2 This last form occurring more frequently in patients with cirrhosis.3

The current treatment of choice for GAVE is endoscopic intervention with argon plasma coagulation (APC).1 However, recurrence-free survival at one year is achieved in less than 50% of the patients2 and in addition rates of failed therapy of up to 14% have been reported.1 Equally important to refer is the complication rate which is high (20–30%).3

The authors describe a case report of GAVE in a female cirrhotic patient presenting with severe symptomatic iron deficiency anemia. After failure of APC, the patient was treated with endoscopic band ligation (EBL) with resolution of anemia, without new episodes of rebleeding and no need for further hospitalizations or transfusion requirements.

2. Case presentation

A 69-years-old female presented with a three-week history of fatigue. She denied hematemia and abdominal pain, and there was no change in appetite, weight, bowel pattern, or stool color. She had a medical history of alcoholic cirrhosis (Child Pugh A, MELD 7 points) and was on furosemide, had no known allergies and no family history of gastrointestinal pathology. She denied consumption of nonsteroidal anti-inflammatory and smoking habits.

Figure 1  Gastric antral vascular ectasia.

Physical examination revealed paleness of the skin and mucosae and sinus tachycardia with normal blood pressure. Rectal examination did not reveal blood in stools.

Laboratory data evidenced severe anemia with hemoglobin level of 4.0 g/dL, low platelet count, normal coagulation parameters and inflammatory markers were normal. Iron study revealed a serum iron level of 14 μg/dL (reference range 50–170 μg/dL) with a total iron binding capacity of 398 μg/dL (reference range 250–450 μg/dL) and ferritin of 2.8 ng/mL (reference range 8–252 ng/mL). Transfusion of red blood cells was initiated with hemoglobin level increasing to 7.7 g/dL.

An OGD was performed and revealed multiple erythematous spots in the antrum compatible with GAVE, diffuse type (Fig. 1), and mild portal hypertensive gastropathy, without active bleeding. There was no evidence of esophageal or gastric varices. GAVE was treated with APC without complications (Fig. 2). A colonoscopy with ileoscopy was also performed, but it was negative for blood or hemorrhagic lesions. Her hemoglobin levels remained stable and the patient was discharged and started on propranolol (for portal hypertensive gastropathy), with a target of 55 beats
per minute, 40 mg of pantoprazole every 24 h and performed iron intravenous supplementation in ambulatory.

During the following 4 months, the patient had 3 new episodes of severe symptomatic anemia requiring transfusion. During these episodes she underwent OGD that revealed persistence of GAVE and APC treatments were performed.

Nevertheless the patient presented with a new episode of symptomatic anemia, and an hemoglobin level of 3.7 g/dL was observed. After transfusion of red blood cells an OGD was performed. At that time, since GAVE persisted despite treatment sessions using APC, and taking into consideration the severity and short recurrence intervals of symptomatic anemia, a decision was made to perform EBL (multi-band ligator, Ezy Shoot, G-Flex®). Six bands were applied, starting from lesions adjacent to the pylorus, then continued proximally in the antrum until most of the GAVE affected areas were treated (Fig. 3). No complications of the procedure were reported, and the patient was discharged after 24 h, maintaining propranolol and pantoprazole. Endoscopic evaluation was performed every 4 weeks and another 3 sessions of EBL were performed with almost complete eradication of GAVE (Fig. 4). Following the first EBL treatment the patient remained asymptomatic with stable hemoglobin level of 12 g/dL and no need of red cells blood transfusion or iron supplementation.

3. Discussion

GAVE is a poorly understood entity, of unknown etiology, and an increasingly identifiable cause of chronic iron deficiency anemia. The pharmacological management of GAVE has been met with disappoint results, and the mainstay of GAVE management remains endoscopic therapy.\textsuperscript{1,9}

APC is a modality of non-contact electrocoagulation that applies high-frequency energy into tissue to cause thermal effects, which can be used for hemostasis.\textsuperscript{10} APC has been used successfully to treat GAVE with an effective transient response, but primary failure rates of therapy of up to 14% have been reported.\textsuperscript{3} Some authors\textsuperscript{11–13} suggest that this endoscopic modality is insufficient in order to achieve medium and long-term treatment success, as it has been associated with a high recurrence rate (40–100%), with less than 50% of the patients achieving a recurrence-free survival at one year.\textsuperscript{8} In addition to this limitation, APC results in complications, such as sepsis, pyloric stenosis and gastric outlet obstruction syndrome, in 20–33% of the patients.\textsuperscript{3}
EBL has been reported to be a relatively easy technique for GAVE therapy, has been shown to be safe and effective with lower complication rates in comparison with APC.\cite{14,15}

A recent prospective study showed endoscopic improve-
ment with the use of EBL in 91\% of the patients, associated
with a significant improvement in the hemoglobin and fer-
ritin levels. EBL in GAVE has been associated with transient
abdominal pain in a minority of the patients but no major
complications have been reported in the literature.\cite{14}

Another new option therapy for GAVE is radiofrequency
ablation, which allows larger mucosal surfaces to be
treated. A recent study\cite{16} suggests that radiofrequency abla-
tion is a safe and effective treatment for recurrent bleeding
from GAVE. However this technique requires additional
training, is more expensive than other options and is not
widely available.\cite{16} Potential complications are the same
as for APC and includes perforation and bleeding.\cite{16}

In this case, the patient was initially treated with APC
after being diagnosed with GAVE as the cause of severe iron
deficiency anemia, however this strategy was not successful.
APC treatment might not be effective in some cases and this
could be explained by the limited depth of thermal injury.\cite{10}

Even tough portal hypertensive gastropathy was mild and
probably not the cause of anemia, because of the severe
presentation without active bleeding, the patient started
on propranolol which is the first line treatment to reduce
portal pressure.\cite{9}

EBL is widely employed as an effective treatment for
esophageal varices because of its capacity to obliterate sub-
mucosal varices. With respect to GAVE, since the histological
changes are present in the mucosa and submucosal layer,
EBL may be more effective because of its ability to obliterate
the submucosal vascular plexus.\cite{10} In this patient, the
presence of extensive areas of the antrum affected with a
high-density of both mucosal and submucosal vascular mal-
formations is a likely explanation for the primary failure of
the APC treatment. Given the fast recurrence of severe
anemia, often within 4 weeks, the decision to perform EBL
yielded positive results, with eradication of GAVE with 4
sessions of EBL with no complications, namely abdominal
pain.

Even though our case report is in accordance with recent
literature some issues still need to be elucidated in order
to improve the treatment of GAVE with EBL. The optimal
interval between treatment sessions, the potential role of
combined therapy with APC in patients with poor response
and the need of endoscopic surveillance for recurrence after
eradication since the etiology of GAVE are still unknown.

Some studies\cite{14,15} suggest that the number of sessions
required for GAVE eradication is inferior when using EBL
compared to APC, resulting in inferior health care costs
for that group of patients. However, randomized controlled
trials are lacking to determine whether EBL is more cost
effective than APC as the primary endoscopic therapy for
GAVE.

In summary, GAVE is a rare cause of chronic gastrointesti-
nal blood loss and iron deficiency anemia, often associated
with chronic diseases such as cirrhosis. We report an
unusual case of GAVE with severe symptomatic anemia,
with no response to primary endoscopic therapy with APC
despite correct intravenous iron supplementation between
endoscopic treatments. After initiating GAVE eradication
with EBL the patient became asymptomatic. EBL may in
the future be used as the initial endoscopic treatment to
eradicate GAVE, but larger studies are needed to clarify this
issue.

**Ethical disclosures**

**Protection of human and animal subjects.** The authors
declare that no experiments were performed on humans or
animals for this study.

**Confidentiality of data.** The authors declare that they have
followed the protocols of their work center on the publica-
tion of patient data.

**Right to privacy and informed consent.** The authors
declare that no patient data appear in this article.

**Conflicts of interest**

The authors have no conflicts of interest to declare.

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