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Refractory gastric antral vascular ectasia: a new endoscopic approach

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Abstract. – Gastric antral vascular ectasia (GAVE) is an uncommon disorder observed in patients with liver cirrhosis, causing upper gastro-intestinal haemorrhage. GAVE is diagnosed through esophagogastroduodenoscopy and is characterized by the presence of visible columns of red tortuous enlarged vessels along the longitudinal folds of the antrum (i.e., so-called watermelon stomach). Pharmacological, endoscopic and surgical approaches have been proposed for the treatment of GAVE. Endoscopy represents the gold standard for GAVE treatment. The most widely used endoscopic approach is represented by Neodymium:yttrium-aluminum-garnet (Nd:YAG) laser. Argon plasma coagulation (APC) has been proven to be more efficient in terms of costs and complication rates than and equally effective as Nd:YAG. Other endoscopic procedures proposed for this treatment are banding ligature (EBL) and sclerotherapy with Polidocanol. Refractory GAVE represents a therapeutic challenge because it may cause persistent anemia, often leading to repeated blood transfusions due to the inefficacy of pharmacological and endoscopic therapeutic approaches. Endoscopic band ligation (EBL) has been shown to be superior to APC in the treatment of refractory GAVE. Surgical antrectomy by Billroth I anastomosis can be considered in selected cases. In this study, we report a successful endoscopic treatment of refractory GAVE by using a combination of submucosal injection of 1% Polidocanol at the four antral quadrants and subsequent application of APC on the visible antral lesions in two patients.

Key Words:
Gastric antral vascular ectasia, GAVE, Polidocanol, Refractory, Sclerotherapy, Argon plasma coagulation, APC.

Introduction

Gastric antral vascular ectasia (GAVE) is an uncommon disorder causing gastro-intestinal haemorrhage. GAVE is mostly observed in patients with liver cirrhosis but may also occur in patients with autoimmune connective tissue disorders, bone marrow transplantation or chronic renal failure. It is more frequently associated with chronic occult blood loss and only rarely leads to acute, overt gastrointestinal haemorrhage[1]. The first definition of GAVE was given in 1953 by Rider et al[2] who described during an esophagogastroduodenoscopy (EGD) an antrum "fiery red with marked hypertrophic mucosal changes". Biopsies of these lesions showed histological features of an "erosive atrophic gastritis with marked veno-capillary ectasia". Diagnosis of GAVE is preferably endoscopic and the presence of visible columns (linear pattern) of red tortuous enlarged vessels along the longitudinal folds of the antrum is characteristic (see image 1). Due to the similarity with the external stripes of the watermelon, this condition is also termed "watermelon stomach"[3]. Sometimes, red spots are distributed diffusely throughout the antrum (honeycomb pattern), making it difficult to distinguish with antral gastritis[4]. More rarely lesions reach the proximal and distal stomach. In these cases the term "diffused GAVE" is preferred[5]. Pharmacological, endoscopic and surgical approaches have been proposed for the treatment of GAVE[6,7]. The chronic use of a combination of oestrogen and progesterone, in one pilot study and two case reports, has shown to decrease or even to arrest bleeding. Antral vascular ectasia, however, persisted, despite the cessation of bleeding[8-10]. There is little evidence that the use of tranexamic acid may reduce blood loss[11]. The gold standard for the treatment of GAVE is represented by endoscopic procedures[12]. The most widely used endoscopic approach is represented by Neodymium:yttrium-aluminum-garnet (Nd:YAG) laser that has been proven to be safe and effective in the treatment of GAVE[3]. Argon plasma coagulation (APC) has been proven to be more efficient in terms of costs and complication rates than and equally effective as Nd:YAG[13,14].

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In fact, APC reduces the need for repeated blood transfusion and is safe because of the easy control of the depth of penetration, avoiding blood loss. Endoscopic banding ligature (EBL) and sclerotherapy with Polidocanol have been proven to be safe and effective in the treatment of GAVE[7,15-19]. EBL has widely been investigated, with promising results. In fact, when compared to APC, EBL required fewer sessions to control bleeding and had higher rates for arrest of bleeding, at reduced costs and number of blood transfusions. Differently, results from sclerotherapy are limited to a single report in which the efficacy and safety of this procedure was in combination with monopolar electrocoagulation (electrohydrothermal)[17]. Refractory GAVE is defined by the absence of response to pharmacological and endoscopic approaches with recurrent bleeding and severe anemia. Surgical antrectomy by Billroth I anastomosis is considered the only therapeutic option in selected cases in which endoscopic and pharmacological treatment have repeatedly been unsuccessful. More recently, EBL has been proposed as an effective endoscopic approach for patients who did not respond to previous treatment with APC[20].

Aim and Rationale

In this study we report a successful endoscopic treatment of refractory GAVE by using a combination of submucosal injection of 1% Polidocanol solution at the four antral quadrants and subsequent application of APC on the visible antral lesions in two patients with refractory GAVE. Needles for sclerotherapy and catheters for APC are available in the majority of Endoscopic Units from all over the world for routine interventions. Histologically, submucosal enlarged vessels of GAVE may erode through the gastric mucosa, leading to chronic blood loss and subsequent anemia. The rationale for the use of APC is well proven[13,14,21]. The rationale for the use of submucosal injections of Polidocanol for the treatment of GAVE is linked to an indirect effect, due to the compression on antral enlarged vessels caused by the oedema of submucosa and to a direct effect secondary to thrombosis of submucosal vessels which are over-represented in this disorder[22-24].

Case Report 1

A 66-year-old man, with compensated HCV-related cirrhosis, was admitted for symptomatic anemia with a haemoglobin level (Hb) of 8.8 g/dl. Comorbidities were haemophilia A and type 2 diabetes mellitus. Activity of factor VIII was assessed, resulting in a partial deficiciency. In the clinical history, there was a diagnosis of watermelon stomach treated with three consecutive sessions of APC. The patients also underwent band ligation of oesophageal varices in the previous six months. An EGD was performed showing signs of severe portal hypertension (large oesophageal varices with red wale markings, severe portal hypertensive gastropathy (PHG) and hypertensive duodenopathy) and a watermelon stomach with multiple antral elevated erosions (Figure 1). GAVE was treated with a submucosal injection of 10 mL of 1% Polidocanol solution at the four cardinal points of the antrum followed by APC of linear vascular ectasias. After 48h Hb levels reached stable values of approximately 11 g/dL. The same treatment was repeated seven days later, to ensure a sufficient eradication of the antral lesions. During the next four weeks the haemoglobin level reached stable values of about 12 g/dL. Four weeks later a new EGD was performed showing a marked improvement of the watermelon stomach with a significant reduction of lesions. Patient received esomeprazole 40 mg/die for 30 days. During the follow-up period of 8 weeks, the patient did not receive iron supplementations or blood transfusions, maintaining stable haemoglobin levels.

Case Report 2

A 66-year-old woman was admitted for symptomatic anaemia. She suffered from by compensated HCV-related cirrhosis, type 2 diabetes and

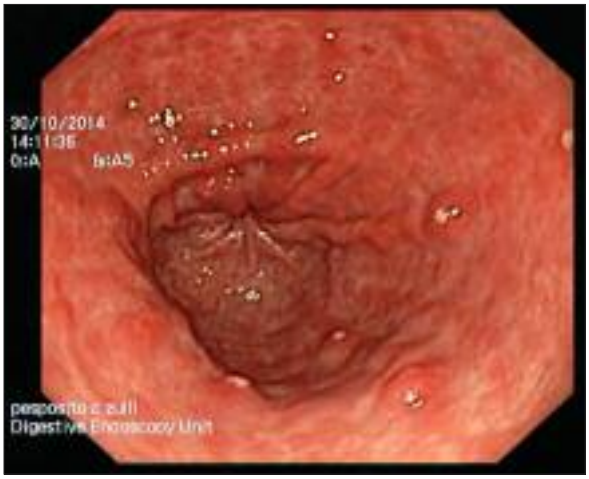

Figure 1. Watermelon stomach with multiple antral elevated erosions.

chronic obstructive pulmonary disease. In the clinical history, there was a diagnosis of GAVE treated with two sessions of APC in the previous four months. Because of severe anaemia (Hb 5.4 g/dL), an EGD was performed showing signs of portal hypertension (small oesophageal varices without red signs, PHG of the gastric fundus-body) associated to a diffused pattern of GAVE. The patient was given 3 units of red blood cells reaching a Hb value of 8.5 g/dL. Seven days later, Hb value decreased to 7.8 g/dL and a new EGD was performed showing the same endoscopic features seen at the previous EGD. GAVE was treated with a sub-mucosal injection of 10 mL of 1% Polidocanol at the four cardinal points of the antrum followed by APC of vascular ectasias. Haemoglobin levels evaluated every day for ten days, maintained stable at approximately 9.5 g/dL. Seven days later a new EGD was performed showing a substantial improvement in the macroscopic features of GAVE. The patient received esomeprazole 40 mg/die for 30 days. During the follow-up period of 8 weeks, the patient did not receive iron supplementations or blood transfusions, maintaining stable levels of haemoglobin.

Discussion

Refractory GAVE represents a therapeutic challenge because it may cause severe anemia, leading to repeated blood transfusions. Our patients had persistent severe anemia caused by chronic gastric hemorrhage from refractory GAVE lesions. Because of the combined endoscopic treatment (i.e., sclerotherapy with 1% Polidocanol and subsequent electrocoagulation with APC), anemia improved significantly with persistently stable hemoglobin levels. Regarding endoscopic therapy of refractory GAVE, at our knowledge, this is the first study in which this combined endoscopic treatment has been used. A similar experience from Cugia et al[17] showed that, in patients with HCV-related cirrhosis, three sessions of endoscopic therapy with monopolar electrocoagulation (electrohydrothermal) and injections of 5% Polidocanol resulted in a significant reduction of visible GAVE lesions. The endoscopic therapeutic approach with APC alone has been shown to be an effective strategy showing a reduction in transfusion requirements up to 77% over a 16-month follow-up and endoscopic efficacy in up to 80-90% of the cases[7,16,21]. However, this procedure may require multiple sessions, with an average of 6 sessions to achieve mucosal healing, and may fail when GAVE presents with a diffused pattern[25]. In our two cases, the combination of Polidocanol and APC has proven to be a safe and effective procedure, leading to healing of GAVE lesions and to a rapid and stable improvement of anemia. In addition, our report suggests that by using Polidocanol a lower number of endoscopic sessions may be required in order to achieve mucosal healing in patients with GAVE compared with APC alone.

Conclusions

The endoscopic treatment of refractory GAVE and GAVE-related anemia through a combined therapy with APC and sclerotherapy with Polidocanol is safe and effective. Further studies may be needed to validate this approach and to evaluate whether this combination therapy is also cost-effective.

Conflict of Interest

The Authors declare that there are no conflicts of interest.

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