Gastric antral vascular ectasia as an early manifestation of systemic sclerosis

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Abstract

Gastric antral vascular ectasia (GAVE) is a rare cause of chronic gastrointestinal bleeding associated with iron-deficiency anemia. The diagnosis is based on endoscopic findings, with a description of "watermelon" or "honeycomb" stomach. Patients may occasionally have autoimmune and connective tissue diseases. We describe the clinical case of a 76-year-old female patient with a history of multiple episodes of upper gastrointestinal bleeding. An endoscopy reported ectasias with a "rising sun" pattern, compatible with gastric antral vascular ectasias. Due to recurrence and refractoriness, the patient underwent a subtotal gastrectomy plus Roux-en-Y reconstruction. In light of the GAVE debut, immunological tests were done, which were positive for systemic sclerosis. The treatment for GAVE episodes that are refractory to endoscopic treatment is surgery. (Acta Med Colomb 2024; 49. DOI: https://doi.org/10.36104/amc.2024.3084).

Keywords: *gastric antral vascular ectasia, watermelon stomach, systemic sclerosis*.

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Introduction

Gastric antral vascular ectasia (GAVE) is an uncommon cause of chronic upper gastrointestinal bleeding, accounting for 4% of non-varicose bleeds; the most frequent complication is iron-deficiency anemia (1). Jabbari described this condition as "watermelon stomach," due to its endoscopic pattern of red, linear stains radially distributed from the pylorus or with a diffuse pattern, known as "honeycomb stomach" (2, 3). Gastric antral vascular ectasia is most frequently located in the gastric antrum, although it has been found in other parts of the gastrointestinal tract like the duodenum, jejunum or rectum (4).

Gastric antral vascular ectasia is known to be associated with autoimmune diseases, mainly Raynaud's phenomenon and systemic sclerosis (SSc), with Sjögren's syndrome, primary biliary cirrhosis and systemic lupus erythematosus as differential diagnoses (1). The diagnosis is based on histologic patterns that describe four specific GAVE disorders as follows: 1) vascular ectasias of the mucosal capillaries, 2) focal thrombosis, 3) smooth muscle cell and myofibroblast proliferation, and 4) fibrohyalinosis, which consists of deposition of a homogenous substance around the ectopic capillaries in the lamina propia (2).

This disease may be treated pharmacologically, endoscopically, and surgically. Pharmacological therapy, like estrogens and progesterone, requires high doses and prolonged use, which causes many adverse events. Octreotide appears to reduce gastrointestinal bleeding and partial regression of the lesions. Another, less frequently used, treatment includes tranexamic acid and cyclophosphamide but produces more adverse events than clinical benefits (4, 5).

Endoscopic treatment has shown better outcomes compared to the pharmacological therapy mentioned. This strategy includes laser or argon plasma ablation or cryoablation (6). Laser (Nd:YAG) has been used to manage gastrointestinal bleeding secondary to GAVE, with a reduced need for transfusions (2). Finally, surgical intervention is indicated for recurrence or if the condition does not improve with the previous therapies, with surgical antrectomy required (6).

Below, we present a case of GAVE as an early manifestation of SSc in a female patient treated at a tertiary care institution in Bogotá.

Case presentation

This case is of a female patient in her 70s, native to and living in Bogotá, with a history of primary hypertension, prediabetes, chronic obstructive pulmonary disease, paroxysmal atrial fibrillation, a CHADSVASC score of 6, HASBLED score of 6, coronary disease, cerebrovascular disease, and sleep apnea syndrome being treated with a bi-level positive airway pressure (BiPAP) device. She presented with a chronic complaint of multiple episodes of gastrointestinal tract bleeding. In January 2018, an endoscopy reported multiple vascular ectasias which were treated with argon plasma, as this was her first episode, with clinical improvement and ambulatory treatment prescribed.

In May 2018, the patient had a new episode of gastrointestinal bleeding, and therefore required a second endoscopy

which showed multiple gastric ectasias, with 30% fewer than the previous endoscopy. Argon plasma treatment was once again applied to the lesions, with no complications.

In November 2019, the patient consulted due to telangiectasias on her upper extremities, changes in the color of her digits, dry skin and, subsequently, digital ulcers. There was no clinical report or previous signs and symptoms of autoimmune disease. She was readmitted in March 2023 for an upper gastrointestinal tract bleed; on exam, the patient was alert and oriented with generalized pallor, tachycardia (heart rate of 110 bpm), normal breath sounds, a soft abdomen with no pain on palpation, and extremities with necrosis of the second finger of the left hand, affecting the distal phalange.

Laboratory tests showed microcytic, hypochromic anemia with a hemoglobin of 8.3 g/dL and hematocrit of 19.3%. The rest of the tests were within normal limits. Another upper gastrointestinal endoscopy was ordered which showed erythematous areas in the antral region with a linear vascular pattern coalescing toward the pylorus, suggesting watermelon stomach (Figure 1), characteristic of sunburst pattern ectasias. A stomach biopsy reported smooth, shiny, light brown serosa with no macroscopic lesions, compatible with GAVE. During her stay, the patient did not respond to medical and endoscopic treatment, and therefore underwent surgical treatment with a subtotal gastrectomy with Roux-en-Y reconstruction.

The GAVE studies were extended to include a transthoracic echocardiogram with normal left and right ventricular size and systolic function, and an abdominal ultrasound showing a liver of normal size and echogenicity and a simple cortical cyst on the left kidney, with no other abnormalities. A liver biopsy was taken which reported mildly active steatohepatitis without fibrosis. The orthopedic service amputated the second finger of her left hand due to necrosis, with no complications.

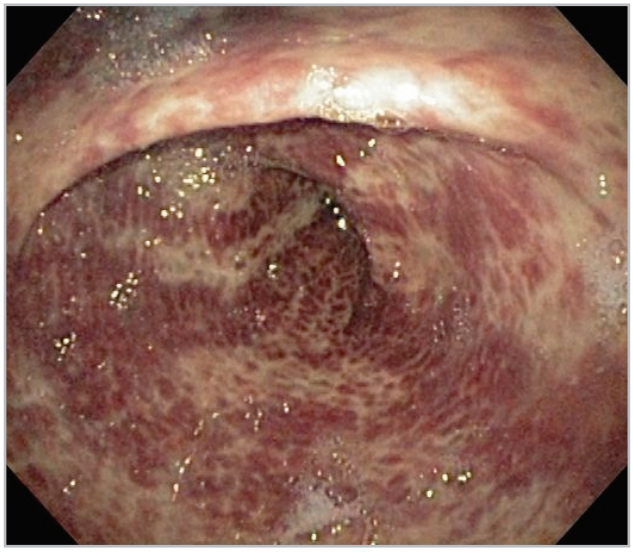

Figure 1. *Upper gastrointestinal endoscopy. (Antral region showing erythema and a linear vascular pattern that coalesces toward the pylorus, suggesting "watermelon stomach").*

After the gastrointestinal and orthopedic surgical procedure, the patient showed clinical improvement. She was assessed by the rheumatology service and, in light of the evidence of GAVE, tests were ordered looking for autoimmune disease, with laboratory reports corroborating the diagnosis of early limited cutaneous SSc based on a centromere (AC-3) ANA pattern, with 1:1,280 titers, with polyautoimmunity in the context of Sjögren syndrome and secondary Raynaud's phenomenon. She began treatment with methotrexate and folic acid, as well as calcium antagonists and phosphodiesterase inhibitors.

The patient was hemodynamically stable, with no signs of infection, and no new surgical interventions, and was therefore discharged with ambulatory follow up by rheumatology. The patient has had no further episodes of gastrointestinal bleeding.

Discussion

Systemic sclerosis is a chronic multisystemic disease that presents with generalized vascular dysfunction and progressive fibrosis of the skin and internal organs (1). The gastrointestinal tract is especially affected, with diminished motor activity (7). Although the most frequently affected organ is the esophagus, any part of the digestive tract can be involved (6). The most common gastric manifestation is gastroparesis, followed by GAVE, also known as "watermelon stomach" (8).

There is an estimated 6% prevalence of GAVE in patients with SSc (7). Most patients have iron-deficiency anemia, along with weakness, fatigue or dyspnea, with no other signs of bleeding. A smaller proportion present with massive upper gastrointestinal bleeding (9).

The condition is diagnosed by upper gastrointestinal endoscopy, which shows longitudinal streaks of flat, reddish rays that radiate from the pylorus to the antrum, arranged as a "watermelon stomach" or in a diffuse pattern known as "honeycomb stomach" (3). Gastric antral vascular ectasia is more common in women than men, with a mean age at onset of 70 years (10). While more studies are needed, the current articles show that GAVE is more prevalent in the limited cutaneous type of SSc (11). Studies have shown that most patients with GAVE, approximately 60%, present with skin telangiectasias (12). However, cases have been reported in which vascular ectasias are the first manifestation of SSc (13-15).

Symptomatic treatment of GAVE includes correcting the iron deficiency, using proton pump inhibitors and, if necessary, blood product transfusion. Endoscopic coagulation with cryotherapy, hemospray, argon plasma therapy or radiofrequency ablation eliminates vascular ectasia and reduces the risk of bleeding; therefore, these methods are considered the first line of interventionist treatment (16).

Among these therapies, argon plasma coagulation is currently considered the treatment of choice, due to its effectiveness and low rate of complications (<7%) (17). Surgical

treatment with antrectomy and gastrectomy is reserved for patients with failed endoscopic treatment (14).

Autologous hematopoietic stem cell transplantation (AHSCT) is an interesting and novel treatment; although the SCOT study excluded patients with active GAVE, AHSCT has been reported to improve anemia in patients with GAVE in the context of SSc. Although the level of evidence is low, this therapy's innovation to reduce transfusions makes it an important therapeutic option (18).

In our patient's case, vascular ectasias occurred early, with the subsequent appearance of skin telangiectasias and Raynaud's phenomenon, which is an unusual presentation of SSc. Tests were done to look for other etiologies of GAVE, which were negative. Due to her refractoriness to endoscopic treatment, the patient underwent surgery.

Today, there are cases of patients with refractory GAVE in diffuse cutaneous SSc who improve significantly with the administration of intravenous cyclophosphamide. The authors believe that remission is a result of immunosuppression (19); however, randomized studies are needed to confirm these findings.

In conclusion, GAVE has a very low incidence and its initial manifestation in the context of SSc is a diagnostic and therapeutic challenge. When GAVE is found on endoscopy, autoimmune disease should be suspected in patients with this rare cause of gastrointestinal bleeding. More studies are needed to show the role of immunosuppression in refractory cases, since surgery is the indicated treatment, but has a high risk of future complications.

References

1. **Allanore Y, Simms R, Distler O, Trojanowska M, Pope J, Denton CP, et al.** Systemic sclerosis. *Nat Rev Dis Primers*. 2015;1:(1)5002.
2. **Pineda Oliva OJ, Valencia Romero A, Soto JC, Diaz Oyola M, Valdivia Balbuena M, Chuc Baeza G, et al.** Ectasia vascular gástrica antral: reporte de un caso. *Endoscopia*. 2014;26(3):104–8.
3. **Fuccio L, Mussetto A, Laterza L, Eusebi LH, Bazzoli F.** Diagnosis and management of gastric antral vascular ectasia. *World J Gastrointest Endosc*. 2013;5(1):6–13.
4. **Stotzer P-O, Willén R, Kilander AF.** Watermelon stomach: not only an antral disease. *Gastrointest Endosc*. 2002;55(7):897–900.
5. **Leeds SG, Mencio M, Ontiveros E, Ward MA.** Endoluminal Vacuum Therapy: How I Do It. *J Gastrointest Surg Off J Soc Surg Aliment Tract*. 2019;23(5):1037–43.
6. **Dulai D M, Kovacs T O G, Gralnek I M, Jutabha R GSJ.** Endoscopic Treatment Outcomes in Watermelon Stomach Patients with and without Portal Hypertension. *Endoscopy*. 2004;36(1):68–72.
7. **Jodal HC, Klotz D, Herfindal M, Barua I, Tag P, Helsingen LM, et al.** Long-term colorectal cancer incidence and mortality after adenoma removal in women and men. *Aliment Pharmacol Ther*. 2022;55(4):412–21.
8. **Kirby DF, Chatterjee S.** Evaluation and management of gastrointestinal manifestations in scleroderma. *Curr Opin Rheumatol*. 2014;26(6):621–9.
9. **Parrado RH, Lemus HN, Coral-Alvarado PX, Quintana López G**. Gastric Antral Vascular Ectasia in Systemic Sclerosis: Current Concepts. *Int J Rheumatol*. 2015;2015:1-6.
10. **Pasumarthy L, Srour JW.** Gastric Antral Vascular Ectasia: An Uncommon Cause of GI Bleeding. *Practical Gastroenterology*. February 2009.
11. **Ingraham KM, O'Brien MS, Shenin M, Derk CT, Steen VD.** Gastric antral vascular ectasia in systemic sclerosis: demographics and disease predictors. *J Rheumatol*. 2010;37(3):603–7.
12. **Jensen DM, Kovacs TOG, Jutabha R, Machicado GA, Gralnek IM, Savides TJ, et al.** Randomized trial of medical or endoscopic therapy to prevent recurrent ulcer hemorrhage in patients with adherent clots. *Gastroenterology*. 2002;123(2):407–13.
13. **Leipe J, Mariette X.** Management of rheumatic complications of ICI therapy: a rheumatology viewpoint. *Rheumatology*. 2019;58(Supp7):vii49–58.
14. **Naidu H, Huang Q, Mashimo H.** Gastric antral vascular ectasia: the evolution of therapeutic modalities. *Endosc Int Open*. 2014;2(2):E67-73.
15. **Moskowitz RW.** Role of collagen hydrolysate in bone and joint disease. *Semin Arthritis Rheum*. 2000;30(2):87–99.
16. **Johnson J, Derk CT.** Gastric antral vascular ectasia in systemic sclerosis. *Int J Rheumatol*. 2011;2011:1-3.
17. **Zepeda-Gómez S.** Endoscopic Treatment for Gastric Antral Vascular Ectasia: Current Options. *GE Port J Gastroenterol*. 2017;24(4):176–82.
18. **Keret S, Zuckerman T, Henig I, Rainis T, Odeh S, Artoul N, et al.** Complete resolution of gastric antral vascular ectasia after autologous haematopoietic stem cell transplantation in systemic sclerosis. *Ann Rheum Dis*. 2023;82(7):995–6.
19. **Fraser SA, Klassen DR, Feldman LS, Ghitulescu GA, Stanbridge D, Fried GM.** Evaluating laparoscopic skills: setting the pass/fail score for the MISTELS system. *Surg Endosc*. 2003;17(6):964–7.