folia medica

Folia Medica 65(4):681-685
DOI: 10.3897/folmed.65.e89756

Case Report

Upper Gastrointestinal Bleeding from Gastric Antral Vascular Ectasia Following Cocaine Use: Case Presentation and Review of Literature

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Received: 30 June 2022 ♦ **Accepted:** 8 Aug 2022 ♦ **Published:** 31 Aug 2023

Citation: Kravchenko T, Chaudhry A, Khan Z. Upper gastrointestinal bleeding from gastric antral vascular ectasia following cocaine use: case presentation and review of literature. Folia Med (Plovdiv) 2023;65(4):681-685. doi: 10.3897/folmed.65.e89756.

Abstract

Gastric antral vascular ectasia (GAVE), also known as "Watermelon stomach", is a rare cause of upper gastrointestinal bleeding (UGIB). It is characterized by an endoscopic appearance of flat red blood vessels traveling from the pylorus to the antrum. Patients often present with chronic blood loss resulting in iron deficiency anemia, or, less commonly, with acute gastropathy resulting in massive hemorrhage. The etiology of GAVE is unknown but the disorder has been more commonly observed in patients with cirrhosis, especially with portal hypertension, as well as in those with systemic sclerosis and other connective tissue disease. There is no definitive cure for GAVE, but the condition can be managed with a variety of endoscopic techniques, including heater probes, bipolar probes, plasma coagulators, laser therapy, and radiofrequency ablation. In rare cases, patients also require blood transfusions. Here we present an interesting case of upper GI bleeding resulting in symptomatic anemia in a 69-year-old female patient with GAVE following cocaine use. The patient was initially admitted for fatigue and shortness of breath and required multiple units of pRBCs. She was also found to have a urine drug screen positive for cocaine. Following stabilization, she underwent endoscopy which revealed the characteristic "watermelon stomach" appearance consistent with GAVE syndrome. The patient was discharged on an oral proton-pump inhibitor with instructions to follow-up outpatient with Gastroenterology. This case is presented as an example of a risk factor for acute exacerbation of a rare cause of UGIB. This patient presentation also represents an example of the importance of strict follow-up for those with risk factors for exacerbation of chronic GI conditions.

Keywords

anemia, blood loss, endoscopy, substance-induced gastropathy, watermelon stomach

INTRODUCTION

Gastric antral vascular ectasia, or GAVE, was first reported in 1953.[1] Since then, it has been described several times in the literature as a rare but clinically significant cause of upper gastrointestinal bleeding (UGIB). Bleeding caused by GAVE can be occult in nature and the condition most commonly presents as iron deficiency anemia; however, more severe presentations have also been recorded.[2] GAVE is most commonly seen in females (71%) with a median age at presentation of 73 years.[3] Two primary associations with GAVE are liver disease and connective tissue disorders. However, published case reports have associated GAVE with a variety of other conditions including acute myeloid leukemia, metabolic syndrome, and more recently primary biliary cholangitis.[4-6]

GAVE can present acutely with severe bleeding. This can be seen in patients both with and without co-existing

portal hypertension, though the endoscopic appearance in patients with portal hypertension differs slightly – these patients have more diffuse gastric angiomas.[7] Due to the rare nature of GAVE and the scarcity of these patients presenting with symptomatic UGIB, there is little published data on risk factors or outcomes for this complication.

CASE REPORT

We present the case of a 69-year-old woman who presented to the Emergency Department at our institution for evaluation of shortness of breath and fatigue. Her past medical history was not well documented but she reported a history of recurrent gastrointestinal bleeds as well as chronic anemia. She was found to be acutely anemic with a hemoglobin level of 5.5 g/dL found on her complete blood count on arrival. At this time, she also underwent a urine drug screen test that was found to be positive for cocaine. The patient endorsed a history of polysubstance use upon further questioning but was unsure regarding her last time using or what drugs she had used recently. The patient was admitted for management of a suspected upper GI bleeding. She was transfused 3 units of packed red blood cells after which her hemoglobin improved to 9 g/dL. The patient remained hemodynamically stable and was taken to the endoscopy suite on her second day of hospitalization. The patient subsequently underwent upper endoscopy which showed two non-bleeder linear erosions in the antrum, diffuse duodenal erythema consistent with duodenitis, and erythematous changes in the gastric mucosa consistent with her GAVE ***(Fig. 1)****. Due to the fact that there was no active bleeding at the time of endoscopy, there was no endoscopic intervention performed. She continued to be hemodynamically stable following the endoscopy and her hemoglobin stabilized at a level around 9 g/dL. She was cleared for discharge on day three of hospitalization and instructed to follow up as an outpatient.*

DISCUSSION

The case discussed here is unique in that it presents an acute exacerbation of a rare disease that was triggered by a factor that was previously not well documented. There is a lack of published literature associating illicit drug use, including cocaine, with complications from GAVE syndrome. However, cocaine has in the past been linked with vascular gastrointestinal complications. A 2005 retrospective review of a small patient cohort found that enterocolitis was a possible complication of cocaine use, with the highest risk for this complication in the first 3 days after using the drug. This same review found that high rates of patients in this group needed to undergo laparotomies, and of those that did, the operation was associated with a 50% mortality risk.[8] There have been case reports associating massive GI hemorrhage with cocaine use, but it is not as well documented as the association of cocaine and cardiovascular complications such as myocardial infarction and aortic dissection. Specific vascular GI complications that have been noted in the setting of cocaine use include small bowel bleeding, colonic bleeding, and bowel perforation.[9] There is a definite consensus on the use of cocaine as both a trigger of GI bleeding and an exacerbating factor in patients predisposed to GI bleeding, such as those with history of GI disease.

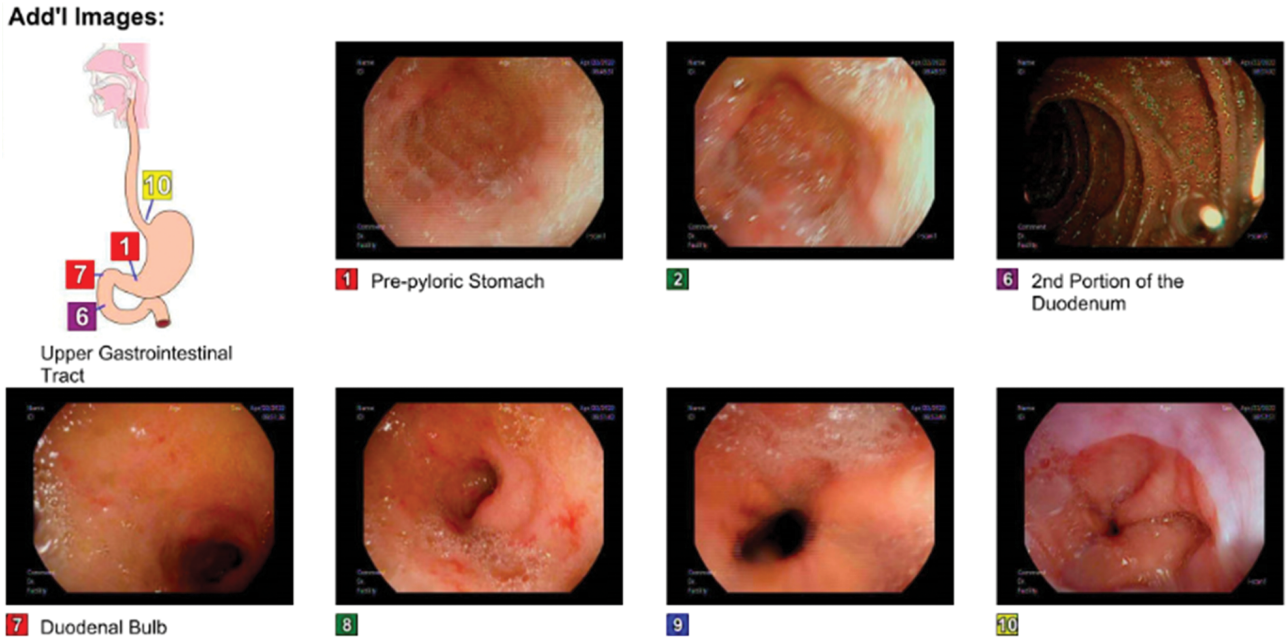

Figure 1. Endoscopy findings obtained on day 2 of admission. Images 2, 7, and 8 of the series show some of the characteristic "watermelon stomach" seen in GAVE with linear erythematous blood vessels most prominent at the antrum.

Cocaine can cause GI bleeding through a number of mechanisms. Cocaine is a monoamine reuptake inhibitor, increasing norepinephrine at synapses and causing alpha-1 adrenergic activation. This leads to vasoconstriction. When this occurs in the splanchnic circulation, it can lead to GI ischemia. Cocaine also induces platelet aggregation, which can further exacerbate ischemia and lead to thrombosis and reduced blood flow. Finally, cocaine is a known toxin to GI mucosa, particularly in the stomach. This is notable for our patient, who has pre-existing GAVE syndrome, which puts her at a baseline higher risk of gastric bleeding. Cocaine-induced erosive gastropathy is a well-documented phenomenon that, while not studied in the setting of GAVE, likely increases the risk of bleeding in GAVE patients. Taken together with the vasoconstrictive and thrombogenic effects of cocaine, this gastropathy likely contributed to a significantly increased risk of stomach bleeding in our patient.

There have been other correlations between GAVE and risk factors described in the literature. There is a consensus in the literature regarding an association of GAVE with chronic illness, especially liver disease. A 2004 retrospective cohort study found GAVE in 30% of cirrhotic patients undergoing liver transplantation.[10] Interestingly, it has also been shown that such patients will have resolution of their GAVE following liver transplantation. The consensus in the literature is split on the relationship between GAVE and portal hypertension. One study on endoscopic findings suggested that GAVE in patients with underlying portal hypertension had more diffuse vascular malformations, indicating more severe disease.[11] Conflicting evidence has been reported which shows that TIPS procedure performed for portal hypertension does little to control GAVE-related bleeding. These factors offer an unclear picture of the relationship between treatment of liver disease with possible resolution of underlying GAVE.[12]

Management of GAVE depends on acuity of patient presentation. Possible treatment modalities include pharmacotherapy, surgery, and endoscopy. There has been little data published on effective pharmacological therapies but possible modalities include octreotide, tranexamic acid, and bevacizumab.[13] Surgical management is a possibility after failure of conservative therapy. Operations that have been performed for GAVE include laparoscopic gastrectomy.[14] Endoscopy is a common treatment and various endoscopic techniques have been used for the management of the disease including argon plasma coagulation (APC), radiofrequency ablation (RFA), and endoscopic band ligation (EBL). RFA and EBL have been shown to have lower recurrence rates than APC. However, all 3 techniques require close follow-up due to risk of remission resulting in acute bleeding. One retrospective study found a decrease of recurrence-free survival in GAVE patients who underwent EBL from 88% at 1 year to 44% at 2 years. This same study found that a greater number of pre-procedure blood transfusions was correlated with an increased risk of recurrence.[15] In our case, patient follow-up is important even without any endoscopic procedure being performed. The patient's history of drug use and lack of regular medical follow-up for multiple years put her at high risk for further exacerbation of her GAVE.[16] More data is needed to further evaluate risk factors for recurrence of GAVE in patients who did not undergo endoscopic treatment, but it is likely that environmental risk factors like those present in this patient's case would be found to significantly correlate with remission.

At this time, there has been no data published on follow-up or screening regiments for patients with GAVE syndrome. Other GI conditions with risk of bleeding, such as esophageal varices, are monitored with regular screening programs. While GAVE is a rare disease and it is difficult to evaluate the efficacy of any screening intervention with a small, largely asymptomatic patient population, patients such as the one presented in this case who have known exposure to risk factor for GAVE-induced UGIB would benefit from regular follow-up of blood counts and possible endoscopy to assess progression of gastric vascular lesions.

CONCLUSIONS

Though uncommon, GAVE should be considered as part of a broad differential diagnosis for UGIB, especially following exposure to known gastropathy-causing agents such as cocaine. This case describes an episode of UGIB in a patient with GAVE following cocaine use and stresses the importance of routine clinical, laboratory, and possible endoscopic follow-up in patients with known GAVE.

Acknowledgements

The authors have no support to report.

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

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Кровотечение из верхних отделов желудочно-кишечного тракта из-за эктазии антральных сосудов желудка после употребления кокаина: представление случая и обзор литературы

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Дата получения: 30 июня 2022 ♦ **Дата приемки:** 8 августа 2022 ♦ **Дата публикации:** 31 августа 2023

Образец цитирования: Kravchenko T, Chaudhry A, Khan Z. Upper gastrointestinal bleeding from gastric antral vascular ectasia following cocaine use: case presentation and review of literature. Folia Med (Plovdiv) 2023;65(4):681-685. doi: 10.3897/folmed.65.e89756.

Резюме

Сосудистая эктазия антрального отдела желудка (GAVE), также известная как «арбузный желудок», является редкой причиной кровотечения из верхних отделов желудочно-кишечного тракта (UGIB). Он характеризуется эндоскопическим изображением плоских красных кровеносных сосудов, идущих от привратника к антральному отделу. У пациентов часто наблюдается хроническая кровопотеря, приводящая к железодефицитной анемии, или, реже, острая гастропатия, приводящая к массивным кровотечениям. Этиология GAVE неизвестна, но заболевание чаще наблюдается у пациентов с циррозом печени, особенно с портальной гипертензией, а также у пациентов с системным склерозом и другими заболеваниями соединительной ткани. Окончательного лечения GAVE не существует, но с этим состоянием можно справиться с помощью различных эндоскопических методов, включая нагревательные датчики, биполярные датчики, плазменные коагуляторы, лазерную терапию и радиочастотную абляцию. В редких случаях пациентам также требуется переливание крови. Здесь мы представляем интересный случай кровотечения из верхних отделов ЖКТ, приведшего к симптоматической анемии, у 69-летней больной с GAVE после употребления кокаина. Первоначально больная была госпитализирована из-за усталости и одышки, и ей потребовалось несколько единиц pRBC. Также было установлено, что анализ мочи на наркотики дал положительный результат на кокаин. После стабилизации ей была проведена эндоскопия, которая выявила характерный вид «арбузного желудка», соответствующий синдрому GAVE. Больная была выписана с предписанием на приём перорального ингибитора протонной помпы с указанием на последующее амбулаторное наблюдение в гастроэнтерологии. Этот случай представлен как пример фактора риска острого обострения редкой причины UGIB. Представление случая также представляет собой пример важности строгого наблюдения за пациентами с факторами риска обострения хронических заболеваний желудочно-кишечного тракта.

Ключевые слова

анемия, кровопотеря, эндоскопия, наркотическая гастропатия, арбузный желудок