Challenging Diagnosis and Endoscopic Management of Dieulafoy's Lesion–Induced Small-Bowel Bleeding: A Case Report

Liang Zhu, MD, PhD; Zhen-wen Wang, MD; Zhi-quan Huang, MD; Yang Hu, MD

Small-bowel bleeding is a relatively uncommon event of gastrointestinal bleeding. Some causes of small-bowel bleeding, such as vascular lesions, are still challenging to confirm, despite the use of various diagnostic modalities (e.g., capsule endoscopy, deep enteroscopy, and radiographic imaging). Vascular lesion–induced bleeding tends to be insidious and intermittent, but sometimes it can be massive and fatal, so that the timing of an endoscopy is critical. We describe herein the case of an elderly female patient with Dieulafoy's lesion–induced small-bowel bleeding presenting with recurrent melena. In this article, we describe how the cause of her bleeding was found and how the bleeding was stopped endoscopically. Finally, we discuss the characteristics of a small-bowel Dieulafoy's lesion and its endoscopic treatment. [*P R Health Sci J 2021;40:56-58*]

Key words: Endoscopic management, Dieulafoy's lesion, Small-bowel bleeding, Diagnosis

Bleeding from the small intestine, which used to be referred to as obscure gastrointestinal hemorrhage (OGIB), remains an unusual event of gastrointestinal (GI) bleeding (1). Although small-bowel bleeding can now be detected due to advances in capsule endoscopy, deep enteroscopy, and radiographic imaging, some causes, such as vascular lesions (including Dieulafoy's lesions), are still challenging to diagnose (2). In this paper, we describe the challenging case of an elderly patient who suffered from recurrent melena and discuss the clinical course and endoscopic intervention that led to the resolution of her symptoms.

Case Report

A 65-year-old female farmer was admitted to our hospital with a 5-year history of melena. Her past history included hypertension and a duodenal ulcer. She regularly took an antihypertensive drug, and her blood pressure was well-controlled. She denied the use of non-steroidal anti-inflammatory drugs. A physical examination upon her arrival revealed stable vital signs, a clear mind, and an anemic appearance; no positive signs were detected upon examination of her heart, lungs, or abdomen. Laboratory examinations immediately after admission demonstrated an extremely low hemoglobin level (2.8 g/dL), normal white blood cell and platelet counts, a normal hemagglutination and a positive fecal occult blood test. The admitting diagnosis was a GI hemorrhage. After routine treatment, including fluid resuscitation, acid suppression, and a blood transfusion, the patient underwent a gastroscopy and colonoscopy, but only a healed duodenal ulcer was found, which could not explain the patient's GI bleeding. As a result of our studies, we believed the bleeding site to be in the small intestine. Two days later, computed tomography enterography was performed in order to screen for disorders of the small intestine and to exclude contraindications to further examinations, but nothing was found. Considering her advanced age and weakness, we advised her to allow us to perform a video capsule endoscopy (VCE) to confirm the bleeding site, but she refused because VCE was not included in the medical insurance of our country, which meant the patient would have had to pay the entire cost herself. Instead, she chose a reimbursable double-balloon enteroscopy (both anterograde and retrograde), the result of which was negative. Two days later, her stool turned yellow and her hemoglobin ascended to 8.5 g/dL on a routine blood test. She left the hospital the next day because she thought her GI bleeding had been stopped and she was not able to pay the necessary medical costs for an extended hospitalization, although we told her that the bleeding might reoccur at any time and finding the locus of that bleeding was necessary. Unfortunately, one month later, the patient was readmitted with a massive melena. We talked with a team of surgeons about what the next step should be, including whether or not surgery might be needed. Because the bleeding site had not

Department of Gastroenterology, the First Affiliated Hospital of Nanchang University, Jiangxi, China

The authors have no conflict of interest to disclose.

Address correspondence to: Yang Hu, MD, Department of Gastroenterology, the First Affiliated Hospital of Nanchang University, Nanchang 330006, Jiangxi, China. Email: huyangguy@qq.com

been identified, the risk of surgery was extremely high. Digital subtraction angiography (DSA) seemed to be an appropriate method for both diagnosis and therapy, given the acute, active GI bleeding and, especially, the patient's hemodynamic instability (3). However, she refused our suggestion, again, after we informed her of the indications and limitations of DSA. A VCE was accepted, which found fresh blood between the distal part of the duodenum and the proximal jejunum (Figure 1). An emergency endoscopy was performed. A protruding vessel with active bleeding (Dieulafoy's lesion) in the horizontal part of the duodenum was found, and the vessel was clipped with titanium hemoclips (from MICRO-TECH™, China), so that the bleeding was stopped, successfully (Figure 2). Two days later, her stool turned yellow and she was discharged. The patient is still under follow-up, and no further episodes of GI bleeding have been reported.

Discussion

Small-bowel bleeding accounts for a small part of GI bleeding and is still a challenging diagnosis, despite the use of advanced technology and proper endoscopy. Clinical presentation and age may be helpful to determine etiology. Patients over the age of 40 years complaining of recurrent GI bleeding with no findings after conventional examinations are more likely to have vascular lesions, such as angioectasia and Dieulafoy's lesion, while inflammatory bowel disease or Meckel's diverticulum are more likely in patients under 40 years old (1).

Small-bowel vascular lesions, including angioectasia, Dieulafoy's lesion, and arteriovenous malformation, are the most common causes of small-bowel bleeding (2). The severity of the bleeding caused by small-bowel vascular lesions may range widely from chronic, intermittent, and well-compensated to acute, massive, and life-threatening (4). Different from angioectasia (capillary or vein malformation) and arteriovenous malformation, Dieulafoy's lesions consist of histologically normal but abnormally large arteries that typically protrude through a small mucosal defect (5). Although Dieulafoy's lesions are frequently found in the proximal stomach on the lesser curvature, they have been identified as the source of OGIB in 3.5% of patients, with most of these lesions located in the jejunum (6). However, Dieulafoy's lesions can be easily overlooked, even after careful endoscopic examination, because of the intermittent nature of the bleeding; it is often difficult to confirm during non-bleeding intervals (7). In additon, in the presence of a Dieulafoy's lesion that has not been treated endoscopically, the incidence of rebleeding is reported to be high (8). So the timing of performing an endoscopy can be decisive in terms of both diagnosis and treatment. As was the case in our patient, a Dieulafoy's lesion was confirmed and treated effectively when she was actively bleeding but not when she was in a stable, non-bleeding state. The etiology of Dieulafoy's lesions remains unclear. Patients who bleed from Dieulafoy's lesions often have comorbidities, including hypertension, diabetes, and/or alcohol abuse (9). Our patient had a long history of hypertension, which is believed by some authors to alter the normal process of angiogenesis and trigger the formation of aberrant vessels with a constant diameter, the presence of which increases the incidence of Dieulafoy's lesions (10). Although there is limited evidence from high-quality clinical trials regarding the optimal therapeutic approach for a small-bowel Dieulafoy's lesion, endoscopic intervention has been recommended as the first choice of treatment, during which a form of mechanical hemostasis should be applied, such as was seen in our case (2). Techniques that use mechanical instruments (such as the hemoclip) to achieve hemostasis have been reported to be more effective and are assoicated with lower rates of recurrence than thermal (argon) and injection (adrenaline) techniques (11). However, long-term follow-up has proven to be necessary in the evaluation of the effectiveness

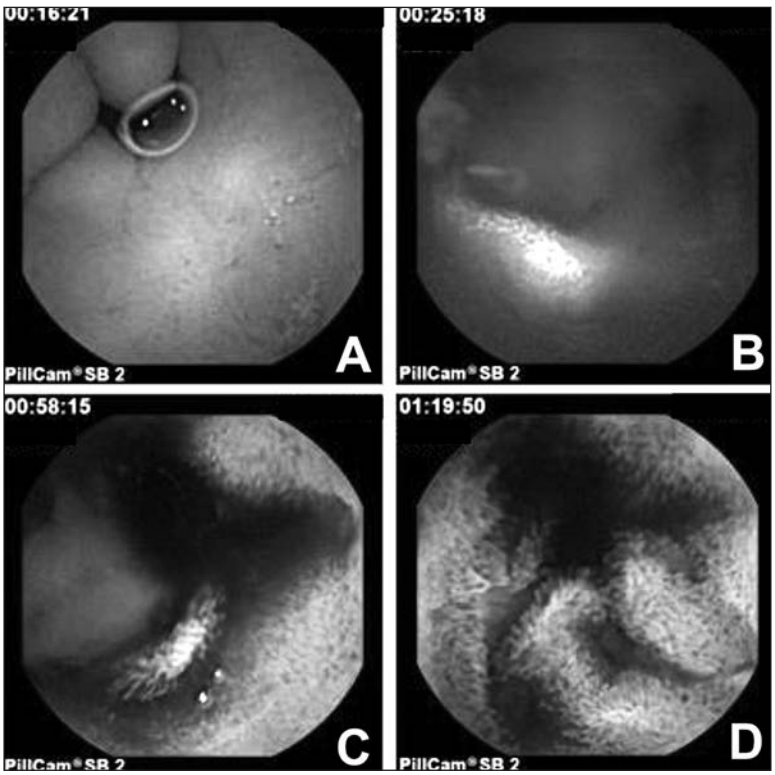

Figure 1. Pictures of video capsule endoscopy. The capsule reached the descending part of the duodenum at 25 m, where bright red fresh blood was found (picture B). The blood turned dark red at 27 m and turned brown at 58 m (picture C). Thus, the bleeding site was determined to be located between the inferior part of the duodenum and the superior part of the jejunum.

of the applied endoscopic therapy. Our patient has been in follow-up for over 4 years and has had no further episodes of bleeding.

To sum up, small-bowel vascular lesions should be taken into consideration when there is GI bleeding, the source of which is not found after conventional examinations, especially for patients over 40 years old. Small-bowel Dieulafoy's lesions are easier to confirm in the active bleeding state than in a non-bleeding interval, so the timing of when an endoscopy is performed can be decisive. Small-bowel Dieulafoy's lesions with active bleeding can be treated successfully by mechanical endoscopic methods, such as placing a hemoclip.

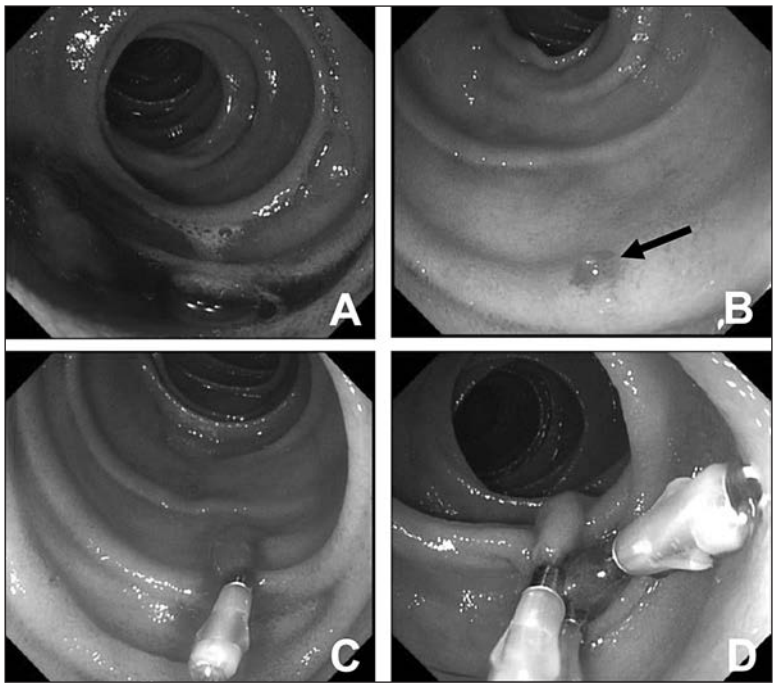

Figure 2. Pictures of the emergency gastroscopy. Bright red, fresh blood was seen at the inferior part of the duodenum (picture A) and a protruding vessel with active bleeding (Dieulafoy's lesion) was found after washing (as marked by an arrow in picture B). Titanium hemoclips were used to clip the vessel so that no additional active bleeding was seen (pictures C and D).

Resumen

El sangrado del intestino delgado es un evento relativamente poco frecuente de sangrado gastrointestinal. Algunas causas del sangrado del intestino delgado, como las lesiones vasculares, siguen siendo difíciles de diagnosticar a pesar del uso de diversas modalidades de diagnóstico, como la endoscopía con cápsula, la enteroscopia profunda y la imagen radiográfica. El sangrado inducido por lesiones vasculares tiende a ser insidioso e intermitente, pero a veces puede ser masivo y mortal, por lo que el momento de la endoscopia es crítico. Presentamos el caso de una paciente anciana con sangrado del intestino delgado inducido por una lesión de Dieulafoy que presentó con melena recurrente. En este caso, describimos cómo se encontró la causa del sangrado y cómo se detuvo endoscópicamente. Finalmente, discutimos las características de la lesión de Dieulafoy del intestino delgado y su tratamiento endoscópico.

Acknowledgment

Supported by the project of the Jiangxi Department of Science and Technology (no. 20202BBGL73109), the Jiangxi Educational Committee foundation (no. GJJ170006), and the project of the Health and Family Planning Commission of Jiangxi Province (no. 20195082). Liang Zhu and Zhen-wen Wang contributed equally to this work.

References

1. Gerson LB, Fidler JL, Cave DR, Leighton JA. ACG Clinical Guideline: Diagnosis and Management of Small Bowel Bleeding. Am J Gastroenterol. 2015;110(9):1265-1288. doi:10.1038/ajg.2015.246
2. Sakai E, Ohata K, Nakajima A, Matsuhashi N. Diagnosis and therapeutic strategies for small bowel vascular lesions. World J Gastroenterol. 2019;25(22):2720-2733. doi:10.3748/wjg.v25.i22.2720
3. Leung WK, Ho SS, Suen BY, et al. Capsule endoscopy or angiography in patients with acute overt obscure gastrointestinal bleeding: a prospective randomized study with long-term follow-up. Am J Gastroenterol. 2012;107(9):1370-1376. doi:10.1038/ajg.2012.212
4. Almeida N, Figueiredo P, Lopes S, et al. Urgent capsule endoscopy is useful in severe obscure-overt gastrointestinal bleeding. Dig Endosc. 2009;21(2):87-92. doi:10.1111/j.1443-1661.2009.00838.x
5. Morowitz MJ, Markowitz R, Kamath BM, von Allmen D. Dieulafoy's lesion and segmental dilatation of the small bowel: an uncommon cause of gastrointestinal bleeding. J Pediatr Surg. 2004;39(11):1726-1728. doi:10.1016/j.jpedsurg.2004.07.027
6. Dulic-Lakovic E, Dulic M, Hubner D, et al. Bleeding Dieulafoy lesions of the small bowel: a systematic study on the epidemiology and efficacy of enteroscopic treatment. Gastrointest Endosc. 2011;74(3):573-580. doi:10.1016/j.gie.2011.05.027
7. Kasapidis P, Georgopoulos P, Delis V, Balatsos V, Konstantinidis A, Skandalis N. Endoscopic management and long-term follow-up of Dieulafoy's lesions in the upper GI tract. Gastrointest Endosc. 2002;55(4):527-531. doi:10.1067/mge.2002.122652
8. Ciobanu L, Pascu O, Diaconu B, Matei D, Pojoga C, Tanţău M. Bleeding Dieulafoy's-like lesions of the gut identified by capsule endoscopy. World J Gastroenterol. 2013;19(29):4823-4826. doi:10.3748/wjg.v19.i29.4823
9. Abd Elrazek AE, Yoko N, Hiroki M, et al. Endoscopic management of Dieulafoy's lesion using Isoamyl-2-cyanoacrylate. World J Gastrointest Endosc. 2013;5(8):417-419. doi:10.4253/wjge.v5.i8.417
10. Ding YJ, Zhao L, Liu J, Luo HS. Clinical and endoscopic analysis of gastric Dieulafoy's lesion. World J Gastroenterol. 2010;16(5):631-635. doi:10.3748/wjg.v16.i5.631
11. Jamanca-Poma Y, Velasco-Guardado A, Piñero-Pérez C, et al. Prognostic factors for recurrence of gastrointestinal bleeding due to Dieulafoy's lesion. World J Gastroenterol. 2012;18(40):5734-5738. doi:10.3748/wjg.v18.i40.5734