Radiology Case Reports 19 (2024) 6157–6160

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Case Report

Endovascular interventional treatment of patients with gastrointestinal bleeding after dual antiplatelet therapy: A case report ☆

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ARTICLE INFO

Article history:
Received 15 August 2024
Revised 23 August 2024
Accepted 24 August 2024

Keywords:
Gastrointestinal bleeding
Dual antiplatelet therapy
Interventional radiology

ABSTRACT

Dual antiplatelet therapy is commonly used to treat or prevent thromboembolic events in patients with deep vein thrombosis, pulmonary embolism, atrial fibrillation, in patients after coronary artery stenting, cerebral artery stenting or artificial heart valves, etc. Although they significantly reduce the morbidity and mortality from thromboembolic events, dual antiplatelet therapy is associated with the risk of bleeding, which can be life-threatening. Gastrointestinal bleeding is one of the most common and dangerous events when using dual antiplatelet therapy for a long time. According to studies, nearly half of the major bleeding cases related to dual antiplatelet therapy arise from the gastrointestinal (GI) tract. We report the case of a 74-year-old female patient with lower gastrointestinal bleeding after using dual antiplatelet therapy that was successfully treated endovascularly with a coil.

Introduction

Lower gastrointestinal bleeding is bleeding originating from the gastrointestinal tract after the ligament of Treitz, including the small intestine, colon, rectum, and anus. Lower gastrointestinal bleeding accounts for about 20%-25% of all cases of gastrointestinal bleeding, with an average incidence of about 21-27/100,000 people, and a mortality rate of about 2%-4% [1–3]. Currently, conventional treatment options for lower gastrointestinal bleeding include endoscopic hemostasis, transcatheter arterial embolization, and surgery.

☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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https://doi.org/10.1016/j.radcr.2024.08.131

Fig. 1 – Axial images before injection (image A), arterial image after injection (image B), and venous image after injection (image C) show contrast agent leakage into the bowel suggesting active bleeding at the hepatic flexure colon (yellow and red arrow).

Colonoscopy is the best management tool for patients with chronic and intermittent lower gastrointestinal bleeding. Still, it is of less value in patients with acute, severe, life-threatening lower gastrointestinal bleeding due to incomplete visualization of the lesion due to intraluminal coagulation obscuring the site of the lesion. Indications for urgent surgery include life-threatening bleeding in patients who do not respond to endoscopic therapy and embolization, which is usually the treatment of last resort due to much higher morbidity and mortality but is not usually applied in cases of bleeding due to dual antiplatelet therapy [4,5]. In this article, we report cases of gastrointestinal bleeding using dual antiplatelet therapy that were successfully treated with endovascular interventional treatment and discuss the treatment strategy.

Case report

A 74-year-old female patient with a history of coronary stenting was taking dual antiplatelet therapy Aspirin 81 mg/day and Clopidogrel 75 mg/day. About 2 hours before admission, the patient had a large amount of black stool.

The patient was admitted to the local hospital and transfused with 1 g of Transamin × 3 times, 750 mL of packed red blood cells, and 500 mL of fresh frozen plasma. However, the patient continued to have black stools 4 times, each time about 150 mL, with symptoms of dizziness and fainting. The patient was then transferred to the Friendship Hospital for treatment.

Examination upon admission: the patient was alert, with pale skin and mucous membranes. Respiration rate 20 beats/min, SpO2 96%. Heart rate 120 beats/min, blood pressure 130/70 mmHg.

Tests: Rbc: 2.78 T/L; Hgb: 83.2g/l; Hct: 0.246 L/L.

Coagulation: PT%: 100.3%; INR: 0.99; APTTs: 31.9; ADP: 12% (Normal 69-88).

The patient then underwent an abdominal CT scan with contrast showing thickening of the hepatic flexure colon wall with active bleeding (Fig. 1).

The abdominal CT scan with contrast revealed a significant amount of blood clots in the intestines. This extensive clotting would hinder an accurate evaluation through gastrointestinal endoscopy, so the decision was made to forgo endoscopy to control the bleeding. Consequently, after the CT scan, the patient immediately underwent endovascular intervention to find the active bleeding resource. During the intervention, Sheet 5F with 5F Simmon 2 catheter (Terumo), Progreat alpha 2.0F microcatheter (Terumo), and selective occlusion of the lesion with Interlock detachable coil 3 mm × 15 cm (Boston Scientific) were used. After the intervention, the patient had stable hemodynamics, passed yellow stools, and was discharged hospital after 3 days (Fig. 2).

Discussion

Conventional treatment options for lower gastrointestinal bleeding include endoscopic hemostasis, transcatheter arterial embolization, and surgery. Colonoscopy is the best management tool for patients with chronic and intermittent lower gastrointestinal bleeding. Still, it is of less value in patients with acute, severe, life-threatening lower gastrointestinal bleeding due to inadequate visualization due to inadequate bowel preparation or active bleeding. Indications for urgent surgery include life-threatening bleeding in patients unresponsive to endoscopic therapy and embolization, which is often the treatment of last resort due to much higher morbidity and mortality [4,5]. However, in patients with bleeding due to dual antiplatelet therapy, surgery is usually contraindicated. In our patient's case, the patient came to the hospital in an emergency with massive lower gastrointestinal bleeding, and hemodynamic instability, and the patient had used dual antiplatelet therapy, so endoscopic hemostasis was not the preferred option in this case. The patient then underwent DSA angiography to find the bleeding point for embolization.

In the 1970s, Rosch and Bookstein used autologous clots to treat gastrointestinal bleeding, however, the relatively large catheters at that time and limited choice of embolization materials prevented successful embolization of the lesion [6,7]. Embolization of lesions near the mesenteric margin using large bowel catheters has resulted in a rate of massive bowel infarction, ranging from 13% to 33% [6,8,9]. Therefore, lesion embolization was not used but was replaced by local vasoconstrictor infusion (Vasopressin). However, with this treatment,

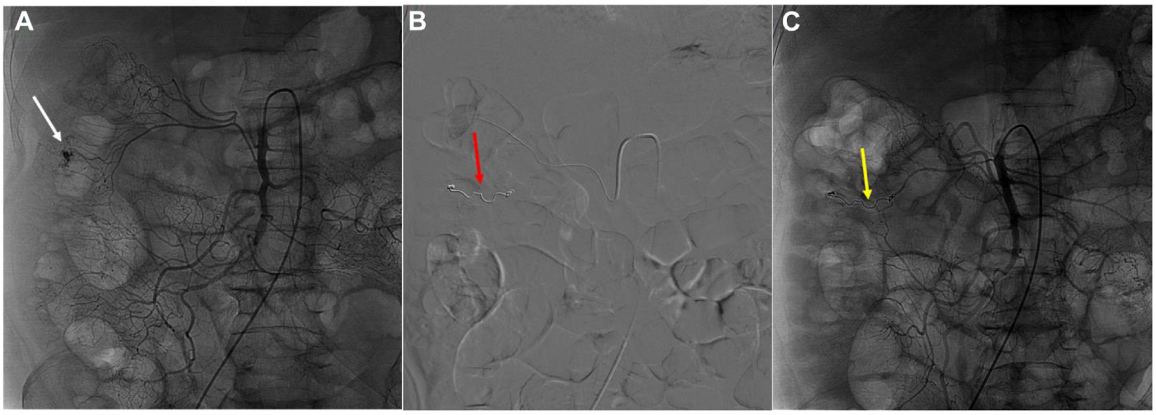

Fig. 2 – DSA images. (A) Active bleeding site at the hepatic flexure of the colon (white arrow). (B) Selecting and occluding the lesion with 01 Interlock detachable coil 3 mm × 15 cm (red arrow). (C) Scan shows complete occlusion of the lesion (yellow arrow).

patients need to be hospitalized in an intensive care center, 20% of bleeding cannot be controlled and the rate of rebleeding occurs in about 15% of cases, in addition, it has significant side effects such as abdominal pain, ... Since the 1990s and especially in recent years, with the development of microcatheter devices and new embolization materials, the vascular intervention has been increasingly widely used and has been proven to be a feasible, safe and effective method, with a low complication rate, and acute intestinal ischemia complications are very rare [10]. However, the main challenge in the management of lower gastrointestinal bleeding remains the identification of the bleeding source11. Accurate detection of the bleeding site by angiography requires a reported bleeding rate of at least 1 mL/min [11]. Therefore, negative angiography is common in patients with lower gastrointestinal bleeding due to the intermittent nature of the bleeding. The sensitivity of angiography for detecting a source of lower gastrointestinal bleeding varies widely with reported success rates ranging from 40% to 78% [12,13]. Stimulation angiography can improve the ability to find active bleeding points in lower gastrointestinal bleeding. In our patient's case, the patient had a clinically massive bleeding condition, and the active bleeding point at the hepatic flexure of the colon could be observed on the CT scan, so the active bleeding point could be easily found during angiography.

The choice of materials in embolization intervention for treating gastrointestinal bleeding is also very diverse. In 1997, Gardon et al. [14] reported 17 cases of patients with gastrointestinal bleeding treated with microcatheter embolization with materials such as gel foam and PVA particles, the success rate was 93% and there were no complications of intestinal ischemia. Embolic agents are mainly chosen based on the location of the vascular lesion. Gelfoam, coils, N-butyl cyanoacrylate (NBCA), and combinations of these materials are commonly used for embolization. Gelfoam or NBCA are embolization materials in suspension form, often used in cases where the lesion is super-selective, the terminal vessel is affected or the embolization potential is low. Coils are often used when embolization is at the base of the vascular lesion. In our patient's case, using coils helped preserve the anastomotic loops, avoiding the risk of bowel necrosis.

Conclusion

Gastrointestinal bleeding is an uncommon complication after dual antiplatelet therapy. Using coil intervention to prevent this complication helps to stop bleeding and minimize the rate of intestinal ischemia after intervention.

Patient consent

The patient has consented to the release of all information to be published in this article.

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