An Alternative Approach to Life-Threatening Gastrointestinal Bleeding After Corrosive Ingestion

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Abstract

Massive gastrointestinal bleeding after corrosive intake is a rare complication that generally mandates a surgical intervention for control. Angioembolization for control of gastrointestinal bleeding in the setting of acute corrosive injury has not been described. Here, we present our experience of a case of acute corrosive injury presenting with massive upper gastrointestinal bleeding in the delayed phase which was successfully managed by angioembolization. We discuss the case in light of the literature available and describe markers which may serve to identify potential candidates for angioembolization.

Keywords Corrosive injury · Gastrointestinal bleed · Angioembolization · Hematemesis · Left gastric artery

Introduction

Massive gastrointestinal bleeding after corrosive intake is uncommon and usually necessitates surgical control. Herein, we present our experience of a case of acute corrosive injury with massive upper gastrointestinal bleeding where surgery was averted with the timely use of angiography and embolization.

The Case

A 27-year-old man presented with a history of accidental acid intake 3 weeks back. The patient was initially managed conservatively at another hospital and discharged on liquid diet. However, he developed progressive dysphagia with odynophagia and presented to our emergency. He underwent a feeding jejunostomy. Intraoperatively, the stomach was grossly normal. On the second postoperative day, he had an episode of massive hematemesis along with bleeding into the jejunostomy tube. On examination, he had tachycardia and severe pallor. He underwent an upper gastrointestinal endoscopy which revealed an active spurt in the gastric antrum but this could not be controlled endoscopically. Computed tomography angiography showed a pseudoaneurysm with active extravasation of contrast with hyperdense clots filling the stomach (Fig. 1). Patient immediately underwent a digital subtraction angiography. Celiac angiogram was normal. Subsequently, the left gastric artery was selectively catheterized and the angiogram showed a pseudoaneurysm arising from one of its branches without any obvious contrast extravasation. As the pseudoaneurysm was arising from a small branch, and the microcatheter could not reach its neck, a proximal embolization was performed (using 0.3 mL of 30% glue-lipiodol mixture). Post embolization, no opacification of the pseudoaneurysm was noted (Fig. 2). Post-procedure, the patient did not have any further episodes of bleeding and was

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Fig. 1 **a** Axial CT angiography image showing active extravasation of contrast (arrow) with hyperdense clots (asterisk) filling the stomach. **b** Coronal maximum intensity projection image showing pseudoaneurysm from left gastric artery (arrow)

discharged after 7 days. He is planned for definitive surgery (colonic pull-up) after 3 months.

Discussion

Upper gastrointestinal bleeding after acute corrosive ingestion is usually mild, but may rarely be massive, characterized by a fall in hematocrit to below 25% and requiring three or more transfusions. The management of patients with massive bleeding almost always involves a surgical intervention. Tseng et al. [1] reported their experience of massive upper gastrointestinal bleeding in corrosive injury. Of 378 patients, 12 (3.2%) had massive bleeding and all of them required surgery for control of bleeding. Ananthakrishnan et al. [2] have reported similar results in their patients, and the surgical treatments consisted primarily of major procedures such as partial or total gastrectomy, gastro-esophagectomy, etc. Rarely, more radical procedures like pancreaticoduodenectomy or partial hepatectomy may be required to control the bleeding [1–3]. Such extensive surgery in the emergency setting is associated with a very high rate of mortality (10–30%) and morbidity (30–50%) [1–3]. Despite a high

surgical complication rate, the role of angioembolization has traditionally been limited in the algorithm of management of massive bleeding after corrosive ingestion as the stomach is a highly vascular organ with several extra- and intramural vascular communications. Surgery, therefore, remains the only resort in patients with failed endoscopic control.

Our patient had an unusual presentation. We hypothesized that the cause of delayed bleeding was the ongoing damage to the gastric wall by the acid retained due to pylorospasm, which possibly eroded a branch of the left gastric artery resulting in pseudoaneurysm and bleeding. The management of such a presentation is challenging. As with any other type of upper gastrointestinal bleeding, endoscopy is the initial investigation of choice. Most cases of bleeding are diffuse and minor and can be managed either by supportive or local superficial treatment with endoscopic coagulation. At times, the injury may be severe enough to result in sloughing off of the entire thickness of the mucosa with subsequent exposure and erosion of the muscular layers or even a full thickness perforation with or without peritonitis. These cases obviously warrant surgical interventions. In our case, the stomach had appeared completely normal during the

Fig. 2 **a** Selective angiogram of left gastric artery obtained using microcatheter shows a pseudoaneurysm (arrow) arising from one of its branches. No active extravasation was seen. **b** Left gastric artery angiogram after embolization with glue-lipiodol mixture showing non-opacification of the pseudoaneurysm. Glue cast is seen (arrow)

surgical procedure performed 2 days back. Additionally, the endoscopy confirmed that the point source of bleed with the rest of the mucosa being intact. We decided to attempt an angiography as the bleeding seemed to be localized to a single vessel and was possibly caused by a pseudoaneurysm. As discussed, angiography successfully localized the bleeding to a pseudoaneurysm and this was successfully embolized.

We propose that angiography and embolization be considered a rational option in patients with delayed bleeding after corrosive injury who demonstrate a single site of bleed on endoscopy. This approach is not only minimally invasive but also avoids the physiological stress and morbidity of a major surgical procedure in the catabolic corrosive patient. Such an approach also has the advantage of preserving tissue planes and thereby facilitating future definitive surgery. Since such situations are rarely encountered, treating surgeons and physicians must take extra care to always entertain the possibility of pseudoaneurysm and an angiographic control while dealing with corrosive bleeds.

Conclusion

Angiography and embolization should be treated as a viable option in the management of patients with corrosive injury and bleeding from a single site in the delayed phase.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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