Active bleeding from downhill varices: case report and management

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INTRODUCTION

Proximal esophageal varices, or downhill varices, develop in the setting of venous hypertension of the superior systemic circulation, commonly because of superior vena cava (SVC) obstruction. They are named based on their cephalad-to-caudal direction of blood flow. The incidence of downhill varices is low (0.5%), and they account for 0.4% to 10% of all acute esophageal variceal bleeding.

CASE REPORT

A 49-year-old man with end-stage renal disease presented in hypovolemic shock secondary to hematemesis. Notably, the patient had been admitted with a similar presentation 2 weeks earlier, and emergent EGD had revealed esophagitis.

A repeat EGD revealed nonbleeding grade 3 varices in the proximal esophagus with stigmata of recent bleeding (Fig. 1). The patient underwent successful variceal banding ligation (Video 1, available online at www.giejournal.org).

Given the unusual findings of downhill varices, the patient underwent a CT angiogram that revealed chronic occlusion of the SVC with extensive collateral vessels (Fig. 2). The patient reported a history of chronic dialysis vascular access before surgical development of an arteriovenous fistula. The patient underwent successful recanalization and angioplasty of the SVC. He had no further bleeding episodes and was scheduled for repeat surveillance EGD in 6 months.

DISCUSSION

Downhill varices develop in response to SVC obstruction, most commonly from chronic indwelling venous catheters. Endoscopic diagnosis should prompt further investigation with magnetic resonance or CT angiography of the thorax.1

SVC obstruction diverts superior venous return from the head and upper torso via collateral pathways, namely the azygous and innominate veins, to bypass the obstruction. The proximal and midesophageal veins drain into the azygous and innominate veins, and this increased pressure and collateralization results in the development of esophageal varices in the superior aspect of the esophagus (Fig. 3).2 In contrast, uphill varices occur secondary to increased portal pressure, leading to the development of collateral circulation. Increased blood flow in this collateral circulation at the gastroesophageal junction and resistance of the esophageal muscularis layer contribute to an increase in venous pressure. These changes cause dilatation and dislocation of the veins, allowing the formation of varices.3

Endoscopic therapy of nonbleeding downhill varices should be avoided. However, band ligation therapy management of downhill varices at high risk for bleeding, although controversial, can be considered.4 The patient had 2 presentations characterized by severe hematemesis, and EGD revealed a varix with recognized stigmata of recent bleeding. Therapeutic intervention with banding was successfully performed despite active hemorrhage on

Figure 1. Grade III varices with red wale sign (A) and white nipple sign (B). Successful variceal band ligation (C) of Grade III varix with white nipple sign.
manipulation, which is expected when suction is applied in this situation. The patient was deemed high risk for recurrent GI bleeding, and banding was considered fundamental in management.

Downhill varices are seen with an incidence of 0.5% and can easily be missed during endoscopy. During the first emergent EGD, the endoscopist missed the varices. Given their rarity and unusual location, they can easily be missed because the endoscopist may tend to retrieve the endoscope faster when approaching the midesophagus. A detailed examination of the proximal and mid-esophagus and slow endoscope retrieval are paramount to avoid misvisualization of any proximal lesions present.

CONCLUSION

A high index of suspicion is warranted in patients presenting with hematemesis with a history of cannulation of the superior venous system, especially in patients on hemodialysis. Endoscopic findings of downhill varices should prompt physicians to investigate for an underlying etiology of SVC obstruction, as management of the underlying

Figure 2. CT axial (A) and coronal (B) image at the level of the aortic arch with a large concentric filling defect (red arrow) consistent with intraluminal thrombus with total occlusion. Ct axial (C), coronal (D) and sagittal (E) images at the level of the thyroid with extensive enhancing serpiginous vessels (blue arrows) within the anterior and lateral chest wall representing extensive venous collateralization.

Figure 3. Schematic illustration of downhill varices compared with uphill varices.
Endoscopic intervention with variceal banding ligation seems to be an effective temporizing measure in downhill variceal bleeding.

**DISCLOSURE**

*All authors disclosed no financial relationships.*

Abbreviation: SVC, superior vena cava.

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