Therapeutic approach to downhill esophageal varices due to SVC syndrome in Behcet’s disease: a case report.

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Running title: Bleeding in downhill esophageal varices.
Abstract

Background: One of the rare presentations of SVC syndrome is bleeding of downhill esophageal varices (DEV).

Case presentation: We report a 39-year-old man who is a known case of Behcet’s disease. The patient's first presentation was superior vena cava syndrome due to thrombosis followed by bipolar ulcers and arthralgia. He received warfarin, prednisolone and azathioprine. The clinical course of the patient was complicated by one episode of hematemesis without abdominal pain when the patient’s PT was in therapeutic range. After resuscitation and correction of PT with FFP transfusion, upper GI endoscopy was done. Prominent varices were seen in the upper third of the esophagus, tapering to the middle part without acute bleeding. Stomach and duodenum were normal. Color ultrasonography evaluation of the portal, hepatic and splenic veins was negative for thrombosis. Band ligation was done and the patient’s bleeding did not recur.

Conclusions: Band ligation is the safest method for controlling DEV bleeding in patients with uncorrectable underlying disorders.
**Introduction**

Downhill esophageal varices (DEV) which develop in the upper third of the esophagus (table 1) are less common than distal esophageal varices, i.e. the uphill type, which is usually produced by portal hypertension (1;2). DEV serve as collateral branches directing blood flow “downwards”, either to bypass superior vena cava (SVC) obstruction via azygus vein, or to drain the superior systemic system to the portal vein when both the SVC and the azygus vein are obstructed (3). Predominant factors involved in the determination of the downward extension of varices along the esophagus are the level of SVC obstruction and its duration (2;4). The more distal the obstruction of SVC and the slower the process of occlusion, the higher the possibility of DEV developing. With obstruction of the SVC and the azygus vein, venous blood flow from the cranium and upper extremities may flow through the inferior thyroid veins and mediastinal collaterals into esophageal veins and then into the coronary vein to the portal vein, hepatic vein and inferior vena cava to the heart, resulting in downhill varices (4;5).

Downhill varices are mostly due to SVC syndrome secondary to mass effects including lung cancers (6-9), intrathoracic goiter (3;10-12), mediastinal lymphoma (13), thyroid carcinoma (14;15), thymoma (2;16), mediastinal lymphadenopathy secondary to different head, and neck cancers such as carcinoma of the tongue (7). Less frequent etiologies of DEV are Behcet’s disease (17-20), systemic venulitis (21), thyroid disease or a history of thyroid surgery (10;22), fibrosing mediastinitis (23), as a complication of upper extremity hemodialysis access (24), Castleman's disease (angiofollicular lymph node hyperplasia) (1), muscular constriction of abnormal extensions of posterior hypopharyngeal veins, and
venous obstruction as a rare late complication after correction of congenital heart defect (25), and interestingly, one report of liver cirrhosis (26). Intramural esophageal hematoma (pseudo-DEV) should also be considered in the differential diagnosis (27).

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<thead>
<tr>
<th>Location</th>
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<td>Pathophysiology</td>
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Case Report

A 42-year-old man presented with sudden-onset hematemesis of nearly 500 cc. Everything had started a year before, when he had developed shortness of breath along with a plethoric face. The patient was admitted to the Surgery Department and was diagnosed with SVC thrombosis by means of Doppler ultrasonography and spiral computed tomography (CT) scan of chest (figure 1). The subject underwent thoracotomy out of suspicion of mediastinal mass effect on SVC, detected on thoracic spiral CT scan to be a thymoma or a thymus-associated mass. In the operation, no discrete mass was found and the thymus gland was removed and sent for pathologic review. No pathologic finding was detected and the gland had normal histological appearance. The patient received anticoagulant therapy in the form of warfarin 5 mg/day for 9 months. Then, he developed arthralgia of knee, wrist, elbow and ankles but no documented arthritis. He was examined by a rheumatologist when he was discovered to have positive pathergy test (positive cutaneous hypersensitivity reaction to intradermal injection of saline) and an oral aphthous ulcer. The history of genital ulcer was also positive in the patient. The diagnosis of Behcet’s disease was made and the patient was treated with prednisolone tablets, 15mg/day, and azathioprine, 100 mg/day; warfarin was also continued. A follow-up CT scan showed prominent mediastinal collateral veins close to the esophagus (figure 2).

Two weeks later, the patient presented with sudden onset of hematemesis and was admitted to the Emergency Room. He did not mention any past history of upper
gastrointestinal bleeding. Review of systems was not contributory. The patient was conscious and agitated. His blood pressure was 110/70 mmHg, but he had orthostatic hypotension with resting heart rate of 104/min. The patient had plethoric face and elevated JVP. Conjunctivae were pale and sclerae were anicteric. Pemberton sign was detected. Abdomen was soft with no tenderness, organomegaly or shifting dullness. Nervous system, musculoskeletal system, joints and the peripheral vascular system were all normal. A nasogastric tube was inserted and coffee ground secretions were revealed. Lab data were as follows: WBC: 6400, Hb: 6.5 g/dl, MCV: 97, MCH: 32, Platelet: 241,000, PTT: 40 seconds, PT: 18 seconds, INR: 2.1, albumin: 4 g/dl, ALT: 23, Alkaline Phosphatase: 170 (normal), BUN: 18 mg/dl, Cr: 0.6 mg/dl, Na: 138 meq/dl, K: 4.2 meq/dl.

The patient received 6 fresh frozen plasma (FFP) units and 4 units of packed red cells and his INR was rechecked after FFP infusion, when it was corrected to 1.3.

Because of underlying vasculitis, the diagnosis of portal vein thrombosis and bleeding due to esophageal varices was considered. The patient received intravenous infusion of octreotide and intravenous infusion of ranitidine. The bleeding stopped and the patient was closely monitored in the Emergency Room. Warfarin and azathioprine were discontinued and intravenous hydrocortisone was started instead of oral prednisolone.

The patient underwent upper endoscopy on the day of admission and esophageal varices were found. Gastric and duodenal mucosae were intact. Abdominal ultrasound was normal and no evidence of ascites, splenomegaly and chronic liver disease was found. To rule out portal vein thrombosis as the cause of esophageal varices, Doppler ultrasonography was performed and mesenteric, splenic, portal and hepatic veins were
evaluated; no discrete thrombosis was detected. The patient was not able to perform MR angiography. The patient underwent re-endoscopy by a second endoscopist and esophageal varices in the upper half of esophagus tapering to the middle part of esophagus were found (figure 3); the diagnosis of downhill esophageal varices was made and band ligation was performed successfully (figure 4). He received oral cyclophosphamide 100 mg/day upon recommendation of rheumatologist. Omeprazole was administered to the patient. The patient was discharged from hospital the following day without any complication. Two weeks later, the third endoscopy along with the second band ligation was performed. The patient was discharged without any problem. After 1 and 6 months, the patient underwent the 4th and 5th endoscopies and downhill esophageal varices were found to have been eradicated. Warfarin was initiated for patient and he has been well with no bleeding during the past 12 months.


Discussion

Mediastinal tumor-induced DEV is seen sporadically, but one due to SVC obstruction secondary to Behcet’s disease is very rare (20). Interestingly, SVC syndrome could be the initial symptom in Behcet’s disease (18) as in the presented case. The most frequent signs and symptoms were face or neck swelling (82%), upper extremity swelling (68%), dyspnea (66%), cough (50%), and dilated chest vein collaterals (38%). Dyspnea at rest, cough, and chest pain were more frequent in patients with malignancy (28). One of the unseen manifestations of SVC syndrome often discovered accidentally is DEV and upper gastrointestinal bleeding could be its first presentation. After reviewing approximately 130 cases of DEV, Maton et al. found only 9% to have gastrointestinal hemorrhage, much lower than that in uphill varices (21). But the bleeding could be life-threatening (21;24).

In some cases, varices disappear following treatment of the underlying etiology, e.g. resection of the tumor (11;29). On the other hand, since fatal pulmonary embolism may happen after endoscopic sclerotherapy of downhill esophageal varices, cyanoacrylate
injection into a varice above the lower third of the esophagus is a high-risk procedure (30). In the presented case, eradication of upper esophageal varices didn't lead to any other visible variceal development either in hypopharynx or lower esophagus or stomach up to six months after band ligation. Then, band ligation seems to be a safe method of controlling DEV bleeding in patients with uncorrectable underlying disorders. But, further evaluations with large number of patients are warranted before drawing definite conclusions.

**Competing interests**

There are no financial or non-financial competing interests to declare in relation to this manuscript.
Authors’ contributions

HT was the gastroenterologist diagnosed DEV for the first time in this case and did the band ligation. MA was the internal medicine resident involved in patient management, who took a detailed history, recorded laboratory data and follow-up information. MH was the radiologist who also contributed to diagnosis through imaging evaluation. AE, HT, MA and MH all contributed by providing the figures. AE prepared the primary draft of manuscript and finally, all authors contributed in final manuscript preparation.
References


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Figure 1. Spiral CT scan at the level of carina. SVC partial thrombosis (black arrows)
AA: Ascending Aorta . DA: Descending Aorta
Figure 2. Spiral CT of the thorax at the level of aortopulmonary window. Collaterals close to esophagus (black arrow).
Figure 3. Upper third of esophagus.
Figure 4.
Ligated Esophageal varice (single arrow) just below upper esophageal sphincter (double arrows)