

Variceal Hemorrhage

A 57-year-old male with a past medical history of alcoholic cirrhosis presents to the emergency department with intermittent hematemesis over the past 3 days. He has experienced similar episodes over the last 4 months but the patient reports that they usually resolve within 1-2 hours. He has a 20-pack year smoking history and continues to consume 4-5 alcoholic drinks per day. He denies fevers, weight loss, cough, dysphagia, abdominal pain, melena, or hematochezia. Patient is afebrile and vital signs are all within normal limits. On general appearance, he appears pale. HEENT examination reveals conjunctival pallor and scleral icterus. Cardiac examination is unremarkable. Abdominal examination reveals increased abdominal girth with a positive fluid wave. The liver is palpable 3 cm below the costal margin and a non-palpable spleen. Hemoglobin is 9.8 g/dL, WBC is 5,700/mm³, and platelet count is 139,000/mm³. In addition to volume replacement, which of the following is the most appropriate immediate next step in the management of this patient's condition?

- A. Prophylactic antibiotics
- B. Upper endoscopy
- C. Transfusion of packed red blood cells
- D. IV octreotide
- E. A and D
- F. A, C, and D
- G. All of the above

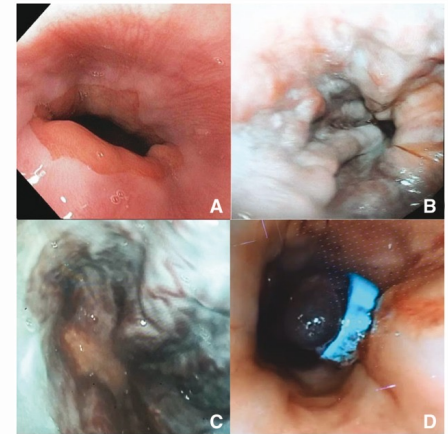


Figure 1. The images above display successful treatment of esophageal variceal hemorrhage in a cirrhotic patient. (A) shows a normal esophagus. (B) and (C) both show bulging esophageal varices with associated red wale sign suggesting recent hemorrhage. (D) shows a necrotic esophageal varix post-band ligation.

Gastroenterol Rep (Oxf). 2017 Aug; 5(3): 185–192. Published online 2017 Jul 21. doi:10.1093/gastro/gox024.

Discussion

The correct answer is E. Both prophylactic antibiotics and IV octreotide should be initiated in addition to IV fluids for a patient with suspected variceal bleeding. This clinical vignette and question is meant to highlight the variceal bleed algorithm (described in further detail below), which advises that the patient be managed immediately with medication until hemodynamically stable before further investigation with endoscopy.

Acute variceal hemorrhage is one of the major causes of upper gastrointestinal bleeding in cirrhotic patients, affecting over 70%. Nearly a fifth of patients may die from an initial bleeding episode; however, improvement in treatment modalities have shown better prognosis. Several risk factors for bleeding varices have been identified such as location, size, appearance, clinical features, and variceal pressure. A prognostic index may be calculated using the Child-Pugh classification (measure of liver dysfunction), variceal size, and the presence of red wale markings (suggestive of recent hemorrhage).¹

Portal hypertension is defined as a hydrostatic pressure >5 mmHg in the portal venous system due to a buildup of venous blood from an obstruction. Some causes include Budd Chiari syndrome, portal vein thrombosis or infiltrative malignancies, but cirrhosis is the most common cause. Esophageal varices are a compensatory mechanism to help relieve the pressure in the portal venous system resulting from blood directed retrograde through the left gastric vein, which forms anastomoses with the esophageal veins. Though not commonly performed in the United States, hepatic venous catheterization can help calculate the portal-hepatic venous pressure gradient (HPVG). A gradient >12 mmHg is associated with high risk of variceal bleeding. Large prospective studies have shown a greater risk of bleeding in patients with higher Child-Pugh scores, multiple small varices on initial endoscopy, or inability to achieve sustained virologic response with HCV.²

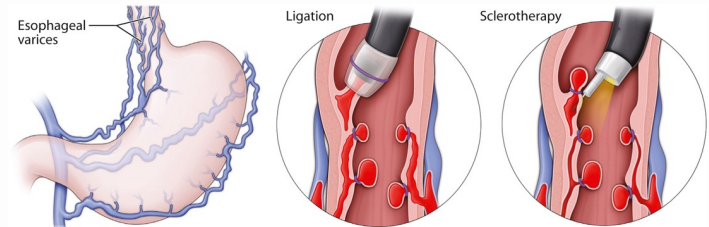


Figure 2. (DOI: <https://doi.org/10.1016/j.gie.2016.12.026>)

Treatment

Primary Management goals: hemodynamic stability, adequate oxygenation, bleeding control, and preventing further complications.

IV fluid resuscitation should be started immediately, specifically with 2 large bore IVs if the patient is hemodynamically unstable. Supplemental oxygen should be provided via nasal cannula or endotracheal intubation if the patient is actively vomiting blood or if the oxygen saturation does not recover with nasal cannula. Prophylactic antibiotics should be given prior to endoscopy; broad-spectrum antibiotics such as ceftriaxone is a popular choice. Somatostatin analogs such as octreotide should be given simultaneously due to their inhibitory effect on vasodilator hormones, thus reversing the splanchnic vasodilation which contributes to portal hypertension and worsens prognosis with variceal bleeding. These quick measures help restore the patient's hemodynamic status and promote hemostasis.²

Upper endoscopy should be performed within 12 hours to confirm variceal bleeding. If present, treat with endoscopic variceal ligation (EVL) and then endoscopic sclerotherapy if EVL fails. These procedures are effective in 70-90% of patients. However, if the patient continues to bleed, then a balloon tamponade or esophageal stent may be placed temporarily in preparation for more definitive measures such as TIPS or surgery.²

Treatment (continued)

Prophylactic measures for variceal bleeding include pharmacologic therapy with a non-selective beta blocker (NSBB) or EVL. These measures are most effective in two groups: (1) small varices PLUS red wale sign or Child class B or C and (2) medium or large varices. While they can help reduce risk of future bleeding episodes, they have no effect on mortality.³

NSBBs such as propranolol or nadolol have been shown to relieve portal hypertension by combating splanchnic vasodilation via unopposed alpha-mediated vasoconstriction. Dosage modifications should be considered in patients with systemic hypotension and/or renal insufficiency. This approach has a great prognosis for patients with a first variceal bleed due its effect on reducing HPVG.³

EVL is another prophylactic measure that reduces risk but should be performed by an experienced endoscopist. A 2011 meta-analysis of 1023 patients across 12 trials showed no significant difference between the prophylactic effects of EVL vs NSBB.³

Patients should follow up with regular endoscopic surveillance depending on their liver status. If ongoing liver injury, then every 1-2 years. If no ongoing injury, then every 2-3 years.³



About the Author

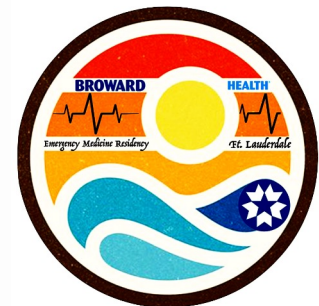
This month's case was written by Raihan Noman. Raihan is a 4th year medical student from FIU HWCOM. He did his emergency medicine rotation at BHMC in January 2022. Raihan plans on pursuing a career in Diagnostic Radiology after graduation.

References

1. Mallet M, Rudler M, Thabut D. Variceal bleeding in cirrhotic patients. *Gastroenterol Rep (Oxf)*. 2017;5(3):185-192. doi:10.1093/gastro/gox024
2. Sanyal, AJ. Overview of the management of patients with variceal bleeding. In: Runyon, BA, ed. *UpToDate*. UpToDate; 2021. Accessed January 23, 2022.
3. Sanyal, AJ. Primary and pre-primary prophylaxis against variceal hemorrhage in patients with cirrhosis. In: Runyon, BA, ed. *UpToDate*. UpToDate; 2021. Accessed January 23, 2022.

Take Home Points

- **Variceal hemorrhage should be suspected in cirrhotic patients presenting with upper GI bleeding (most common cause in this population).**
- **Monitor hemodynamic status and manage with IV fluids, IV prophylactic antibiotics (e.g. ceftriaxone), and IV octreotide prior to endoscopic evaluation.**
- **Secondary prophylaxis includes non-selective beta blocker (e.g. propranolol, nadolol) and/or endoscopic variceal ligation.**
- **Assess liver status and recommend endoscopic surveillance accordingly.**



 @browardem