

Introduction

Aorto-esophageal fistula (AEF) is a rare, usually fatal cause of upper gastrointestinal bleeding (UGIB) that occurs when there is a direct connection between the aorta and the esophagus. It can result as a complication of esophageal cancer.

Case Presentation

A 63-year-old male presented for sudden-onset hematemesis. In the ER, he was actively hemorrhaging and had lost approximately 1-2 liters of blood within minutes. Massive transfusion was initiated. He lost pulses but return of spontaneous circulation was quickly achieved. A nasogastric (NG) tube was placed for decompression but was later clamped during the resuscitative efforts. He was intubated and admitted to the medical ICU for management. The patient was recently diagnosed with invasive squamous cell carcinoma of the esophagus, described as a necrotic, penetrating, 7 cm mass in the middle third of the esophagus. It was classified as T4N1 and was abutting the aorta. He completed radiation and chemotherapy four months prior. Given suspicion for aortic involvement, CT-angiogram of the aorta was performed and demonstrated an esophageal mass inseparable from the anterior wall of the descending thoracic aorta with a penetrating ulcer and a linear focus of extraluminal contrast extending anteriorly towards the esophagus (Figures 1 & 2). The findings were concerning for AEF. The patient underwent emergent thoracic endovascular aneurysm repair (TEVAR). Though he survived the immediate post-operative period, he developed bacteremia and septic shock. He ultimately expired two weeks later.



Figure 1: A thin, linear focus of extraluminal contrast extending anteriorly from proximal portion of the descending aorta

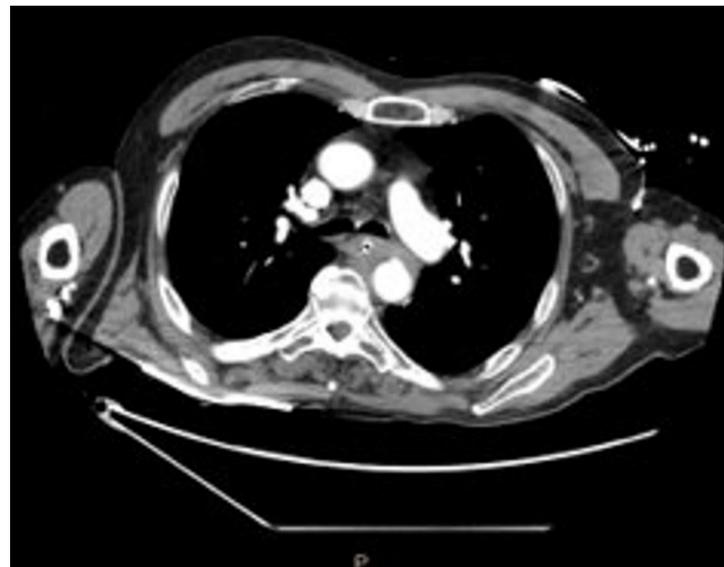


Figure 2: An anterior convexity to the wall of the thoracic aorta, representing a penetrating ulcer or focal pseudoaneurysm

Discussion

AEFs can occur in patients with esophageal cancer via direct tumor infiltration and radiation injury. Radiation therapy causes damage to endothelial cells, fibrosis of intima, thrombosis of capillaries, and necrosis of the vessel wall, all of which contribute to fistula formation. AEFs can occur in 10-30% of patients with esophageal cancer receiving radiation therapy. Patients may first present with small episodes of hematemesis, then a bleeding-free period of hours to weeks, followed by a final, sudden episode of massive UGIB. Our patient remained relatively normotensive despite massive hemorrhaging. We theorized that clamping his NG tube allowed enough blood accumulation in the esophagus to inadvertently tamponade the fistula. This was demonstrated on CTA, which showed evidence of a fistula but no active contrast extravasation into the esophagus at the time the imaging was performed. Endovascular stenting can urgently repair defects in the aorta, however definitive management requires surgical resection. Most patients with AEF exsanguinate prior to intervention. Those who do undergo successful surgical repair are at high risk for developing life-threatening sepsis, spinal cord ischemia, aortic perforation, and stenosis/migration of the stent. Therefore, even with early detection and intervention, the mortality rate of AEF is still extremely high.

Conclusion

In patients who have a history of esophageal carcinoma who present with massive UGIB, AEFs should be suspected early on to ensure prompt intervention.