Primary Pseudoaneurysm of the Descending Aorta

Saulat H. Fatimi · Anum I. Malik · Awais Ashfaq · Naquiya Murtaza

Received: 11 October 2010 / Accepted: 16 January 2013 / Published online: 29 January 2013
© Association of Surgeons of India 2013

Abstract Aorto-esophageal fistula (AEF) is an atypical cause of massive hematemesis proving to be lethal if left untreated. We report a case of a 56-year-old man who presented with chest pain and hematemesis. He was diagnosed with pseudoaneurysm of the descending aorta and underwent open surgery for primary repair.

Keywords Tracheoesophageal fistula/surgery · Aneurysm false/complications · Aneurysm false/mortality · Aneurysm false/surgery

Introduction

Aorto-esophageal fistula (AEF) forms 0.08 % of all causes of upper gastrointestinal hemorrhage [1]. Where thoracic aortic aneurysms are found to be the most common cause of primary AEF [2], exclusion of aortic transections [3] and aortic coarctation repair [4] have also been implicated.

We report a case of a 56-year-old man who was initially diagnosed with thoracic aortic pseudoaneurysm based on computed tomography (CT) imaging. AEF was found intraoperatively.

Case Summary

A 56-year-old man presented with complaints of chest pain radiating to the back, cough, and hematemesis since the last 24–36 h. He was transferred to our institution

where the preliminary diagnosis of pseudoaneurysm, measuring 4×6 cm, of the descending aorta was made based on the CT done at the previous hospital. There was no significant previous medical or surgical history. Baseline investigations showed anemia and leucocytosis. Liver functions and coagulation profile were normal. Thereafter, he was admitted for an emergent surgical repair of pseudoaneurysm.

Left thoracotomy was performed; proximal and distal control of the aorta was established, and the pseudoaneurysm was opened. It contained necrotic material and surrounded a torn posterior intercostal artery (see Fig. 1). A fistulous opening, about 0.8–1 cm, was found in the posterior wall of the aorta, communicating with the esophagus (see Fig. 2). The durations of surgery and aortic cross-clamping were 110 and 70 min, respectively.

T-tube drainage of the esophagus was performed, the defect was closed by a pleural flap, and the aortic defect was stitched directly. The patient was completely stable until the fourth postoperative day when he started experiencing multiple episodes of hypoxia at separate time intervals; the cause for which could not be identified, and for that, he had to be repeatedly intubated, which led to a tracheostomy. Ultimately, he became febrile on the eighth postoperative day. Blood and tissue cultures of the thoracic aorta came out positive for *Stenotrophomonas maltophilia*, *Candida albicans*, *Pseudomonas aeruginosa*, methicillin-resistant *Staphylococcus aureus*, and *Acinetobacter*. The patient maintained a normal urinary output during this time.

On the 12th postoperative day, the chest and nasogastric tube drained blood with fresh bleeding from the mouth. The patient was rushed to the theater for a second thoracotomy. The bleeding site was identified from the aorta at the previously repaired site where the sutures had cut through the wall. The esophagus was noted to be healing normally. The aorta was repaired with interrupted sutures, and the wound was closed in layers.

S. H. Fatimi
Division of Cardiothoracic Surgery, Department of Surgery,
The Aga Khan University, Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan

A. I. Malik · A. Ashfaq (✉) · N. Murtaza
Medical College, The Aga Khan University, Stadium Road,
P.O. Box 3500, Karachi 74800, Pakistan
e-mail: ashfaq.awais@gmail.com

Fig. 1 Necrotic material contained within the pseudoaneurysm

Nevertheless, the patient's condition deteriorated, and 2 weeks later, he became unresponsive and went into bradycardia and asystole. He was eventually pronounced dead on the same day. The cause of death was assessed as multiorgan failure and cardiopulmonary arrest after a prolonged state of sepsis.

Discussion

Pseudoaneurysms of the thoracic aorta are a rare cause of AEF. To our knowledge, this is the second case of AEF due to primary descending aortic pseudoaneurysm to have been reported.

In the first case, the patient developed pseudoaneurysm due to a rare tropical disease [5]. In our case, it was thought to have developed from subclinical esophageal injury that eroded into the posterior intercostal artery originating from the aorta. This was primarily based on the condition of the necrotic fistulous tract that seemed to originate from esophagus tapering toward the aorta. A hematoma was thus created, which later eroded into the aorta causing the pseudoaneurysm.

Fig. 2 Nasogastric tube can be visualized through the posterior wall of the pseudoaneurysm, confirming the presence of AEF

Our patient's postoperative course was marred by episodes of hemorrhage and hypoxia. Poor healing led to cut through sutures, which necessitated a reopening. He developed mediastinitis and multiorgan failure and eventually developed sepsis despite aggressive antibiotic and antifungal therapy.

Literature reveals two cases in which AEFs developed due to secondary pseudoaneurysms of the thoracic aorta [4, 6]. Surgical management of such fistulas entails a high rate of mortality and morbidity. Major treatment modalities currently in practice include open surgical repair and endovascular stent-graft placement.

Though opinion remains divided, open surgical repair has been recommended for patients in good health presenting with clinical signs of infection [7]. The cases reported were managed by diverting the aorta away from the site of the fistula using visceral decompression [4], endovascular stent placement [1, 5], and primary closure of the fistula [6]. Even though endovascular techniques have been considered superior in terms of postoperative morbidity and provide enough window to control for infection, we refrained from it because the surgical field was considered to be highly infected, and in our experience, primary closures usually have very good outcomes over a prosthesis placement.

Literature from similar clinical settings as ours was not available possibly due to rarity of such a presentation. Because the patient's past medical records were not available, we were unable to evaluate the onset of symptoms and early course of disease.

Conclusion

Provided its rare occurrence, the diagnosis of AEF requires high suspicion and is one of exclusion. Because the hematoma involved is massive and lethal, emergent surgical intervention is indicated. Left alone or treated medically, AEFs are consistently fatal.

References

1. Xia M, Guo J, Zhan Q, Yan J (2007) Aorto-esophageal fistula caused by descending aortic pseudoaneurysm: one case report. *Chin Med J* 120:2149–2150
2. Reardon MJ, Brewer RJ, LeMaire SA, Baldwin JC, Safi HJ (2000) Surgical management of primary aorto-esophageal fistula secondary to thoracic aneurysm. *Ann Thorac Surg* 69:967–970
3. Hance KA, Hsu J, Eskew T, Hermreck AS (2003) Secondary aorto-esophageal fistula after endoluminal exclusion because of thoracic aortic transection. *J Vasc Surg* 37:886–888

4. Santo KC, Guest P, McCafferty I, Bonser RS (2007) Aorto-esophageal fistula secondary to stent graft repair of the thoracic aorta after previous surgical coarctation repair. *J Thorac Cardiovasc* 134:1585–1586
5. Patel MA, Schmoker JD, Moses PL, Anees R, D'Agostino R (2001) Mycotic arch aneurysm and aorto-esophageal fistula in a patient with melioidosis. *Ann Thorac Surg* 71:1363–1365
6. Okita R, Mukaida H, Takiyama W, Oheda M, Uchida N, Ishihara H (2005) Successful surgical treatment of aorto-esophageal fistula after esophagectomy. *Ann Thorac Surg* 79:1059–1061
7. Flores J, Shiiya N, Kuniyama T, Yoshimoto K, Yasuda K (2004) Aorto-esophageal fistula: alternatives of treatment, case report and literature review. *Ann Thorac Cardiovasc Surg* 10:241–246