Case Report

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Treatment of a thoracic aortic aneurysm-related aortoesophageal fistula

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ABSTRACT

In this article, we report a successful surgical treatment of an aortoesophageal fistula with aortic coarctation and a thoracic aortic aneurysm complicated with hemorrhagic shock and sepsis. The resection of the diseased segment of the thoracic aorta with further extra-anatomic reconstruction by axillo-aortic bypass from the left axillary artery to the infrarenal abdominal aorta and an esophageal stent implantation were performed.

Keywords: Aortoesophageal fistula, axillo-aortic bypass, coarctation of aorta, thoracic aortic aneurysm.

An aortoesophageal fistula (AEF) is a rare and usually life-threatening pathology. Decision on the optimal treatment method mainly depends on the aortic disease, esophageal lesion, presence of sepsis, and other associated conditions. The main causes of AEFs are ruptured aortic aneurysms, foreign body ingestion, esophageal malignancies, and postoperative complications after aortic surgery.[1,2]

Herein, we report a case of AEF complicated with hemorrhagic shock and sepsis which was successfully treated.

CASE REPORT

A 22-year-old male patient had a history of fever during the last 20 days which was resistant to medical treatment. He was admitted to an external center due to hematemesis. Two days later, he was referred to our hospital with hemodynamic shock and sepsis. Computed tomography angiography (CTA) revealed an AEF, coarctation of the aorta, post-stenotic thoracic aortic aneurysm, and abscess around the aneurysm (Figure 1). Based on the worsened hemodynamic status with ongoing sepsis, an emergency surgery was decided. A written informed consent was obtained from the patient.

The procedure was performed under general anesthesia via a left thoracotomy without cardiopulmonary bypass. Intraoperative findings confirmed the diagnosis of AEF, coarctation, and thoracic aortic aneurysm with abscess around it. Mobilization of the aortic arch, left subclavian artery, descending aorta, and all departing branches from the aneurysm was achieved. The aorta was clamped proximally and distally. Due to the highly infected thoracic cavity with ongoing sepsis, we decided to perform staged surgery. Coarctation and aneurysmal tissue were resected with aggressive debridement of the surrounding tissue and both ends of the aorta were sutured and buttressed with pledged sutures. Then, extra-anatomic anastomosis was performed from the left axillary artery through subcutaneous tunneling posterolaterally and retroperitoneally to the infrarenal abdominal aorta with a 10-mm Dacron graft (Figure 2). The defect on the esophagus was not closed during this procedure and a silicone nasogastric tube was inserted.

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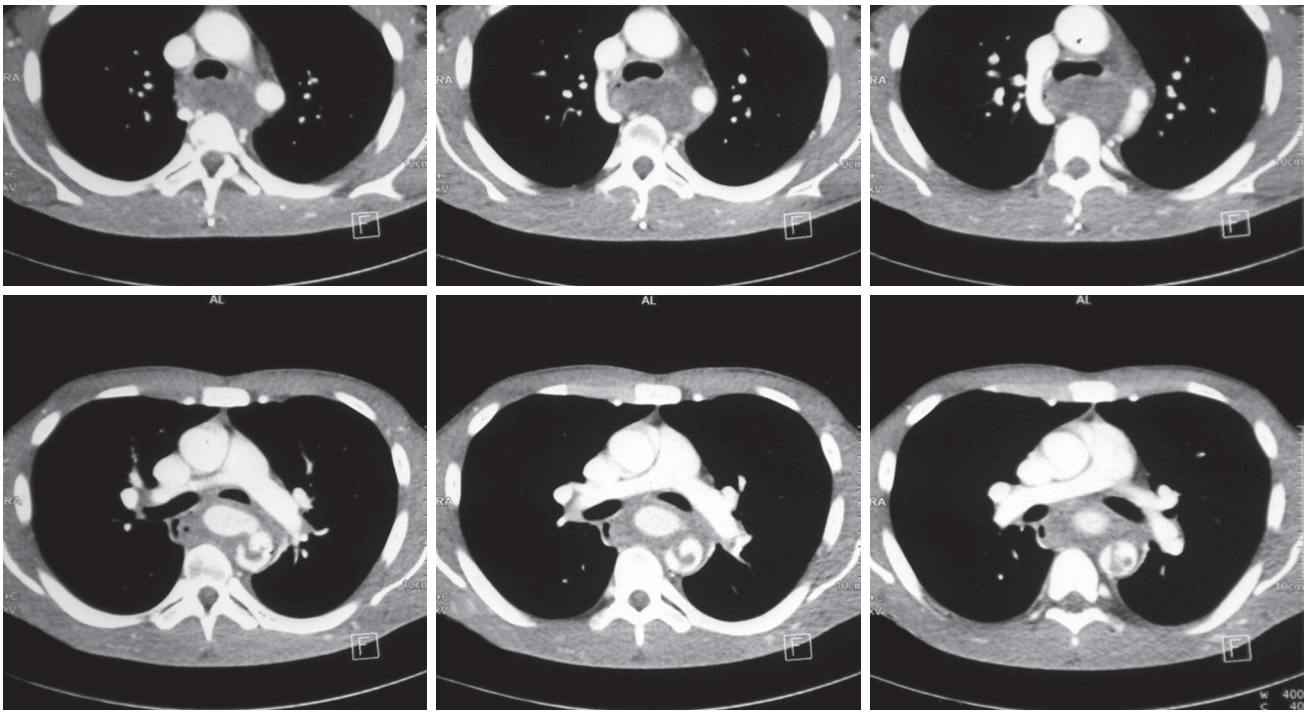

Figure 1. Computed tomography angiography images of aortoesophageal fistula, coarctation of aorta, and abscess around aorta, compressing esophagus.

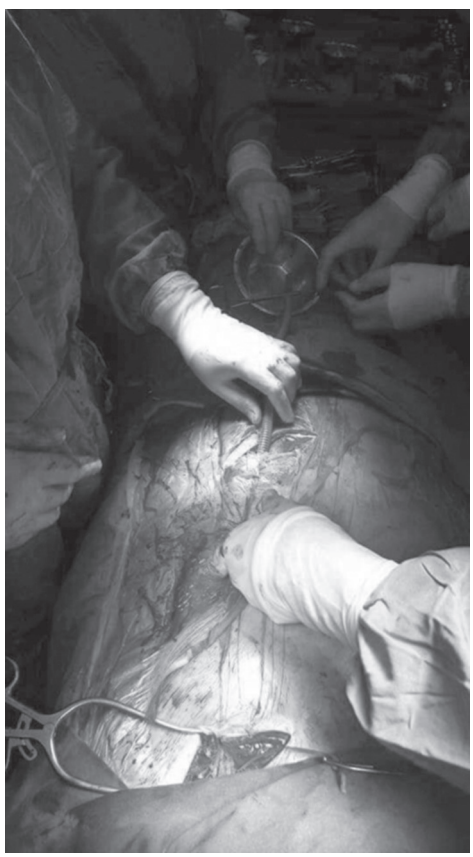

Figure 2. Extra-anatomic left axillary artery-infrarenal aorta bypass with a 10-mm Dacron graft.

After surgery, the patient was doing well. On the postoperative Day 11, esophageal stenting was performed. During postoperative period, he had repeated fever. Control CTA on postoperative Day 15 revealed new abscess around the esophagus and aorta. The patient underwent abscess drainage surgery by re-thoracotomy on postoperative Day 21. The following days were uneventful, and the patient was discharged from the hospital on postoperative Day 28. However, he was readmitted two months later for esophageal stent removal and presented bleeding during the procedure and was treated conservatively with no need for surgery. He was discharged three days after stent removal with antibiotherapy for six months. The patient was doing well at his regular follow-ups, the latest being four years after surgery.

DISCUSSION

An aortoesophageal fistula is a rare and life-threatening pathology which causes upper gastrointestinal system bleeding and infection of the mediastinal cavity. Surgical treatment for AEFs yields better results than conservative management.[1,3] Many authors recommend staged repair of AEF.[2] Some authors, however, propose omental flap coverage in AEF treatment. It is well-known that the most

significant clinical condition affecting long-term survival of patients after surgery is persistent esophageal fistulas and associated sepsis.[4,5] It is difficult to avoid the contamination of the operative field or the residue of infected tissue during the operation. Consequently, the risk of graft infection is quite high after an *in situ* reconstruction. Performing an extra-anatomic bypass grafting is a good alternative to avoid the infection of the graft.[4,6,7] In our case, we chose an extra-anatomic axillo-aortic bypass approach. The axillary artery is a good inflow source. We can expect a flow close to that obtained with a bypass from the aorta. In general, an 8 to 10-mm graft is enough to obtain adequate flow to the lower body. To perform axillary bypass, it is not necessary to clamp the carotid artery.

In AEFs, there are various options for the esophageal repair from simple suture to total esophagectomy. Esophageal repair should be individualized based on the extent of esophageal wall necrosis. Since the esophagus in our case was found to be highly infected and poorly viable, we preferred to intervene later and performed an esophageal stent implantation on postoperative Day 11. This strategy also shortened the operation time during the first operation.

Currently, there are many surgical options and surgeons must be aware of all options of repair to apply any option to whatever the situation dictates. Extra-anatomic bypass and esophageal stent implantation are helpful alternatives to reduce the infection risk of the graft and operation time.

In conclusion, repair of AEFs secondary to thoracic aortic aneurysms and associated coarctation of the aorta, with long-term survival, continues to be an unusual occurrence with most patients dying prior to diagnosis. The cornerstones of aortic fistula management are early diagnosis and a treatment approach adjusted to the fistula's etiology individually. Despite our case's presentation with associated high-risk factors such as sepsis and hemorrhagic shock, we conclude that early diagnosis, the decision on emergency surgical intervention, and optimal critical care management with prolonged antibiotic coverage may contributed to successful outcomes.

Declaration of conflicting interests

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REFERENCES

1. Roten R, Peterfy R. Aortoesophageal fistula. Clin Pract Cases Emerg Med 2017;1:260-1.
2. Kubota S, Shiiya N, Shingu Y, Wakasa S, Ooka T, Tachibana T, et al. Surgical strategy for aortoesophageal fistula in the endovascular era. Gen Thorac Cardiovasc Surg 2013;61:560-4.
3. Nakamura T, Yamamoto M, Yamazato T, Kanaji S, Takahashi H, Inoue T, et al. Surgical strategy of esophageal resection and reconstruction for aortoesophageal fistula. Dis Esophagus 2017;30:1-7.
4. Yang Y, Hu D, Peng D. Primary aortoesophageal fistula: A fatal outcome. Am J Emerg Med 2018;36:343.
5. Hsu RB, Chen RJ, Wang SS, Chu SH. Infected aortic aneurysms: clinical outcome and risk factor analysis. J Vasc Surg 2004;40:30-5.
6. Madan AK, Santora TA, Disesa VJ. Extra-anatomic bypass grafting for aortoesophageal fistula: a logical operation. J Vasc Surg 2000;32:1030-3.
7. Yamashita Y, Tatewaki H, Matsumoto T, Shiose A. Axillo-iliac artery bypass for recurrent aortic coarctation to reduce cardiac afterload. Interact Cardiovasc Thorac Surg 2018;27:626-8.