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Surgical treatment of aorto-esophageal fistula associated with thoracic aortic aneurysm

Abstract

Aorto-esophageal fistula (AEF), associated with thoracic aortic aneurysm and aortic coarctation, is a rare and potentially fatal pathology. We present the results of successful aneurysm resection and aneurysm surgery CPB less in a patient diagnosed with thoracic aortic aneurysms and AEF, which has appealed to us in the case of hemodynamic shock and sepsis.

Keywords: Aorto-esophageal fistula, thoracic aorta aneurysm, aorta coarctation

INTRODUCTION

Aorto-esophageal fistula (AEF) is rare and usually life-threatening pathology. Decision on the optimal treatment depends on the presence of aortic disease, esophageal lesions, sepsis and other co-morbidities. The main causes of AEF are aortic aneurysm, foreign injury, esophageal malignancy (tumor) and postoperative complications of aortic surgery (1,2).

Presented by us the patient was operated in two stages: (1) resection of the aortic coarctation and aneurysmal section, axillo-aortic shunt, drainage of the abscess, and subsequent esophageal stenting (2).

Presentation of the clinical case

A 22-year-old male patient had persistent fever, resistant to treatment, for the past 20 days. He was transferred to the other hospital due to hematemesis. Two days later, the patient was transferred to intensive care unit of our hospital with hemodynamic shock and sepsis. He was unconscious, when he entered. In the blood analysis the level of Hemoglobin was 6.5 mg/dL and blood transfusion was begun to the patient.

Gastroscopy and CTAngio (Figure 1) were performed due to increased hematemesis at bedtime.

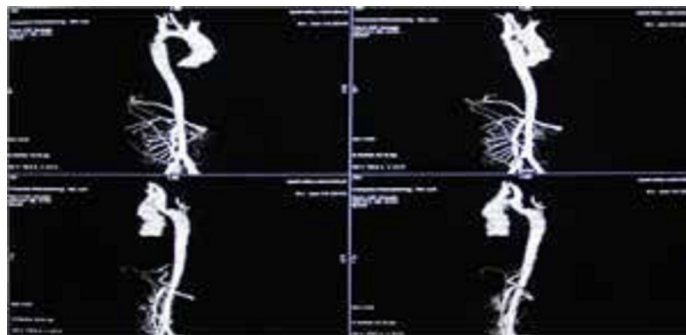


Figure 1. Thoracic aorta aneurysm, Aortic coarctation, Abscess that compresses the esophagus in paraesophageal and paratracheal area

In CTAngio was found AEF, aortic coarctation, thoracic aortic aneurysm and abscess around it. According to the deterioration of the general patient's condition, taking account of vital signs, it was decided to perform emergency surgery.

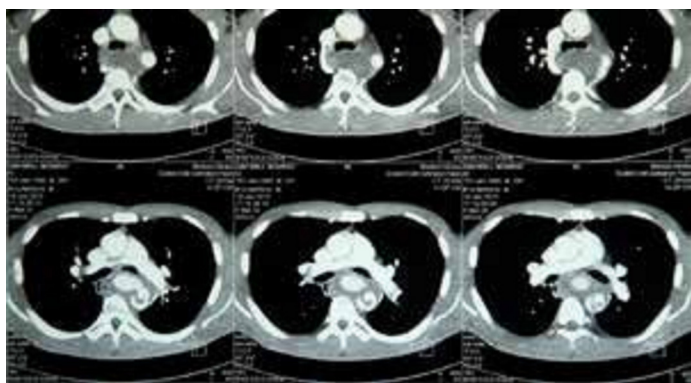


Figure 2. An esophageal fistula appears around the descending aorta

Surgical intervention

Left thoracotomy was performed under the general anesthesia and selective single pulmonary ventilation. Thoracic aorta was visualized, coarctation and aneurysm were seen, proximal and distal areas were rotated with a tap, heparin was injected and the aorta was crossed. Because of well-developed collaterals, the surgery was performed without a pump. The damaged area of the aorta was resected, and the aorta was closed with buttered sutures. Because of severely infected area, it was decided to perform an extraanatomic axilloaortic anastomosis. Initially, a proximal anastomosis was performed between the 10 mm Dacron graft and the left axillary artery. Then the graft was anastomosed to the infra renal region of the aorta by posterolateral and retroperitoneal tunnelling (Figure 3).



Figure 3. Surgical intervention. Extraanatomic axillo-aortic bypass

It was seen that the paraesophageal and paratracheal area filled with abscess and necrotic tissue; taking account that this part of the esophagus had eroded segment, was decided not to repair the esophagus at the same stage. It was performed the extensive debridement and abscess was drained, the area was washed with

antibiotics. The wound was sewed according to the layers. The patient was transferred to the resuscitation and intensive care unit.

The patient was extubated on the first day of postoperative period. On the fifth day of the postoperative period, after assessing hemogram and the other hemodynamic parameters, he was transferred to the ward. In response to blood and necrotic tissue culture, Methicillin Susceptible *Staphylococcus Aureus* (MSSA) was increased and antibiotic regimen was adjusted. On the eleventh day after the operation, the patient received a Hanaro ezophageal stent implant.

On the 15th day after operation, on a control CT scan a small abscess was found again and initially treated with medications, but during 6 days was no effect, and on the 21th of day of the postoperative period the patient underwent retoracotomy, and abscess was drained. The following days were stable, with no recurrent fever, and the patient was discharged home on the 28th day postoperatively. Two months later, he was hospitalized again for removal of the esophageal stent. When the stent had being removed there was bleeding, but the bleeding stopped completely with medical treatment. The patient was discharged home in good condition. The patient received antibiotic therapy for 6 months. Since then, the patient follow-up persistently. Duration of follow-up is 6 years. The patient feels extremely well.

Which leads to develop the myxomatous muscular fibrous tissue in the inner and middle coat of the subclavian artery (Figure 3), represented by proliferating cellular elements, with the formation of loose connective tissue (CT) around them, containing a large number of thin CF.

DISCUSSION

AEFs are a life-threatening conditions, their's outcomes are usually determined by the etiology of the fistula. Bleeding from aortic fistula can be prevented by two ways: both open and endovascular, but the risk of death is very high due to infectious complications. Chiari, identified the AEF trio in 1914: it consisted of pain in the middle of the chest, sentinel bleeding and subsequent changes (2).

The earliest occurrence of hematemesis is sentinel bleeding and subsequent hematemesis. The earliest occurrence of hematoma is sentinel hemorrhage, followed by hemorrhage. The first hematemesis is called sentinel hemorrhage, or heraldic bleeding. Then the patient becomes stable until the next hemorrhage. Severe bleeding usually results in death. There is an asymptomatic interval between heraldic hemorrhage and subsequent hemorrhage, and bleeding does not recur in most patients. Stopping the bleeding allows for successful repair of many AEFs.

Endoscopy and chest computed tomography are our selection procedures for the diagnosis of AEF and co-morbidities. CT scans are especially helpful in visualizing the abscess cavity and its association with AEF.

In cases of AEF resulting from an aortic aneurysm, the aneurysm should be resected and an extraanatomic anastomosis performed to prevent the possibility of graft infection (3). Although, early death is usually the result of bleeding or operative complications, long-term survival depends on the prevention of intrathoracic sepsis and graft infection. The choice of antibiotic depends on the outcome of the planted culture.

Urgent left thoracotomy provides the most convenient way to control the aorta proximal and distally. After confirming the diagnosis of AEF, we decided to perform the operation in two stages: 1) resection and repair coarctation of the aorta aneurysm, and 2) treatment of the esophageal injury.

Repair of the esophagus should be individualized according to the degree of necrosis of its wall (3,4). Because of, our patient's esophagus highly infected and high wall necrosis was found, we decided to perform the operation in two stages. Whenever possible, the one-stage repair simplifies the procedure and promotes early recovery of ingestion function.

The etiology of AEF affects medium- and long-term outcomes. If the underlying cause of AEF is not removed, medium and long-term outcomes are unpleasant. Sepsis and hemodynamic instability at admission are the main factors affecting the patient's postoperative outcomes and nosocomial mortality.

In patients, receiving conservative treatment mortality was 100%. The literature notes that the management of the patients with an infected aorta aneurysm (especially *Staphylococcus aureus* infection) and aortic rupture is particularly difficult (5,6).

Regardless of the type of surgery chosen, most patients are at the high risk of infectious complications. The literature notes that long-term antibiotic treatment is recommended (5), especially in the patients treated endovascularly or when all necrotic and infected tissues can not be completely resected. Discontinuation of antibiotic treatment may be decided in absence of clinical, bacteriological, or radiological evidence of ongoing sepsis.

CONCLUSION

Treatment of AEF after aortic aneurysm and coarctation, and

long-term outcomes about them are very rare in literature. Many of these patients die before they are diagnosed. But in most operated patients are met postoperative infection complications. The basic principles of management of aortic fistulas are early diagnosis and treatment according to the etiology of this fistula. Because our patient approached us with high risk factors as such sepsis and hemorrhagic shock, we believe that timely diagnosis, emergency surgical intervention, and long-term antibiotic treatment contributed to a successful outcome.

Conflict of Interests: The author declares that there are no conflict of interests.

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