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Case report - Cardiac general
Atrio-esophageal fistula complicating esophageal achalasia

Paul Achouha,c,d,*, Julia Poulya,c, Arshid Azarineb,c, Jean-Noël Fabiani,b,c,d

Abstract
A 75-year-old male, known to have achalasia, was admitted to the intensive care unit with massive upper gastrointestinal bleeding and sepsis. He had a history of purulent pericarditis 18 months earlier. He also presented with atrial fibrillation associated with a cerebral transient ischemic accident two months earlier. A contrast computed tomography scan showed an atrio-esophageal fistula with active extravasation of contrast. He was operated on via a median sternotomy, and the defects in the atrial wall, inferior vena cava and diaphragm were closed using pericardial patches. An esophagectomy was to be performed 24 hours later, but the patient died from septic shock and multiple organ failure before his second procedure.

Keywords: Cardiac; Esophagus; Fistula; Pericardium

1. Case report

Atrio-esophageal fistula is a rare but fatal complication of esophageal achalasia. We report the case of a 75-year-old male who was admitted to the intensive care unit with massive upper gastrointestinal (GI) bleeding and sepsis. His past medical history was positive for gastroesophageal reflux, hiatus hernia and iron deficiency anemia. He had undergone, 26 years earlier, a Heller myotomy to treat esophageal achalasia. 18 months earlier, he had presented with spontaneous infectious pericarditis due to Streptococcus viridans. He underwent surgical drainage through a subxiphoid approach and was treated with long-term antibiotics. The etiologic work-up for his pericarditis was negative. The patient did well afterwards except for his persistent anemia.

He had consulted his cardiologist two months earlier for atrial fibrillation associated with one episode of transient ischemic cerebral accident. Echocardiography was normal. He was started on antiarrhythmic treatment and oral antiocoagulation after an upper GI endoscopy and a colonoscopy ruled out active GI bleeding.

The patient was hospitalized for sepsis with positive blood cultures (Streptococcus oralis as well as Staphylococcus) and severe anemia. He was started on intravenous antibiotics and inotropes, and needed multiple blood transfusions. Upper GI endoscopy showed a large blood clot at the level of a distended lower esophagus as well as active bleeding.

A thoracoabdominal contrast computed tomography (CT)-scan showed a severely dilated esophagus, with active leak of contrast from the left atrium (LA) into the esophagus, suggestive of an atrio-esophageal fistula (Fig. 1).

Shortly afterwards, the patient presented with ST segment changes on electrocardiogram associated with troponin level elevation and apical lateral akinesia on echocardiography. He deteriorated hemodynamically and needed continuous blood transfusions. The decision was made to perform emergency heart surgery in order to treat the atrio-esophageal fistula and stop the bleeding as a first step. Performing an esophagectomy was to be considered once the patient had stabilized hemodynamically.

The patient was operated on through a median sternotomy. There were tight adhesions in the pericardium due to his past pericarditis. Under extracorporeal circulation and aortic cross-clamp, a left atriotomy was performed through the Sondergaard’s groove. The fistula was identified at the diaphragmatic portion of the left atrial wall, surrounded with necrotic tissue (Fig. 2a). Direct closure of the fistula through the LA was impossible due to the position of the fistula and the inflammatory nature of the tissue surrounding it, as well as the small size of the LA. The fistula was therefore, directly excised through an extracardiac approach, leaving three round defects in the LA, the inferior vena cava, and the esophagus. The latter had perforated the diaphragm and fistulated into the pericardium and then into the LA. The esophageal mucosa was in continuity with the pericardial cavity. The three defects were closed using equine pericardial patches (Fig. 2b). After profuse pericardial washout, extensive pericardial
drainage was applied according to our protocol for the treatment of mediastinitis, and the chest was closed. The patient died on postoperative day one due to septic shock and multiple organ failure.

2. Discussion

Atrio-esophageal fistula is a rare complication of esophageal achalasia [1, 2]. Most have been described after radiofrequency ablation for the treatment of atrial fibrillation [3, 4]. Atrio-esophageal fistula usually presents with either upper GI bleeding or purulent pericarditis. In our patient, the erosion of the esophagus into the pericardium had caused the purulent pericarditis that had occurred 18 months earlier. The erosion and then fistulization of the esophagus into the LA explains the atrial fibrillation as well as the transient neurological deficit that followed. The diagnosis of atrio-esophageal fistula is frequently made intraoperatively or post mortem. The ‘aquarium sign’ on echocardiography [5], due to the presence of air in the LA, was not found in our patient. Almost all atrio-esophageal fistulas are fatal.

Two cases of survival have been reported after surgical treatment. In one case [6], a 46-year-old man presented with retrosternal pain and pneumopericardium on chest X-ray. The contrast CT-scan showed a communication between the distal Barrett’s esophagus and the pericardial sac. Endoscopic stenting of the distal esophagus was first performed using a coated self-expandable metallic stent. A nasogastric feeding tube was inserted during the same endoscopic procedure. The pericardial side was then closed using an autologous pericardial patch.

In another case [7], a 70-year-old woman had a history of esophageal cancer treated with brachytherapy,
radiotherapy and chemotherapy, leading to radiation stricture. She presented with massive uncontrollable upper GI bleeding two weeks after an esophageal dilation procedure. The atrio-esophageal fistula was diagnosed intraoperatively while performing a left chest esophagectomy. The atrial defect was sutured directly after opening the pericardium. In our patient, a surgical esophagectomy was planned, but the patient was unstable hemodynamically and died from septic shock before the second procedure.

References


