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CE - MEDICAL ILLUSTRATION

Esophago-pericardial fistula with development of hydro-pneumo-pericardium resulting in hemodynamic instability: an unusual complication of esophageal cancer

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Case report

A 75-year-old man, known to have advanced esophageal adenocarcinoma stage T4N7M0 since January 2015 previously treated with chemotherapy and radiation, presented with altered mental status and a 2-day history of worsening central chest pain associated with shortness of breath. His past medical history was significant for insulin dependent diabetes mellitus type 2 and hypertension besides the esophageal carcinoma. On presentation, the vital signs were temperature 37.3 °C, pulse 114 beats/min, blood pressure 82/54 torr, respiratory rate of 26 breaths/min, and oxygen saturation (SpO_2) of 92% on 6 l of oxygen by nasal cannula. On examination, he was barely arousable and confused. Precordial examination showed muffled heart sounds without any murmurs or added sound on auscultation. Pulmonary examination showed decreased breath sounds in the left lower zone. There was 1 + pedal edema in both lower extremities and the jugular venour pressure (JVP) was found to be elevated on neck examination. In the emergency department (ED), the patient became hemodynamically unstable, and his blood pressure dropped to 60/40 torr with further deterioration of level of consciousness. He was intubated, and required mechanical ventilation for protection of his airways. He was subsequently transferred to the intensive care unit (ICU) for further management. The initial laboratory workup showed a white blood cell count of 16.9 cells/mm^3 with neutrophils 80% and bands 5%, hemoglobin of 10.1 g/dl, hematocrit of 33%, platelets of 149/mm^3, serum creatinine of 1.4 mg/dl, serum blood urea nitrogen of 47 mg/dl, serum lactate of 3.6 mmol/L, ALT 254 U/l, AST 231 U/l, alkaline phosphatase 146 IU/l, bilirubin 1.6 mg/dl, albumin 2.1 g/dl. Electrolytes panel showed serum sodium 141 mEq/l, serum potassium 3.4 mEq/l, serum bicarbonate 21 mEq/l, and serum chloride 102 mEq/l. An initial chest X-ray study showed a large left pleural effusion and air overlying the heart within the pericardial sac (Fig. 1a). A CT scan showed erosion and fistula formation between the esophageal lumen and posterior pericardium (Fig. 1b) with subsequent development of a complex pericardial effusion with the air. The patient required vasopressors, and was placed on broad spectrum antibiotics. Interventional gastroenterology was consulted for placement of an esophageal stent to control the esophageal leak, as the patient was not a good surgical candidate. Before placement of the stent, cardiothoracic surgery was consulted to place a pericardial catheter to drain air and fluid from the pericardial sac. As the catheter entered the pericardial sac, a significant amount of the air was released along with light yellow colored fluid. Fluid analysis revealed that the fluid was transudative in nature. A left side chest tube was also placed for the complicated pleural effusion. Pericardial catheter placement was also intended to prevent cardiac tamponade that might result from air insufflation during the stent placement. Patient remained in the ICU for 5 days. Because of a good functional status of the patient before admission and advanced directive to continue with life sustaining measures, the family was reluctant to opt for comfort measures from the beginning. Vasopressors were weaned off, but patient remained dependent on the mechanical ventilator. He remained oliguric during his stay in the ICU, and his creatinine continued worsening and reached 4.6 mg/dl. The nephrology service recommended hemodialysis, but the family opted to withdraw life-sustaining treatment after being counselled and convinced by the palliative care team about the overall poor prognosis of the patient.

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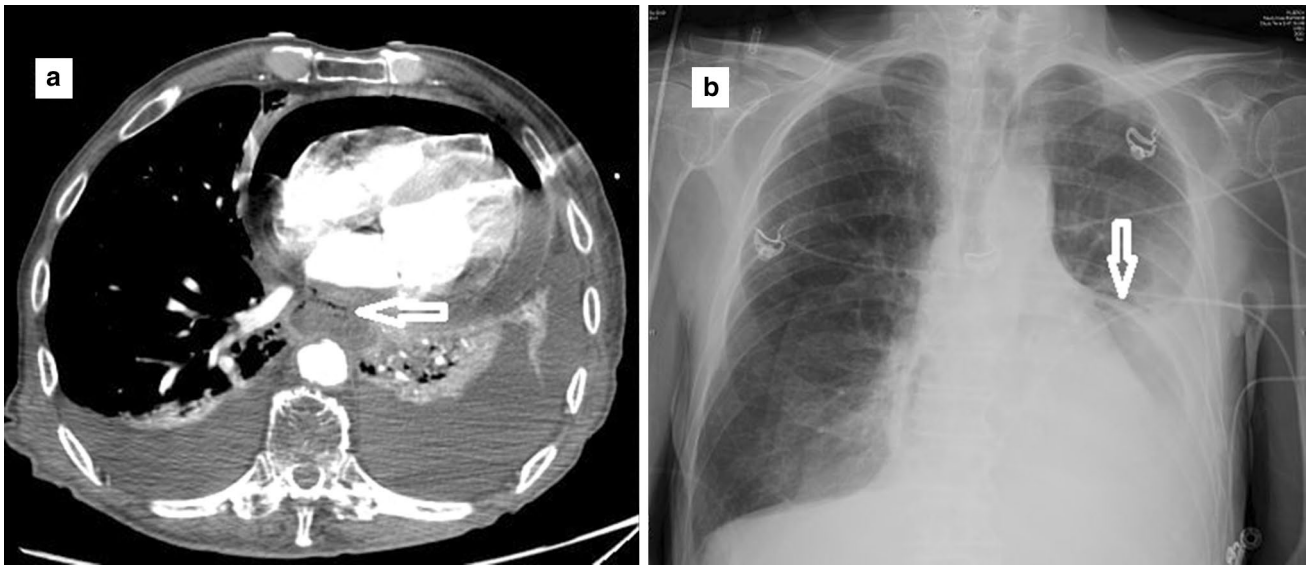

Fig. 1 **a** Chest X-ray study showing a large left-sided pleural effusion with air inside the pericardial sac (marked by arrow). **b** CT scan of chest (axial view) showing the fistula (marked by arrow) between the esophagus and posterior wall of the pericardium with hydropneumopericardium

The palliative care team was onboard and in discussion with the family from the beginning.

Discussion

Esophago-pericardial fistula (EPF) is an abnormal tract between the esophagus and pericardium. EPF is mostly related to benign esophageal diseases, esophageal ulcers, reflux esophagitis, foreign body impaction and esophageal perforation [1, 2]. Esophago-pericardial fistula and hydropneumopericardium are rare but serious complications of locally advanced distal esophageal adenocarcinoma, and carries a grave prognosis [3, 4]. Most of the patients with EPF develop purulent pericarditis and require thoracotomy as a definitive management along with antibiotics. Patients having EPF in the setting of malignancy are often not good candidates for aggressive surgical interventions, and need palliative care. The quality of life can be improved with resumption of oral feeding by prosthesis implantation in the esophageal cavity. In the age of interventional endoscopic procedures, it is important to consider a pericardial catheter placement in cases of esophago-pericardial fistula before any endoscopic attempt is made to prevent cardiac air tamponade.

Compliance with ethical standards

Conflict of interest The submitting author declares on behalf of all co-authors that we have no conflict of interest.

Research involving human and/or animal rights There were no research involved animals performed by any author. All procedures performed in human participants were approved by the ethical standards of the institutional committee and in accordance with the 1964 Helsinki Declaration and its later amendments.

Informed consent Informed consent was obtained from the legal representative of the patient included in the case report.

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