

# Pneumopericardium Complicating Esophageal Cancer

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## CASE REPORT

An 81-year-old man with a 2-year history of squamous cell carcinoma of the esophagus managed palliatively presented with breathlessness and purulent cough. Clinical examination revealed signs of pneumonia at the left lung base. He was hemodynamically stable. Heart sounds were dual, and the jugular contour was normal in both phases of respiration. Chest radiography demonstrated moderate pneumopericardium (Figure 1). This was confirmed on chest computed tomography (Figure 2). The patient was treated with intravenous antibiotics, and the pneumopericardium was managed conservatively in view of frailty and advanced esophageal carcinoma. He died 10 days later.



**Figure 1.** Erect chest x-ray demonstrating pneumopericardium.



**Figure 2.** Axial thorax noncontrast computed tomography confirming pneumopericardium.

Recognized causes of pneumopericardium include penetrating or blunt trauma to the chest wall, invasive pulmonary or cardiac procedures, fistulae to the pericardium (arising from abutting carcinoma or suppuration), barotrauma, and purulent pericarditis from gas-forming organisms.<sup>1,2</sup> It is often detected incidentally on routine imaging, and many resolve spontaneously. Key elements, which determine progression to cardiac tamponade and cardiovascular collapse, are the rate of air amassment relative to pericardial compliance and the

presence of intact compensatory mechanisms. Clinical signs are thus determined by pathophysiological trajectory. Auscultatory findings include muffled heart sounds and systolic crepitus arising from compression of air in the pericardial sac (Hamman's sign).<sup>2</sup> Subcutaneous emphysema may be palpable depending on the level and degree of communication.<sup>1</sup> Pulsus paradoxus heralds progressive constrictive physiology and poor prognosis.<sup>2</sup> Diagnosis can be reached using simple erect plain chest radiography to demonstrate a band of air surrounding the heart that clearly details the diaphragm.<sup>2</sup>

Treatment is focused largely on the underlying cause and its clinical severity. The condition often resolves spontaneously over a period of days, without dynamic embarrassment, and management should be expectant observation. However, if clinical features of pericardial tamponade develop, survival is contingent on immediate pericardiocentesis and surgical closure of the air-pericardial communication.<sup>2</sup>

Our case presents asymptomatic pneumopericardium in a patient with advanced esophageal carcinoma in which conservative management was appropriately pursued. We postulate that as a result of aggressive local invasion, an esophago-pericardial fistula formed and remained patent, allowing near-normal changes in intrapericardial pressure during both phases of the cardiorespiratory cycle and therefore no overt clinical features of tamponade or circulatory failure.

## DISCLOSURES

Author contributions: ZY Htet obtained the images, wrote the manuscript, and reviewed the literature. AKJ Mandal wrote and edited the manuscript and is the article guarantor. CG Missouri supervised the case report and edited the manuscript.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received August 12, 2018; Accepted November 12, 2018

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