

CASE REPORT

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A 67-year-old man with cardiac air tamponade: a case report

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Abstract: Pneumopericardium is a rare entity, primarily described as a result of causes such as penetrating/blunt trauma and procedures, aspergillosis, and diaphragmatic hernia. Malignancy history has also emerged as a new cause. A 67-year-old man with a history of active cancer presented to the emergency department with the chief complaint of shortness of breath and hemoptysis. He had low blood pressure and tachycardia along with hypoxia. The thoracic computed tomography (CT) imaging revealed a right pulmonary mass, central necrosis, and anterior pneumopericardium and gas adjacent to the right pericardial border. Patients with small, stable, asymptomatic pneumopericardium may be treated conservatively with close monitoring to prevent escalation to cardiac tamponade. Prompt decompression is advised if there are progressive symptoms, a concurrent pneumothorax, or cardiac tamponade.

Keywords: CT Scan; Lung Cancer; Pneumopericardium

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1. Introduction

Pneumopericardium is a rare entity, primarily described in the literature as a result of causes such as penetrating/blunt trauma and procedures, aspergillosis, and diaphragmatic hernia. Malignancy has also emerged as a new cause (1). We present a pneumopericardium case as a complication of locally advanced lung mass.

2. Case presentation

A 67-year-old man with a history of active cancer presented to the emergency department with the chief complaint of shortness of breath and hemoptysis. The patient had symptoms a few hours before presentation, such as worsening shortness of breath, cough, and hemoptysis.

He had squamous cell carcinoma in his right lung for the last three years for which he was under chemotherapy. The patient also had a history of hypertension and diabetes. On his physical examination, the vital signs on admission were as follows: blood pressure of 75/55mmHg, respiratory rate of 24 breaths/minute, heart rate of 92 beats/minute, oxygen saturation level of 85%, and temperature 37/2 Celsius.

The cardiac examination was significant for irregular heartbeats with regular S1 and S2. There was also jugular vein distension. Breath sounds were symmetric bilaterally.

Immediately, high-volume fluid therapy was started. A bed-

side echocardiogram was performed. On a sub-xiphoidal view, due to air around the heart inside the pericardium, a clear heart image could not be seen in the bedside ultrasound. As an incidental finding, the hypotension improved relatively when the patient was placed in the prone position. The thorax's computed tomography (CT) imaging was ordered (Figure 1).

It revealed a right pulmonary mass, central necrosis, and gas adjacent to the right pericardial border (arrow) and an anterior pneumopericardium (arrowhead).

Another CT scan was performed in the prone position (Figure 2).

The second CT imaging showed that air had moved to the posterior part of the pericardial cavity, putting less pressure on heart structures.

With the impression of cardiac tamponade, a heart surgery consultation was requested, and the patient was admitted to the intensive care unit. The patient underwent bronchoscopy on the next day, and a bronchial fistula was diagnosed that had probably entered the pericardial sac.

3. Discussion

It was a rare case of pneumopericardium due to lung cancer with subsequent development of cardiac air tamponade. Documented instances of pneumopericardium in patients



Figure 1 First CT scan



Figure 2 Second CT scan in prone position

with lung cancer are rare in the literature. Concurrent pneumomediastinum has been reported in one case (2). Coexisting pneumothorax was reported in three other cases. Reported causes of pneumopericardium are trauma, fistula formation between the pericardium and adjacent air-containing structures, barotrauma, pericardial infections, and some with iatrogenic origin (3). Cancers are also considered an essential cause of this condition; pneumopericardium due to lung cancer is proposed to be caused by one of the following mechanisms: formation of a bronchoscopy-pericardial fistula by direct pericardial invasion of a necrotic tumor (4). Iatrogenic trauma caused by procedures such as thoracentesis or bronchoscopy (5); and rupture of a bulla into the pericardium through a necrotic focus (4,6,7). In this

case, the tumor was believed to have directly invaded the right pericardial margin, and a bronchoscopy-pericardial fistula was the most likely cause.

Patients with small, stable, asymptomatic pneumopericardium may be treated conservatively with close monitoring to prevent escalation to cardiac tamponade. Prompt decompression is advised if there are progressive symptoms, a concurrent pneumothorax, or cardiac tamponade (8). Given his progressive symptoms and clinical evidence of cardiac tamponade, we decided to intervene in this patient.

The Prognosis is generally unfavorable due to complications (mediastinitis, tension pneumomediastinum, respiratory failure) and because it usually develops at a very advanced stage of cancer (9).

4. Conclusion

In patients with shock and lung cancer, one should consider pneumopericardium as a rare cause. While the prognosis is often unfavorable, different options may be considered for management.

5. Declarations

5.1. Acknowledgement

None.

5.2. Authors' contribution

All authors contributed the manuscript equally.

5.3. Conflict of interest

None.

5.4. Funding

None.

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