Pneumopericardium due to bronchopericardial fistula in a patient with lung cancer

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Accepted 20 September 2018

DESCRIPTION

Documented cases of pneumopericardium in patients with lung cancer are extremely rare.

We report the case of a 66-year-old man with a 45 pack-year smoking history and an Eastern Cooperative Oncology Group performance status 4. He presented with dyspnoea and chest pain in the last 2 hours. There were no signs of cardiac tamponade present.

CT angiography of the chest revealed a 78 mm right pulmonary mass containing small areas with gas density and a pneumopericardium of 28 mm in maximum thickness (figure 1). Transthoracic echocardiography showed the air gap sign, identified as the loss of signal during the systolic phase presented in patients with pneumopericardium. Bronchofibroscopy showed extensive infiltration and destruction of the carina bronchial wall and of the main bronchi by malignancy and endobronchial disease (figure 2). Endobronchial biopsies revealed an invasive squamous cell carcinoma.

Pneumopericardium due to lung cancer is proposed to be caused by the formation of a bronchopericardial fistula through direct pericardial invasion of a necrotic tumour, iatrogenic trauma caused by procedures or rupture of a bulla into the pericardium through a necrotic focus.^{1,2}

In this case, the presence of the pneumopericardium seems to be related to the formation of bronchopericardial fistula with direct pericardial invasion by the necrotic tumour. Due to the low-performance status and the high risk of complications, the patient was not eligible for a target treatment, such as thoracic radiotherapy

Figure 2 Bronchofibroscopy revealing extensive signs of cancer invasion of the bronchial tree with destruction of the carina bronchial wall (arrow) and of the main bronchi. It also shows the presence of the endobronchial tumour on the lateral basal segment of the right inferior lobar bronchus (asterisk).

or bronchial stent placement. The patient was clinically stable so conservative and symptomatic treatment was performed. This included high-flow oxygen therapy, analgesics, antibiotics and continuous monitoring of any signs and symptoms of cardiac tamponade.

During the hospital admission, the patient's condition deteriorated rapidly and palliative treatment was performed. The patient died after 3 weeks.

Learning points

- ▶ When facing a patient with pneumopericardium and lung cancer, clinicians should consider the formation of a bronchopericardial fistula by direct pericardial invasion of a necrotic tumour as a differential diagnosis.
- ▶ Patients with small, stable and asymptomatic pneumopericardium may be treated conservatively with close monitoring to prevent escalation to a cardiac tamponade.

Contributors JL has written the manuscript. The manuscript was reviewed and corrected by CCO and CL.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Next of kin consent obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Figure 1 CT angiography of the chest showing a large tumour in the right lung and a pneumopericardium (arrow) anterior to the heart.

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To cite: Lages J, Oliveira CC, Lacerda C. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2018-226939

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