Pneumonia and atrial flutter in a 71-year-old man

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DESCRIPTION
A 71-year-old man with a medical history of hypertension and 80 pack-years of tobacco smoking was presented with dyspnoea and cough of 3-week duration. He was tachycardic, with heart rate 127 beats per minute. ECG revealed atrial flutter. Chest x-ray showed right upper lobe consolidation consistent with pneumonia.

Transesophageal echocardiogram (TEE)-guided cardioversion was ordered. The echocardiogram revealed normal biventricular systolic function without significant valvular disease. The left atrial appendage was enlarged but no thrombus was present. Doppler pulsed-wave interrogation of the right superior pulmonary vein (RSPV) demonstrated increased velocity (1.2 m/s, figure 1). The source-elevated Doppler velocities were found to be compression of the RSPV by an extracardiac mass (video 1). At the conclusion of the examination, multiple well-circumscribed lesions were visualised, adjacent to the aortic arch and distal ascending aorta (video 2), which appeared consistent with enlarged lymph nodes. Given the unexpected findings on the echocardiogram, the cardioversion was deferred and the primary team was contacted regarding recommendation for evaluation of profound lymphadenopathy and extracardiac mass.

Follow-up chest CT showed a large, approximately 5 cm, right perihilar mass suspicious for malignancy with extensive mediastinal adenopathy (figure 2). There was encasement and narrowing of right upper lobe pulmonary arteries as well as the right superior pulmonary vein. In addition, the right upper lobe bronchus...
was narrowed with postobstructive infiltrate and resulting volume loss. Bronchoscopy with biopsy revealed small-cell lung carcinoma. Further evaluation revealed extensive stage small-cell lung carcinoma and the patient referred for expedited chemotherapy and radiation.

**Contributors**  
EK: drafted manuscript. LS, BW: discussion of draft, advising, final approval.

**Competing interests**  
None declared.

**Patient consent**  
Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

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**Learning points**

- Echocardiographers need to be systematic in their approach to every imaging study. Thorough evaluation of the pulmonary veins and Doppler flow lead to the discovery of unexpected extracardiac finding. Additional attention to the mediastinum during evaluation of the ascending aorta and aortic arch demonstrated profound lymphadenopathy and lead to final diagnosis of lung cancer.

- High index of suspicion is needed in patients at increased risk of intrathoracic pathologies. This patient had 80 pack-years history of tobacco use and was admitted with right upper lobe pneumonia and atrial flutter with rapid ventricular response. The unifying diagnosis was a neoplasm that compressed both the right upper bronchus and the right superior pulmonary vein.