Infected right atrial thrombus presenting as pulmonary embolism complicating central venous cannulation

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Not all pulmonary emboli come from the major veins. If the cause is unclear consider investigation with transoesophageal echocardiography

Although the vast majority of pulmonary emboli arise from the iliac and femoral veins, we present a case that illustrates that other potential sources should be considered, especially when recurrent pulmonary emboli occur despite adequate anticoagulation.

Case report

A 64 year old man presented with fever and left sided pleuritic chest pain two weeks after a laminectomy. A ventilation perfusion scan showed multiple areas of ventilation-perfusion mismatch and he was anticoagulated. Subsequently he remained well until readmission four months later with sudden onset of chest pain, dyspnoea, fever, and rigors. A pansystolic murmur was noted on examination. His electrocardiogram showed features of acute right heart strain and a chest x ray film showed a large wedge shaped shadow on the left. His international normalised ratio was 3, he was mildly anaemic (haemoglobin 100 g/l) and the erythrocyte sedimentation rate was 100 mm in the first hour. Multiple blood cultures were negative. A transthoracic echocardiogram did not show any important abnormality. Computed tomography of the abdomen did not identify any source of recurrent pulmonary emboli. Computed tomography of the chest showed multiple wedge shaped opacities in both lung fields, supporting the diagnosis of pulmonary emboli. In view of the fluctuating fever, persisting unexplained anaemia, and systolic murmur, a transoesophageal echocardiogram was then requested (figure), which showed a large tricuspid vegetation and considerable regurgitation.

Nine months previously (five months before the initial pulmonary embolus) the patient had been in a serious road traffic accident when he sustained multiple fractured ribs requiring ventilation and insertion of a central venous line.

The patient had a tricuspid valve replacement, and culture of the vegetation from the resected valve grew *Staphylococcus epidermidis*. He was treated with a six

week course of vancomycin postoperatively and made an uneventful recovery.

Discussion

Thrombus in the right atrium may develop as a result of local trauma from central venous catheters, and this may become infected and act as a continuing source of sepsis.¹ Adherent thrombus may become dislodged and, as in this case, lead to pulmonary embolism.

In our case the fever, anaemia, and murmur suggested a possible cardiac source of embolism, and it illustrates the value of transoesophageal echocardiography in establishing a diagnosis. A recent study has indicated that transoesophageal echocardiography is more sensitive than transthoracic echocardiography for detecting right atrial masses.² This has led to the suggestion that transoesophageal echocardiography should be considered in patients with central lines and sepsis or thromboembolism of unclear aetiology, even if there are no other risk factors for a right sided cardiac mass. Surgery is usually required to remove the source of infection and embolism.

In conclusion, patients presenting with pulmonary emboli with no obvious predisposing cause, especially if recurrent despite adequate anticoagulation, should be questioned about previous central venous cannulation, and a diagnosis of right sided endocarditis and right atrial thrombus considered.

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1 Arnold IR, Brack MJ, Verma PK, McCance A. Infected right atrial thrombi: a complication of central venous cannulation. *Int J Cardiol* 1994;43:101-4.

2 Cohen GI, Klein AL, Chan K-L, Stewart WJ, Salcedo EE. Transoesophageal echocardiographic diagnosis of right sided cardiac masses in patients with central lines. *Am J Cardiol* 1992;70:925-9.

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Transoesophageal echocardiogram showing tricuspid vegetation