CASE REPORT

An unexpected cause of right heart strain

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A 27-year-old woman was referred from her general practitioner (GP) 6 weeks postpartum with weight loss, dyspnoea and bilateral leg swelling. She had been treated by the GP for a chest infection the week before. On admission she was tachycardic, hypotensive and hypoxic with bilateral leg oedema and bibasal crackles. A chest radiograph showed diffuse multinodular opacification. A CT pulmonary angiogram showed dilated pulmonary artery. Echocardiogram confirmed right ventricular strain and dilation. Sputum microscopy was positive for acid-fast bacilli. The patient developed confusion and low-grade fever and the CT head scan showed meningeal involvement. One year of antituberculous therapy was started and she made a clinical recovery after 10 days and was discharged with regular follow-up. An echocardiogram showed resolution of the right heart strain 4 months later.

There was also a mild normocytic anaemia and hyponatraemia. D-Dimers were elevated.

Virology was negative for viral hepatitis and HIV.

Her chest radiograph showed striking extensive multinodular opacification (figure 1). A CT pulmonary angiogram showed no emboli but bilateral hilar lymphadenopathy and dilated pulmonary artery (figure 2). An echocardiography was carried out by a consultant cardiologist in the emergency room confirmed a dilated right ventricle with features suggestive of right heart strain. Induced sputum microscopy was positive for acid-fast bacilli. The day after admission she became drowsy with Glasgow Coma Score of 13. A head CT revealed evidence of meningeal enhancement in keeping with an inflammatory process and some low attenuation changes within the white matter of the left occipital lobe in keeping with a degree of cerebral oedema.

BACKGROUND

This presentation of miliary tuberculosis was unusual because of the significant element of acute right heart failure evident clinically and on echocardiography and CT pulmonary angiogram. The fact that the patient was postpartum also introduced diagnostic uncertainty as the heart failure symptoms might otherwise have been ascribed to peripartum cardiomyopathy or pulmonary embolism.

CASE PRESENTATION

This 27-year-old Pakistani female resident in the UK for 8 years with no medical history was referred by her general practitioner with a 3-week history of progressive dyspnoea, palpitations and bilateral leg swelling over the last week. She was given antibiotics for a chest infection the week before and returned increasingly short of breath although her purulent cough had resolved. She was 6 weeks postpartum and had an uncomplicated pregnancy and delivery but had lost 5 kg since the pregnancy.

There was no history of night sweats, no recent travel and no personal or contact history of tuberculosis. On arrival to the accident and emergency department she was shocked with a pulse rate of 120 bpm, blood pressure of 82/55 mm Hg and oxygen saturations of 59% on air. She was afebrile. Physical examination revealed elevated jugular venous pressure, bibasal inspiratory crackles and bilateral pitting leg oedema.

INVESTIGATIONS

Blood tests showed neutrophilia, elevated C reactive protein and alkaline phosphatase.

DIFFERENTIAL DIAGNOSIS

Based on her clinical presentation the main differentials were atypical pneumonias, pulmonary embolism and postpartum cardiomyopathy. Chest radiography suggested miliary tuberculosis, pneumocystis or other rare pneumonias, sarcoidosis, malignancy or might even have represented pulmonary oedema in the setting of congestive cardiac failure. The finding of tuberculosis on a sputum smear confirmed disseminated tuberculosis with significant right ventricular strain clinically and on investigation. Fifteen days later sputum culture revealed fully sensitive *Mycobacterium tuberculosis*. There was pulmonary and neurological involvement.

Figure 1 A chest radiograph on day of admission showing diffuse multinodular opacification.

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Figure 2 CT pulmonary angiogram showing the dilated right ventricle with small pericardial effusion with bibasal alveolar shadowing.

TREATMENT

In the emergency room the patient was resuscitated with intravenous fluid, given high-flow oxygen and was started with broad spectrum antibiotics. The patient was too unwell to have bronchoscopy hence induced sputum was obtained, using hypertonic saline. When it was confirmed that she was smear positive for acid-fast bacilli, quadruple antituberculous therapy with Rifater (isoniazid, rifampicin and pyrazinamide) and ethambutol was started. Steroid therapy was added when the CT scan of the brain suggested meningeal tuberculosis. Lumbar puncture was omitted as there was sufficient clinical and radiological evidence indicative of meningeal tuberculosis. Diuretics were later added to assist right ventricular function.

Figure 3 A repeat chest radiograph following 5 months of antituberculous therapy.

OUTCOME AND FOLLOW-UP

The patient made a full clinical and haematological recovery. She was discharged on day 15 with a 12-month course of antituberculous therapy as per the National Institute of Clinical Excellence guidelines.¹ A follow-up echocardiogram 4 months later was entirely normal and diuretics were stopped. Chest radiography at this time was also back to normal (figure 3). The patient completed 12 months of antituberculous therapy without complications and remains under follow-up.

DISCUSSION

Development of cor pulmonale in this case was a significant but transient sequel which normalised after 4 months of antituberculous therapy. We have not found any published reports of disseminated tuberculosis presenting with acute right ventricular failure. In this situation, the overwhelming infective burden drains through the lymphatics and into the systemic venous return. It is likely that the seeding of infective emboli in the pulmonary capillaries resulted in acute right heart strain.²

Learning points

- ▶ Severe disseminated tuberculosis with such extensive pulmonary disease complicated by respiratory failure can present with acute right heart failure simulating other conditions, such as massive pulmonary embolus, heart failure, interstitial lung diseases and non-tuberculous pulmonary infections.
- ▶ The respiratory and right heart failure was reversible with antituberculous treatment with no suggestion of long-term pulmonary hypertension on repeat transthoracic echocardiogram.
- ▶ The patient presented 6 weeks after giving birth. She may have had pulmonary tuberculosis earlier and deteriorated gradually as she became more immunosuppressed throughout the pregnancy culminating in cardiorespiratory failure.

Contributors AS compiled the information from case notes and computer systems, wrote up the case and sought consent for its publication. AAM was the consultant and was responsible for the patient during the admission and follow-up and provided senior assistance with the case report. PR provided additional help with editing the manuscript.

Competing interests None.

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