Helping the surgeon: epicardial 3D echocardiography in aortic dissection

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IMAGES IN CARDIOLOGY

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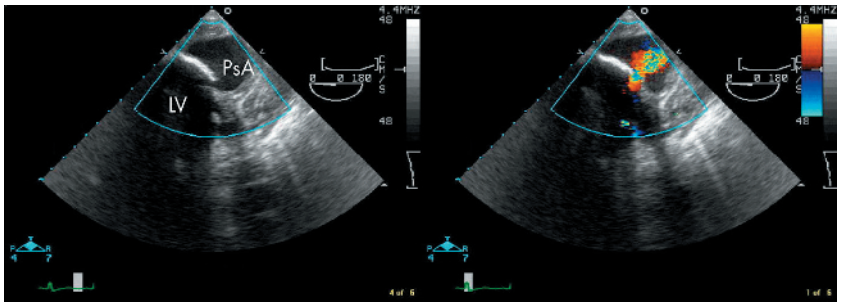
Infected left ventricular pseudoaneurysm

A 52-year-old man had an inferior myocardial infarction 16 years previously and underwent two coronary artery bypass surgeries 12 and two years ago. He also had rheumatoid arthritis and was treated with weekly methotrexate. Transthoracic echocardiogram (TTE) performed before his redo bypass surgery showed a thinned, calcified left ventricular inferolateral wall scar.

Six weeks before the current admission, he developed a respiratory infection that improved with intravenous antibiotics. Initial work-up showed leucocytosis and the erythrocyte sedimentation rate was 127 mm/hour. A computed tomographic (CT) scan of the chest with intravenous contrast revealed a 6 cm × 3.7 cm fluid density, non-contrast enhancing pericardial lesion posterior to the heart, suggestive of a pericardial cyst.

During the index admission, the patient developed haemoptysis and *Staphylococcus aureus* septic shock. TTE showed the inferolateral wall scar with an opposing loculated pericardial effusion. A diagnostic chest CT and transoesophageal echocardiogram (see panel) revealed a perforated left ventricular posterior wall, freely communicating with the pericardial cyst, thereby forming a pseudoaneurysm.



An urgent operation revealed a calcified left ventricular posterior wall with infected pseudoaneurysm that was eroding into the left lung. The patient developed multi-organ failure culminating in fatal ventricular asystole 24 hours later.

To our knowledge, this is the first reported case of an infected pseudoaneurysm in the context of chronic immunosuppression. We hypothesise that the calcified myocardial wall served as a nidus for bacterial infection with subsequent erosion into the pericardial cyst, resulting in an infected pseudoaneurysm.

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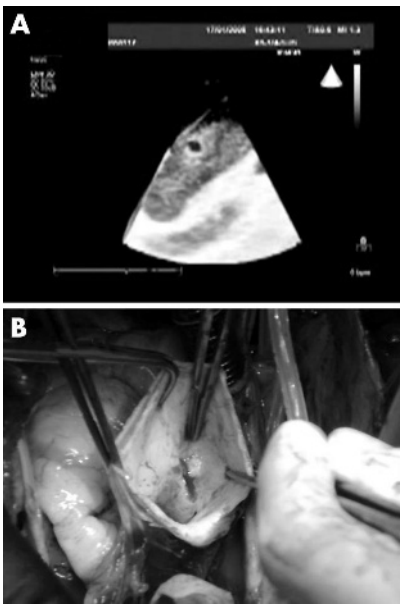

A 74-year-old woman was admitted to the emergency room with acute severe chest pain, dyspnoea and a history of giant cell arteritis and polymyalgia rheumatica. Her heart rate was 95 beats/min, arterial blood pressure was 100/60 mm Hg, and a diastolic murmur was present along the right upper sternal border. She was neurologically intact, with clear lungs, palpable normal pulses in the right radial and in both femoral arteries, and a filiform left radial pulse. Transthoracic echocardiography revealed aortic dissection type A with moderate aortic regurgitation. Aortography confirmed the diagnosis and the extension of the dissection. The patient was taken into the operating room where, after sternotomy, real-time three-dimensional (RT3DE) epicardial echocardiography was carried out (iE33, Philips) with the new probe X5-1, demonstrating the tear (panel A). The exact location and dimension of the tear were easily pointed out, 5 mm from the sinotubular junction, with the false lumen reaching the aortic root above the coronary ostia (panel B). The patient underwent aortic dissection repair with a ''button Bentall'' procedure with a biologic prosthesis. RT3DE offered to the surgeon an impressive, dynamic, precise assessment of the tear and a realistic representation of the anatomical dissection, which was useful for surgical planning.

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