Case Report

Images in emergency medicine: giant ascending aortic aneurysm dissection with hemopericardium

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BACKGROUND: Acute chest pain represents a common presentation at emergency department. Aortic dissection in young patients, however, is fortunately rare.

METHODS: We report a case of giant ascending aortic aneurysm with Stanford type A aortic dissection in an otherwise well 22-year-old male patient. Operative aortic valve and root replacement was undertaken with favourable outcome.

RESULTS: Histopathologic examination of the resected aorta revealed acute on chronic inflammatory change with Langerhans type giant cells consistent with a diagnosis of giant cell aortitis.

CONCLUSION: While uncommon, emergencies of the aorta may present in young patients. Predisposing conditions are discussed.

KEY WORDS: Aorta; Aneurysm; Tamponade; Dissection

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INTRODUCTION

Acute chest pain represents a common presentation at emergency department. Aortic dissection in young patients, however, is fortunately rare. We presented a case of a 22-year-old patient of New Zealand Maori extraction.

CASE REPORT

A previously well, morphologically normal 22-year-old man of New Zealand Maori extraction presented with sudden onset tearing chest pain and dyspnoea while driving to work. He reported prior intermittent chest pain in the preceding one week and had been diagnosed by his general practitioner as having bronchitis. Systemic enquiry revealed no evidence of connective tissue disease in the patient or first-degree relatives. Sexual history was unremarkable with no suspicion of genital infection. Examination was notable for tachycardia, hypotension, distended neck veins and muffled heart sounds. Chest radiograph showed grossly enlarged cardiac silhouette (Figure 1), with bedside echocardiography confirming the presence of pericardial effusion (Figure 2). C-reactive

protein (CRP) was 42, and erythrocyte sedimentation rate (ESR) was not measured at presentation. CT angiogram of the aorta subsequently demonstrated a giant ascending thoracic aortic aneurysm (Figure 3) with associated Stanford type A dissection flap and hemopericardium (Figure 4). The patient was transferred to the operating theatre and under deep hypothermic circulatory arrest underwent aortic valve and root replacement (Bentall's procedure). His recovery was complicated by ongoing bleeding requiring mediastinal packing and delayed sternotomy closure. The patient was eventually discharged independently. Histopathologic examination of the resected aorta revealed acute or chronic inflammatory change with Langerhans type giant cells consistent with a diagnosis of giant cell aortitis. Delayed positron emission tomography (PET) and CT imaging at two months revealed no evidence of ongoing aortitis.

DISCUSSION

Aortic dissection is the most common emergency condition of the aorta, with frequent fatal outcome.

Figure 1. Supine chest radiograph showing enlarged cardiac silhouette.

Figure 2. Bedside subxyphoid echocardiography demonstrating pericardial effusion (arrows).

Figure 3. Coronal computed tomography (arterial phase) of left ventricular outflow tract demonstrating an aneurysm.

Figure 4. Axial computed tomography at the level of the carina with arrow demonstrating dissection flap.

Extent of the dissection and associated complications (cerebral, aortic branch, mesenteric, renal vascular occlusion in addition to pericardial involvement) are key determinants of outcome. Aortic dissections are classified on the basis of the site of intimal tear according to the Stanford classification. Type A aortic dissection involves the ascending thoracic aorta and may extend into the descending aorta, whereas in type B dissection the intimal tear occurs distal to the origins of the left subclavian artery. Type A aortic dissection typically requires urgent surgical intervention with type B dissection frequently undergoing primary medical management.

Type A aortic dissection in patients under 40 years of age is as rare as 5%–7%. Common predisposing conditions include connective tissue diseases (46%), bicuspid aortic valve (22%), and others such as severe hypertension, Behcet's disease with immunosuppressive therapy, aortic coarctation, pregnancy, and cocaine abuse (32%).^[1] Preoperatively cardiac tamponade without palpable pulses is associated with increased risk of poor outcome.^[2] Emergency bedside echocardiography, as demonstrated in this case, may be influential in diagnosing early cardiac tamponade. Patients discharged after surgical

treatment for type A aortic dissection are conferred reasonable outcome with a ten-year survival rate of 70%.^[3]

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