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A Calcified Anterior Mediastinal Mass in a Patient with Aortic Regurgitation

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We report a patient with infective endocarditis of the aortic valve and a calcified anterior mediastinal mass. Angiography and CT scans disclosed an old post-traumatic aneurysm of the ascending aorta that was also the primary cause of aortic insufficiency. After the termination of antibiotic treatment the patient underwent prosthetic replacement of the aortic and mitral valves, and a unique reconstruction of the ascending aorta. In spite of the prolonged course of the disease, the patient is doing well and is in NYHA class II eighteen months later. *J Clin Basic Cardiol 2000; 3: 199–200.*

Key words: aorta, aneurysm, trauma, endocarditis

T umours and cysts found in the anterior mediastinum include: lymphomas, teratodermoids, thymomas, lipomas, and benign bronchogenic and pericardial cysts. Aortic aneurysms may protrude from the middle mediastinum and extend into the anterior mediastinum.

Only some of these structures present with calcifications on chest films. Teratodermoids usually contain linear calcifications in the lining of a cyst, and, in addition, bone or teeth may be seen on a chest radiograph [1]. Granulomatous involvement including tuberculosis and histoplasmosis, or post-radiation calcification of the hilar and mediastinal lymph nodes and pericardium is also common [2, 3]. There are some reports of pseudocysts and calcified pleuropericardial cysts [4, 5]. Cardiac tumours calcify extremely rarely. Aortic aneurysm in Marfan's syndrome can mimic a mediastinal mass but is usually not calcified.

Case report

A 54 year old farmer had been well until autumn 1997. He suffered blunt chest trauma 25 years earlier when he was injured by a wooden log. He was not hospitalised at the time. In autumn 1997, he noticed shortness of breath on physical exertion. The condition aggravated, and in June 1998 he was admitted to the hospital because of deterioration of dyspnoea, weakness, weight loss and occasional episodes of low-grade fever in the last three months.

On examination the patient's temperature was 39 °C, his pulse 90 per minute and blood pressure 125/30 mmHg. The jugular venous pressure was 10 cm; crackles were heard at both lung bases. The apex beat was felt in the 6th intercostal space inside the anterior axillary line. The second heart sound was accentuated and followed by a short diastolic murmur of aortic regurgitation, the third heart sound was audible. At the apex a systolic murmur of mitral insufficiency was heard. The spleen was not enlarged, and there were no peripheral embolic phenomena.

Laboratory investigations showed sedimentation rate of 60 mm/h, and mild normocytic anaemia. The haemoglobin was 94 g/l (normal range 120–180 g/l), and the white blood cell count 7.10⁹/l. The differential showed: 66 % neutrophiles, 18 % lymphocytes, 12 percent monocytes, 2 % eosinophiles. The platelet count was 288.10⁹/l and CRP was 41 mg/l (normal range < 5 mg/l). Six blood cultures were positive for *S. viridans* sensitive to penicillin and gentamicin. Serologic tests for syphilis were negative (VDRL, TPHA). The test for Q

fever was not done because the disease is extremely rare in Slovenia and the patient's clinical course was not suggestive of Q fever. Antibiotic treatment with penicillin and gentamicin was instituted.

An electrocardiogram showed sinus rhythm 90 beats per minute, and left ventricular hypertrophy.

A chest radiograph showed diffuse bilateral signs of lung congestion, and diffuse enlargement of the heart. A saccular, lobulated, well-delineated structure with a gently calcified eggshell-like contour in the heart silhouette on the right was seen on the postero-anterior chest film and in the lower retrosternal space on the lateral chest radiograph (Figure 1).

A transthoracic echocardiogram revealed enlargement of the left ventricle. The aortic valve was tricuspid with mobile vegetations. The aortic ring was dilated. A Doppler study disclosed severe aortic regurgitation. Apart from the dilated aortic ring we noticed no abnormalities of the aortic root, yet the ascending part of the aorta was not visualised because of technical difficulties. The mitral valve was free of vegetations, but there was moderate regurgitation. The echoes from the pericardium showed no abnormalities. CT scans of the chest confirmed the diagnosis of ascending aortic aneurysm (Figure 3).

Contrast aortography revealed a huge aortic aneurysm of the anterior wall of the ascending aorta, measuring 3×5 cm (Figure 2). The coronary arteries were not involved. Aortic regurgitation was severe by angiographic criteria.

The diagnosis of infective endocarditis was substantiated by Duke's criteria including positive blood culture and echocardiographic findings [6]. The patient was treated with i. v. penicillin G 20 million units/day for 8 weeks, and with i. v. gentamicin 1 mg/kg q8h for the first two weeks. The infection ran a favourable course and the patient was operated immediately after the cessation of antibiotic treatment.

The ascending aorta was entered through the anterior longitudinal incision, which was extended to the anterior part of the calcified aortic aneurysm with an eggshell appearance. The insufficient aortic valve was excised and replaced with the St. Jude Medical 23-AHPJ aortic valve prosthesis. The ascending aortic aneurysm was reconstructed with the Vascutek 22-mm tubular graft. The calcified aneurysm was not resected but rather wrapped around the graft to secure additional haemostasis. The right coronary artery was elongated and ran around the aneurysm of the ascending aorta. The mitral valve, which showed moderate mitral regurgitation, was replaced with the St. Jude Medical 33 MJ-501 mitral valve prosthesis. The posterior leaflet was preserved. The postoperative course was prolonged be-

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Figure 1. A postero-anterior chest radiograph shows a saccular, lobulated and well-delineated structure with a gently calcified eggshell-like contour in the heart silhouette on the right (white arrows) (A); a lateral chest radiograph shows this calcification in the lower retrosternal space (black arrows) (B).

cause of the patient's poor physical condition due to the longstanding debilitating infection and heart failure before operation. He followed a postoperative rehabilitation programme in a health resort, and eighteen months later he is doing well and is in NYHA class II. Postoperative echocardiography disclosed normal function of the aortic and mitral prostheses. The ascending aorta showed no abnormalities. The chest radiograph disclosed no mediastinal mass or calcification in that region.

Discussion

Only some rare structures present with calcifications on a chest radiograph. We report a patient with an eggshell-like calcification in the anterior mediastinum. Echocardiography is usually diagnostic for abnormalities of the ascending aorta, but in our patient it failed to outline the aneurysm because of its atypical location. CT scans of the chest confirmed the aneurysm of the ascending aorta and obviated the need for transoesophageal echocardiography, which may have been helpful in identifying the aneurysm. Angiography identified a lobulated calcification as an aneurysm of the ascending aorta. This incidental finding was confirmed at operation when an aneurysm with calcified walls of irregular shape was found, most probably occurring as a result of blunt chest trauma sustained many years before. It caused aortic regurgitation that became symptomatic in the last year. Streptococcus infection



Figure 2. Contrast aortography in the left anterior oblique view revealed a huge aneurysm of the anterior wall of the ascending aorta (arrows), Ao = aorta, LV = left ventricle.



Figure 3. A CT scan of the chest revealed an aneurysm of the ascending aorta (Ao) with huge calcifications (arrows).

of the insufficient aortic valve occurred, leading to infective endocarditis that worsened the already severe aortic regurgitation. The operation included prosthetic replacement of the aortic and mitral valves and a unique reconstruction of the ascending aorta [7]. The Bentall reconstruction of the ascending aortic aneurysm was not performed for fear of damaging a partially calcified origin of the right coronary artery.

In conclusion, although infrequent, a calcified anterior mediastinal mass found on a chest radiograph may suggest an aneurysm of the ascending aorta.

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