

# A huge mediastinal abscess masquerading as cardiomegaly: the value of non-invasive investigations

SS MAZE, F ROBINSON, JE STEVENS, B MERVIS

*From the Cardiac Clinic, Department of Medicine, and the Department of Radiology, University of Cape Town and Groote Schuur Hospital, South Africa*

Extracardiac masses are not infrequently misinterpreted as being due to disease of the heart or great vessels and may often cause haemodynamic change.<sup>1-3</sup> We report an unusual case of a mediastinal abscess which draws attention to the importance of considering non-cardiac causes of "cardiomegaly" and emphasises the value of non-invasive investigative techniques in such cases.

## Case report

A 20-year-old man who had previously been completely well was treated in a peripheral hospital nine months before his admission to Groote Schuur Hospital. At that time he had osteitis of his sacrum and left pubic ramus and a staphylococcal pneumonia with a right-sided pleural effusion. This illness responded well to intravenous cloxacillin treatment. A chest radiograph at the time showed apparent cardiomegaly, which progressively increased in size despite anti-failure treatment (fig 1a).

At the time of his admission to Groote Schuur Hospital his only symptoms were mild dyspnoea and a non-productive cough. There were no systemic symptoms. On examination he was afebrile and generally well. His pulse was regular at 76 beats/min and normal in character. The blood pressure was 105/70 mm Hg with no pulsus paradoxus. His venous pressure was 4 cm elevated with a prominent "a" wave. Kussmaul's sign was negative. Praecordial examination was striking, showing a bulging left hemithorax, an apex beat in the sixth left intercostal space mid-axillary line, and a diffuse left praecordial systolic lift. The heart sounds were normal and well heard to the right of the sternum. A basal grade 2/6 short ejection systolic murmur was heard radiating fairly widely praecordially but not into the neck or beyond the apex. Peripheral pulses were normal, the chest was clear, and the rest of the examination showed nothing abnormal.

Investigation showed a normal full blood count and an ESR of 19 mm in one hour. The electrocardiogram showed normal sinus rhythm, PR interval of 0.18 seconds, leftward axis of  $-20^\circ$ , low voltage from V2 to V6 with a large-voltage S wave in V1 and with no Q waves in the lateral leads. Widespread non-specific T wave changes were noted. The chest radiograph appeared to show a large cardiac shadow and clear lung fields (fig 1b). M-mode echocardiography and 2-dimensional sector scanning were performed with the transducer applied to the right of the sternum, showing that a normal-sized heart was situated in the right side of the chest. It was displaced by a large echo-free space to the left of the heart.

Address for reprint requests: Dr SS Maze, Cardiac Clinic (B11), Groote Schuur Hospital, Observatory 7925, Cape, South Africa.

Computed tomography of the thorax showed a large encapsulated mass occupying virtually the whole of the left hemithorax, compressing the left lung and displacing the heart and superior mediastinal vessels to the right. It extended from the upper end of the sternum to the diaphragm and had an attenuation number of 20-30 Hounsfield units, suggesting a semi-solid consistency such as that of pus or a liquefying blood clot (fig 2).

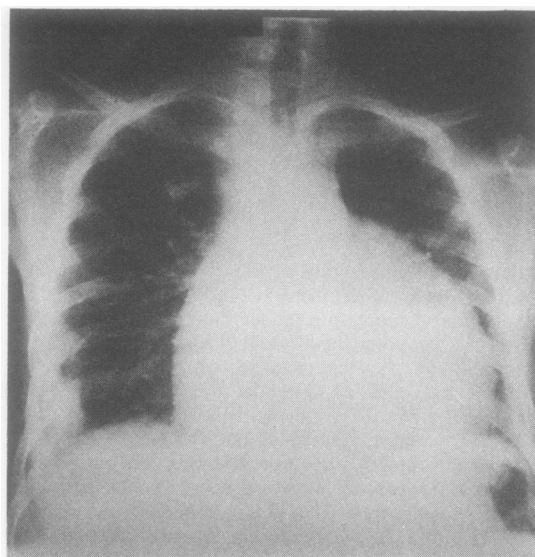
The following pressures were found at cardiac catheterisation: right atrial mean pressure 11 mm Hg, right ventricular pressure 64/0-18 mm Hg, pulmonary artery pressure 34/18 mm Hg, pulmonary capillary wedge pressure 15 mm Hg, and left ventricular pressure 117/4-22 mm Hg. There was a peak-to-peak gradient of 30 mm Hg across the pulmonary valve. Left ventricular angiography showed a normal-sized well-contracting ventricle displaced to the right. There was no mitral incompetence. A right ventricular angiogram showed displacement of a normal-sized ventricle and main pulmonary artery to the right and the left pulmonary artery arching superiorly over a radio-opaque mass. Follow-through of the contrast showed a normal left atrium.

Thoracotomy was performed through a left anterolateral intercostal approach. A large, tense cystic mass with a wall 3-4 mm thick was identified and a litre of pus was removed by needle aspiration. The anatomy was difficult to define precisely. The wall could be stripped from adjacent structures and did not appear to be causing any constriction of the heart. Histological examination of the wall of the mass showed granulation tissue only and no growth was obtained from the pus submitted for culture. The patient's postoperative course was uneventful. Fifteen months after operation examination of the cardiovascular system showed nothing abnormal, a chest radiograph showed a normal heart size, and an electrocardiogram showed non-specific T wave changes only.

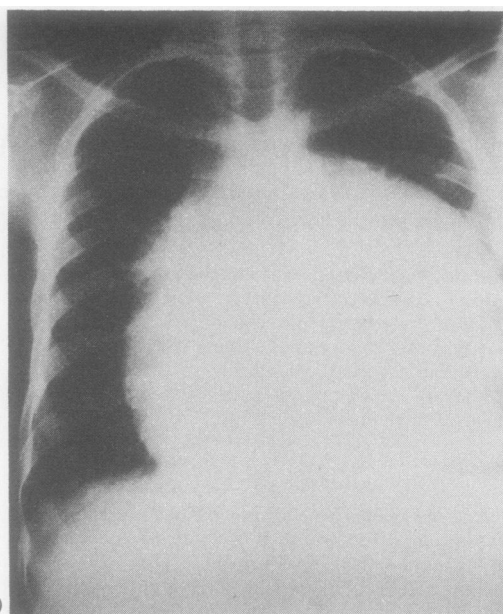
## Discussion

The mediastinal abscess in this case closely mimicked primary cardiac disease and cardiac catheterisation did indeed give abnormal findings. The initial suspected diagnosis was an idiopathic mitral subannular left ventricular aneurysm, although the features were not typical.<sup>6</sup> Other causes of large hearts, such as dilated cardiomyopathy, Ebstein's anomaly, and pericardial effusion, were on clinical grounds felt not to warrant serious consideration.

Non-invasive investigations with echocardiography and computed tomography were virtually diagnostic. M-mode and 2-D echocardiography showed the site of the heart and the mass, as well as the fact that the heart chambers themselves were not affected. The value of echocardiography in

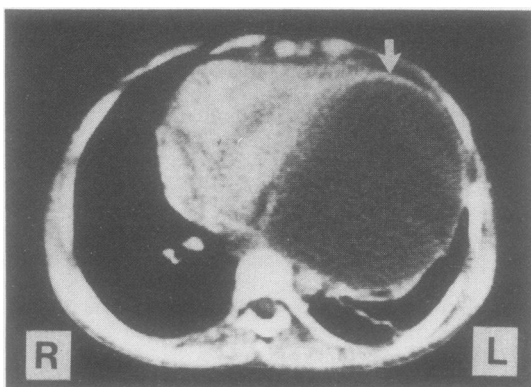


(a)



(b)

**Fig 1** (a) Chest radiograph at the time of the initial acute illness showing a large heart, right basal changes, and right-sided pleural effusion. (b) Chest radiograph nine months later showing a much bigger cardiac shadow and clear lung fields.



**Fig 2** Computed tomography scan showing the mediastinal mass (capsule arrowed). The heart is displaced to the right and the left lung is compressed posteriorly.

the evaluation of similar problems has been emphasised.<sup>2,4,5</sup> Computed tomography of the thorax confirmed the extra-cardiac nature of the mass and gave important additional information about its consistency, extent, and anatomical relationships. The usefulness of computed tomography in the evaluation of mediastinal abnormalities has been pointed out previously.<sup>7,8</sup>

The probable course of events in this patient was that septicaemic spread to the mediastinum occurred at the time of his osteitis. Presumably appropriate antibiotic

treatment sterilised the abscess, resulting in the huge compressive mass. Whether this was a mediastinal or encysted pericardial collection could not be established definitively even at surgery.

## References

- Oldham HN, Sabiston DC, Durham NC. Primary tumours and cysts of the mediastinum. Lesions presenting as cardiovascular abnormalities. *Arch Surg* 1969;**96**:71-5.
- Koch PC, Kronzon I, Winer HE, Adams P, Trubek J. Displacement of the heart by a giant mediastinal cyst. *Am J Cardiol* 1977;**40**:445-8.
- Shaver VC, Bailey WR, Marrangon AG. Acquired pulmonic stenosis due to external cardiac compression. *Am J Cardiol* 1965;**16**:256-61.
- Schloss M, Kronson I, Gelber PM, Reed GE, Berger A. Cystic thymoma simulating constrictive pericarditis. *Thorac Cardiovasc Surg* 1975;**70**:143-6.
- Beck W, Schrire V. Idiopathic mitral subannular left ventricular aneurysm in the Bantu. *Am Heart J* 1969;**78**:28-33.
- Baduini G, Paolillo V, DiSumma M. Echocardiographic findings in a case of acquired pulmonic stenosis from extrinsic compression by a mediastinal cyst. *Chest* 1981;**80**:507-8.
- Baron RL, Levitt RG, Sagel SS, Stanley RJ. Computed tomography in the evaluation of mediastinal widening. *Radiology* 1981;**138**:107-13.
- Rugatch RD, Faling LJ. Computed tomography of the thorax. A status report. *Chest* 1981;**80**:618-26.