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Thymolipoma simulating cardiomegaly: a clinicopathological rarity

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Almog, Ch., Weissberg, D., Herczeg, E., and Pajewski, M. (1977). *Thorax*, **32**, 116–120. **Thymolipoma simulating cardiomegaly: a clinicopathological rarity.** This report describes a 19-year-old girl with a chest radiograph strongly suggestive of cardiomegaly. Although she did not consent to haemodynamic studies, cardiomegaly wasru led out on the basis of the clinical course. Careful radiological study proved the existence of a large mass in the anterior mediastinum, simulating cardiomegaly. At thoracotomy a thymolipoma weighing 450 g was resected. The pathogenesis of thymolipoma is discussed.

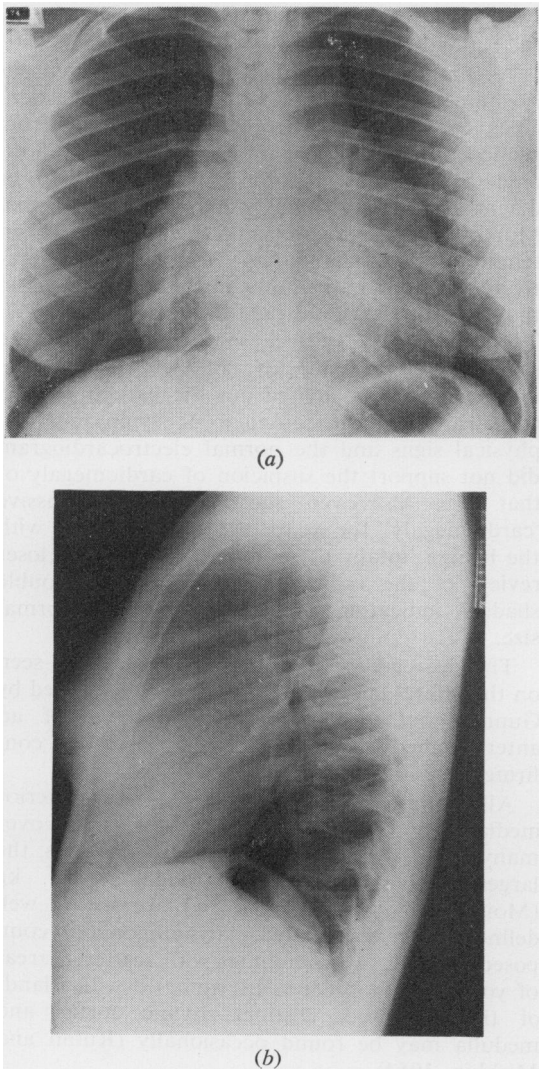
Thymolipoma is a rare benign tumour of the thymus and because not all clinicians are aware of this entity, the diagnosis is easily missed. Only about 50 verified cases have been published so far (Teplick *et al.*, 1973). Recently, we treated a patient with this tumour who for years had been considered to be suffering from massive cardiomegaly. It is the purpose of this report to stress that thymolipoma should be considered in the differential diagnosis of apparent cardiomegaly which cannot be accounted for by clinical and haemodynamic evidence.

Case report

A 19-year-old unmarried girl was admitted to hospital because of abdominal pain and a fever of 38°C of two days' duration. The pain and fever subsided a day later and did not recur. Routine chest films were interpreted at first as cardiomegaly (Fig. 1a). Closer questioning revealed that the patient had been investigated during the past two years for this apparent cardiomegaly in cardiology units of two different teaching medical centres. Being asymptomatic, she declined additional studies, and neither cardiac catheterisation nor cardioangiography was performed. Thus she was diagnosed in both cardiology units as cardiomegaly of undetermined aetiology.

On admission the pulse was regular, 72 per minute, and the blood pressure was 115/80 mmHg. There were no signs of heart failure. The only abnormal physical sign was enlargement of the heart contour on percussion. The electrocardiogram was normal. The complete absence of cardiac complaints and abnormal physical findings, and the normal electrocardiogram, are unusual for a heart of this apparent size. The possibility was therefore raised that the cardiomegaly was only simulated, and additional radiological examinations were performed. Careful study of the postero-anterior films revealed a heart of normal size superimposed over the shadow of the huge additional mass, which simulated the 'cardiomegaly'. On lateral films, the mass was seen in the anterior mediastinum (Fig. 1b) and the existence of a thymoma was suggested.

On 1 September 1974 the patient was operated on through a left posterolateral thoracotomy and a large fatty mass was found in the anterior mediastinum, extending into both hemithoraces. It was lobulated and soft and appeared like a flat pad of fat, spread over the inner aspect of the anterior chest wall. The mass was encapsulated and appeared benign. It did not penetrate any organ. The tumour was dissected out and removed *in toto* (Fig. 2a and b). The right lung was seen through the parietal pleura, but the right pleural cavity was not entered. The patient made an uneventful recovery and was discharged from hospital eight days later. The postoperative chest radiograph is shown (Fig. 3a and b).



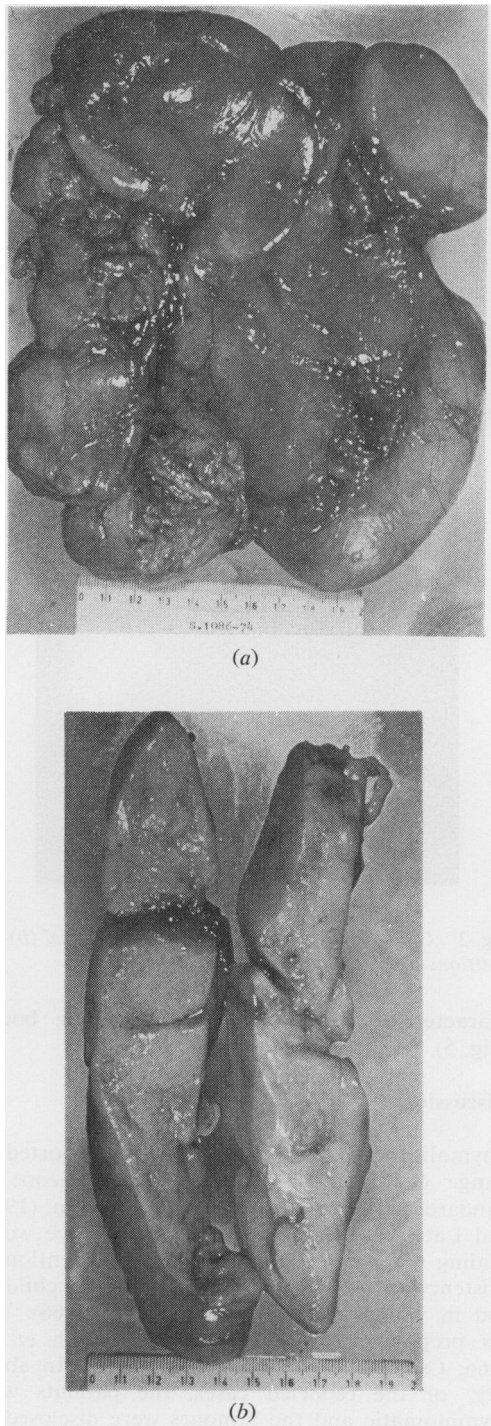
(*a*)

(*b*)

Fig. 1 *Preoperative chest radiograph in P-A* (*a*) *and in lateral* (*b*) *positions.*

PATHOLOGY

The tumour was a well-delineated, coarsely lobulated, yellow mass, weighing 450 g and measuring 23×18×3 cm. The cut surface was yellow with fine greyish spots. Histologically the mass was composed mainly of adult fat tissue with aggregates of lymphocytes and thymic tissue without differentiation between cortex and medulla. The cellular component consisted of mature lymphocytes with a few scattered mast cells. There were numerous Hassall's bodies, some of them calcified and others hyalinised (Fig. 4), some showing the



(*a*)

(*b*)

Fig. 2 *Gross appearance* (*a*) *and section* (*b*) *of the excised mass.*

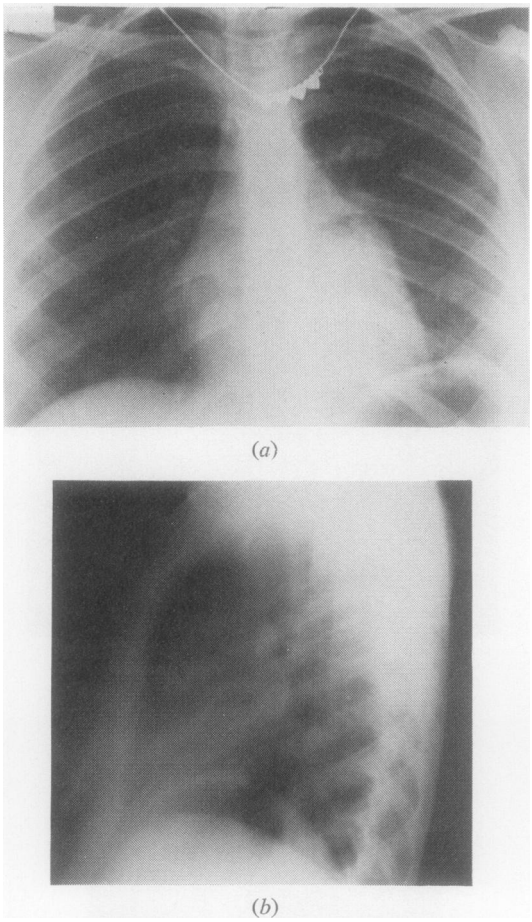


Fig. 3 *Chest radiograph in P-A (a) and lateral (b) positions after removal of the tumour.*

characteristic cellular pattern of young bodies (Fig. 5).

Discussion

Thymolipoma is a rare tumour. First reported by Lange (1916), it is still out of the scope of standard pathology textbooks. Castleman (1953) and Lattes (1962), in their comprehensive works dealing with thymic tumours, did not mention its existence. Most thymolipomas appear in children and in young adults (Boetsch *et al.*, 1966). The sex preponderance is debatable (Boetsch *et al.*, 1966; Csapó and Szenohradszky, 1970). In about 50% of the reported cases, the patients were asymptomatic and the tumours were disclosed by routine chest radiographs. Although symptoms such as dyspnoea, cough, chest pain, and haemoptysis are mentioned, often they are not caused by the tumour.

As many as 40% of the patients present as cardiomegaly (Roseff *et al.*, 1958). When questionable, cardiomegaly can be distinguished from pseudocardiac enlargement by a barium swallow, angiocardiography (Benton and Gerard, 1966), or diagnostic pneumomediastinum (Guilfoil and Murray, 1955; Moigneteau *et al.*, 1967). When semifluid thymolipoma is suspected preoperatively, postural radiographs may show changes in the shape of the tumour (Moigneteau *et al.*, 1967; Teplick *et al.*, 1973). Because the radiographs were suggestive of cardiomegaly, complete cardiological investigation was advised but the patient refused this. However, the absence of symptoms and physical signs and the normal electrocardiogram did not support the suspicion of cardiomegaly of that size. Moreover, the presence of massive 'cardiomegaly' for years was incompatible with the benign, totally asymptomatic course. A closer review of the radiographs revealed the double shadow, indicating that the heart was of normal size.

The decrease of the anterior clear space seen on the lateral chest radiograph—a sign stressed by Gunnells *et al.* (1963)—was suggestive of an anterior mediastinal mass. The operation confirmed our assumption.

All thymolipomas are located in the anterior mediastinum. Growing slowly, sometimes over many years, they can attain huge proportions, the largest reported tumour weighing 12 kg (Moigneteau *et al.*, 1967). They are always well defined and encapsulated. Thymolipoma is composed of adult fat, sometimes with scattered areas of young adipose tissue, intermingled with islands of thymic tissue. Distinct thymic cortex and medulla may be found occasionally (Rubin and Mishkin, 1954).

The pathogenesis of thymolipoma is not entirely clear. According to Bigelow and Ehler (1952), there is abnormal hyperplasia of the fat tissue, with subsequent involution of the thymic tissue. Others consider thymolipoma as a true neoplasm, which may be either a lipoma or a mixed tumour of mesenchymal and entodermal origin (Dunn and Frkovich, 1956). The most plausible explanation seems to be that of Csapó and Szenohradzsky (1970), who suggested that thymolipoma is a lipoma of the thymus gland. The tumour grows as multifocal benign proliferation of perivascular connective tissue which starts in the medulla. In the process of growth, the fatty tissue pulls small particles of thymic tissue into its substance. This

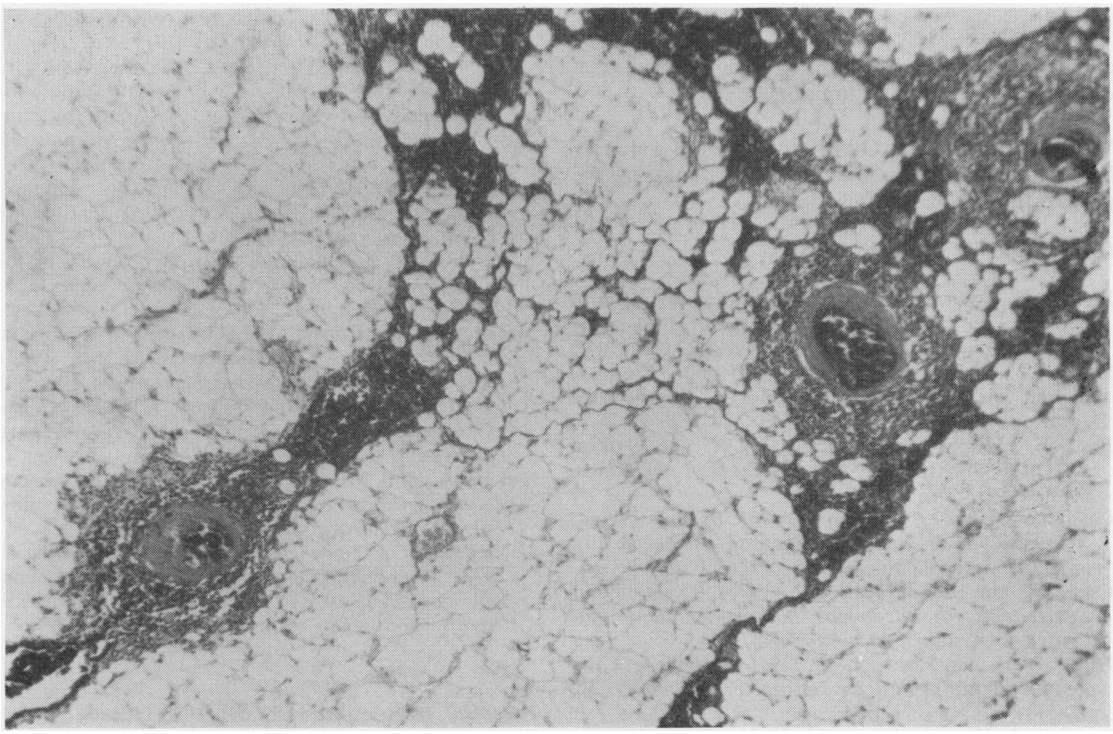


Fig. 4 *Fatty tissue, lymphocytes, and three partly calcified Hassall's bodies (Haematoxylin and eosin ×21).*

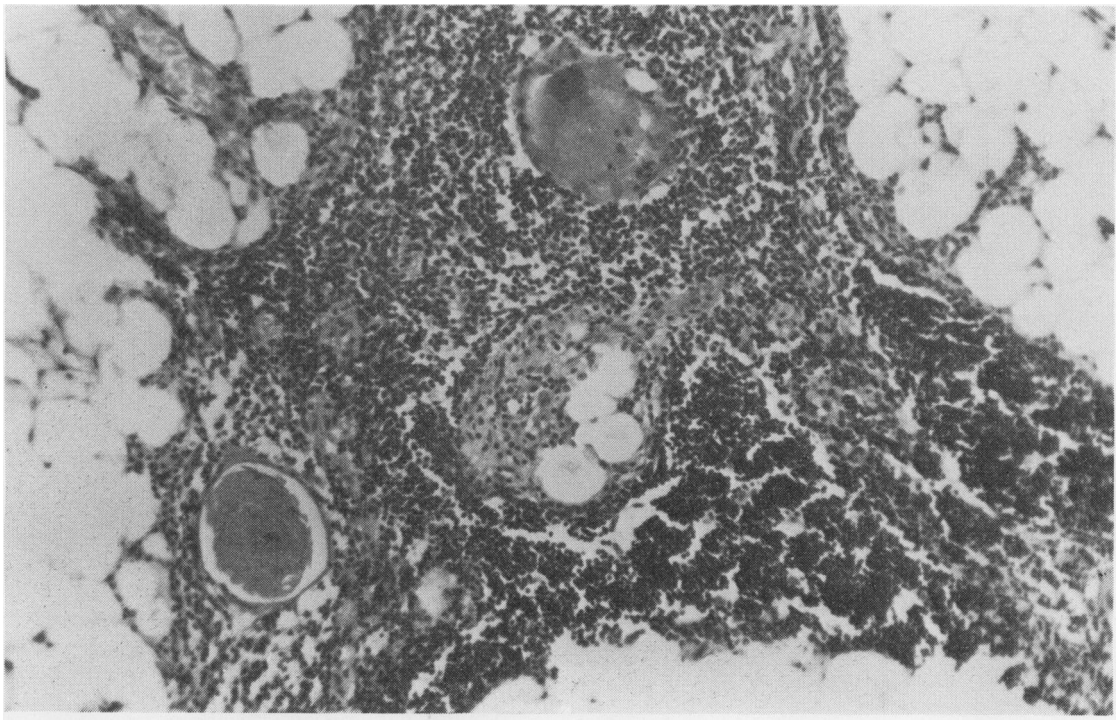


Fig. 5 *Island of lymphocytes with two young Hassall's bodies (H and E ×85).*

explains the presence of two components of different origins in one tumour.

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