Case Report
The C.T. Diagnosis of Pleural Lipoma

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The histological diagnosis of any intra-thoracic mass by non-invasive techniques remains difficult. Those masses lying near the mediastinum may be accessible to bronchoscopy and biopsy whereas peripheral lesions adjacent to the rib cage are more suited to percutaneous needle biopsy.

Computerised Tomography of the thorax provides vital information as to the physical structure and properties of any mass lesion the results of which may enable a histological diagnosis to be made with a reasonable degree of certainty. Its ability to confirm the presence of fatty tissue, however, provides accurate histological proof, thus avoiding the necessity for any further investigations.

We report a case of a peripheral intra-thoracic mass lesion where Computerised Tomography diagnosed the presence of a benign sub-pleural lipoma.

CASE REPORT

R.H.W. a 71 year old lady was referred to the General Physicians in February, 1984 for control of mild hypertension (170/100). There was no significant past medical history and her clinical examination was normal. A routine chest X-ray (Figure 1) showed a well defined soft tissue opacity adjacent to the right 4th and 5th ribs laterally. A repeat film 3 weeks later was unchanged.

A C.T. scan was performed to exclude the presence of other opacities and to show the primary lesion in more detail. A well defined mass was seen in the posterior part of the right hemithorax, having an attenuation of slightly less than soft tissue.

A similar area of lower attenuation was seen between the lateral aspect of the rib and the serratus anterior (Figure 2). Calculation of the attenuation number confirmed the mass to be of fat density (Figure 3). The diagnosis of a sub-pleural lipoma was made and no further investigations were performed.

DISCUSSION

Intra-thoracic lipomata are rare benign tumours 80% of which arise in the wall of the tracheo-bronchial tree (Fraser and Pare 1976). Other sites include mediastinal sub-pleural and intra-pulmonary and endo-bronchial. The distinction between intra-pleural and intra-pulmonary lesions may only be made by diagnostic (Continued on page 43)

Figure 2(a)
C.T. scan showing a mass with an attenuation less than soft tissues extending between the serratus anterior and rib cage laterally and protruding into the thoracic cavity.

Figure 2(b)
The same C.T. scan with a window=1 and level=−51 showing that the mass is equivalent to fat density.
Examination of over 60 blocks of the necrosis in lymph-node lesions by means of haematoxylin-and-eosin stains together with Gordon & Sweets' reticulin, trichrome and elastic-van Gieson preparations appeared to facilitate the correct diagnosis of the underlying nature of the lymph-node necroses. These conjoint procedures are more useful than the traditional histopathological stains aimed to demonstrate micro-organisms, which today are often lacking in necrotic lymph-node lesions of infective aetiology.

The well established connective-tissue stains that were used are capable of indicating the pre-existing structure of otherwise apparently amorphous necrotic lymph node lesions. In this way it was possible to diagnose in 90% of cases both the existence of primary and secondary tumours, and to differentiate these from infective or banal ischaemic necrosis. We believe that the use of several connective-tissue stains is of immediate practical value in establishing the cause of necrosis in lymph-node lesions. The omission of their use appears to be a false economy, which may result in erroneous or delayed diagnosis. Such potentially avoidable errors appear to have little justification, even in current economic circumstances. An unanticipated result of our morphological investigations was the detection of two types of necrosis in tuberculous lymphadenitis. As a consequence we believe that caseous necrosis is a two-stage sequence. Later, massive, necrosis may well have a different pathogenesis.

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pneumothorax (Ten Eyck 1960). Sub-pleural lipomata may have a Dumbbell configuration in which part of the tumour protrudes into the thoracic cavity and the remainder is in the intercostal space and beneath the musculature of the chest wall. Confirmation of its extra-thoracic nature is normally made by demonstrating fat within the adjacent soft tissues by plain film tomography. The ability of Computed Tomography to clearly image soft tissues planes and fat makes this modality ideal for the diagnosis of sub-pleural lipomata.

The differential diagnosis of a peripheral intra-thoracic mass lesion seen on a routine chest X-ray is wide. An initial assessment must be made by comparison with previous X-ray films and if the appearances of the lesion are unchanged over a prolonged period of time then this provides important reassurance to both patient and Doctor. If the mass is large enough and accessible, early ultrasound examination may provide useful information. Fluid collections (e.g. empyemas, loculated effusions) are readily diagnosed and may be drained under ultrasound control.

If the lesion is solid, Computed Tomography can assist by showing whether the mass is predominantly extra-thoracic, pleural or intra-pulmonary. Extra-thoracic masses such as the sub-pleural lipoma may now be confidently diagnosed by C.T. Other lesions arising from soft tissue components or the rib cage itself may be clearly identified.

Intra-pleural lesions may be malignant (metastases or mesothelioma) and C.T. may confirm this by demonstrating adjacent soft tissue extension or bone destruction. In many cases it is not, however, possible to distinguish between adenocarcinoma or mesothelioma by C.T. alone (Naidich et al. 1984) C.T. may assist in planning biopsy which can be undertaken by percutaneous needle aspiration, thoracoscopy (endoscopic examination of the pleural space) or by open thoracotomy. A pleural plaque may produce a solitary mass, but the demonstration by C.T. of widespread and often bilateral pleural involvement with or without calcification may indicate a cause such as asbestos exposure (Kreel 1976). Lipomas and fibromas are two uncommon solitary benign pleural tumours, the former of which can be clearly diagnosed by calculation of the attenuation number, but the latter may require biopsy.

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