BENIGN LOCALISED PLEURAL MESOTHELIOMA

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SYNOPSIS

A Case of benign localised pleural mesothelioma is reported and discussed. She had no symptoms referable to this tumour detected on chest radiography. Local tumour excision was performed successfully. This is a rare intrathoracic tumour not reported in the local literature before.

INTRODUCTION

Although all primary serosal tumours are exceedingly rare, the localised benign pleural form is even more so. Its exact incidence is unknown and only 14 cases were available in 1951 for a collective review. In 1952, Clagett et al from the Mayo Clinic published a series of 24 cases. Primary pleural neoplasms have been difficult to classify and have been variously named. Notable contributions toward clarification have been made by Klemperer and Rabin (1931) and by Stout and Murray (1942). It is reasonable to divide tumours arising from the pleura into two distinct groups. The first but less common group consists of localised tumours resembling fibromas or fibrosarcomas and the second group includes tumours of a diffuse nature involving the entire pleura, both parietal and visceral. The term mesothelioma is often applied to cells of mesoblastic origin which line coelomic cavities including the pleura and these rounded surface serosal cells could develop into fibroblasts.

CASE REPORT

A 31 year old Chinese female was asymptomatic on presentation. She had routine annual chest x-rays done at a private x-ray clinic over four years and these showed an increasing opacity in the apex of the right lung. (Fig. 1) Clinically there was no abnormal findings. There was no finger clubbing, arthropathy or any chest wall abnormality. No supraclavicular lymph nodes were palpable. Tomography showed a lobulated opacity in the apex of the right lung distinct from the surrounding lung parenchyma. (Fig. 2) A barium swallow examination was normal.

Through a right posterolateral thoracotomy, a conical shaped mass filling the apex of the pleural cavity with a narrow pedicle attached to the apical segment of the right upper lobe of the lung was excised.

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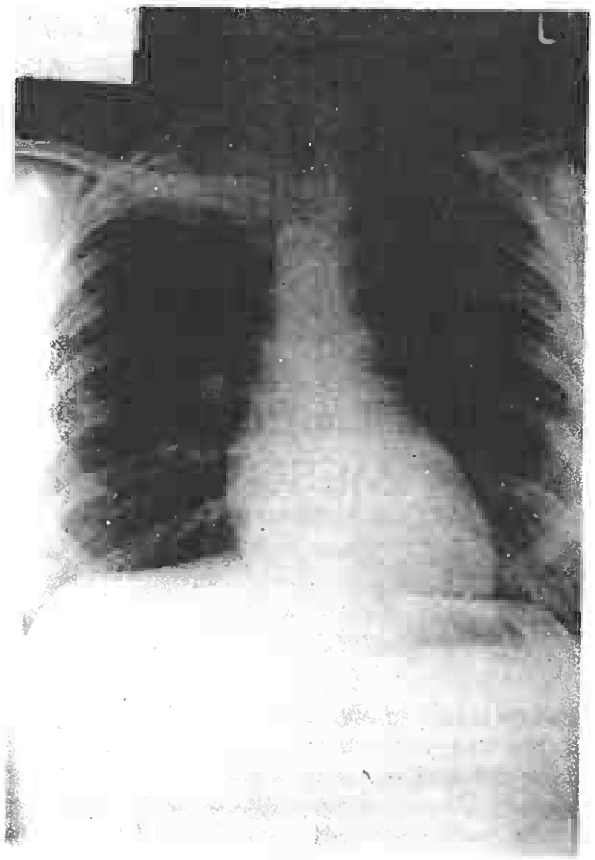

Figure 1. Chest x-ray: PA view showing opacity at apex of right lung

Figure 2. Tomogram of apical opacity of right lung showing well-outlined lobulated mass.

PATHOLOGY

Macroscopic findings:

The specimen (Fig. 3) consisted of an elongated ovoid shaped, firm mass. It was enveloped by a fibrous capsule. The tumour measured 8 x 6 x 5 cm. The cut surface (Fig. 4) was a glistening, greyish white.

Figure 3. Tumour covered by fibrous capsule.

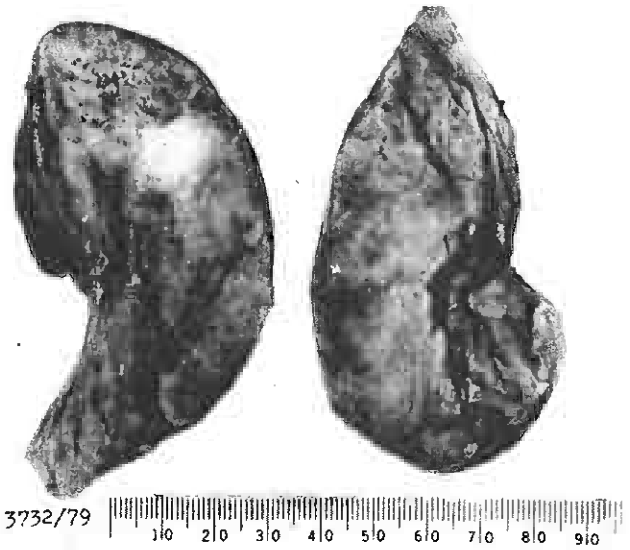

Figure 4. The cut surface was a glistening, greyish white.

Microscopy:

The tumour was made up of interlacing fibrocollagenous bundles (Fig. 5). The nuclei were slender and elongated. They were not hyperchromatic. No mitotic figures were seen. There was no significant nuclear pleomorphism. Well vascularised areas and cystic spaces filled with proteineous fluid were seen in an occasional area. The capsule consisted of flattened fibrous tissue and no covering by mesothelioal cells were seen. Repeat sample of the tumour showed

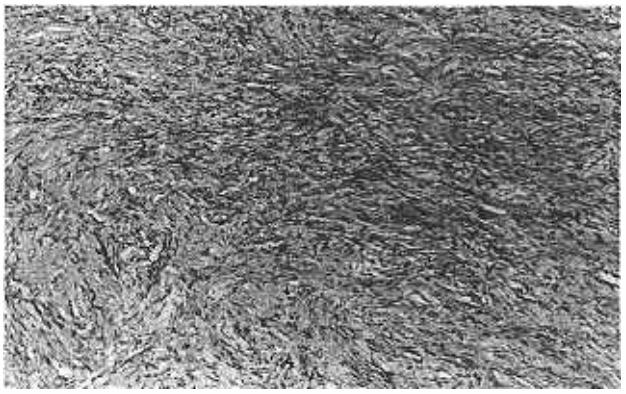

Figure 5. H.E. Stain. Original magnification 10x. Tumour was made up of interlacing fibro-collagenous bundles.

the presence of clefts and glandular spaces (Fig. 6). These spaces were lined by non-ciliated cuboidal cells. The cells did not exhibit significant nuclear pleomorphism or mitotic figures. Proteineous fluid and red blood cells were present in some of these spaces. No papillary processes were seen.

These features were consistent with a diagnosis of benign mesothelioma.

She remains well after more than eight months of follow-up.

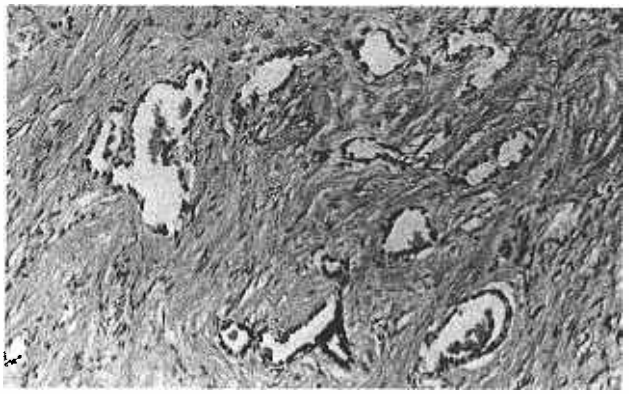

Figure 6. H.E. Stain. Original magnification 20x. Spaces lined by cuboidal cells.

DISCUSSION

This case had no symptoms referable to the lung lesion which was picked up roentgenographically. On the x-ray features, it was not possible to say that the tumour was of pleural origin. Tomography in this case also did not contribute to the diagnosis of the type of tumour, although it provided important information regarding the site and size of the tumour. Hence radiographic examination did not disclose any features that would permit one to distinguish this tumour from a variety of other intrathoracic tumours. As such exploratory thoracotomy was advised because of a pre-operative diagnosis of indeterminate intrathoracic tumour.

The association of pathologic changes in bones and joints with intrathoracic tumours and diseases has been noted frequently. Although articular manifestations do occur in some cases of bronchogenic carcinoma, they are not very common. Clagett et al (1952) mentioned a series of more than 200 cases of carcinoma of the lung where only four had symptoms referable to joints. But in their 24 cases of localised fibrous mesothelioma of the pleura, 16 had symptoms or physical findings, or both, referable to joints. In many of the cases, these symptoms were primarily responsible for bringing the patients to a physician. The most frequent sites of articular involvement in decreasing frequency were the hands, ankles, shoulder, wrists, elbows, and knees, and distinguishing these articular reactions from rheumatoid arthritis clinically was difficult. However, the presence of clubbing of the fingers or toes or both should direct attention to the chest. In seven of these 24 cases, there was a history of recurrent attacks of chills or chilly sensations and fever of unknown cause having occurred before the intrathoracic lesion was discovered.

This tumour was excised locally at thoracotomy. Being mainly fibrocollagenous tissue, relatively avascular and well-encapsulated, surgical removal is not difficult. Local recurrence can occur and the arthropathy that regresses after tumour excision can reappear. The incidence of osteoarthropathies in patients with pleural mesotheliomas (66%) contrasts with 2% in cases of carcinoma of the lung. (Spencer 1978) The tumour remains confined to the surface of the lung unless malignant changes supervene, an event that rarely follows incomplete surgical removal. Le Roux (1962) however, regarded all pleural mesotheliomas as potentially sarcomatous tumours.

For a long time, these tumours were lost in confusing nomenclature. Stout et al (1942, 1951) are credited with having classified tumours arising within the pleural, pericardial and peritoneal coverings as a single pathologic entity. They in turn attribute the ability to recognise and thus classify these tumours into a single category to the tissue work of Murray. She explanted in vitro, cells of "fibrous" pleural tumours which gave rise to characteristic mesothelial cells. Further study has permitted subdivision into the so-called fibrous type in which spindle cells are arranged in whorled bundles and the glandular type in which cells which are either spindle shaped or which may resemble epithelial cells, line glandular spaces. In other instances, these tumours may reveal both the fibrous and glandular components.

Nonetheless, purely fibrous pleural tumours may be difficult to classify histologically, explaining the previous names given to these tumours such as fibroma, fibrosarcoma, myxosarcoma etc. according to the predominant histologic character of the tumour under study. The capacity of the mesothelial cells to transform into different cell elements explains the variable histologic appearance of the mesotheliomas. In extremely difficult instances, fine structural studies are very helpful in classifying the true nature of the

tumour. When the tumour is entirely fibrous in character as in the reported case, the diagnosis is usually established mainly according to its location in the pleura or peritoneum and to the gross findings. Tissue culture is often of limited value due to different lines of cells cultured. Only untrastructural studies of the tumour will clarify in some cases its mesothelial nature by finding mesothelial cells with interlocking cytoplasmic processes, desmosomal attachments and microvilli. (Hernandez & Fernandez, 1974)

No electron microscopy studies were done. The predominantly fibrous nature of the tumours can be explained by its derivation either directly from fibroblasts normally present underneath the pleural surface or by fibroblastic transformation of mesothelial cells in which the parent cells that give rise to the fibroblasts are no more demonstrable because of the overwhelming growth of the latter.

It is possible that the presence of clefts and glandular spaces in these tumours has some relationship to a specific secretion by localised fibrous mesotheliomas which is responsible for the arthritic symptoms although this patient's tumour had these clefts but she was asymptomatic.

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