

Short reports

Amyloid producing tumour of the lung

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This report concerns a 53-year-old man who had an undifferentiated carcinoma of the lung, intimately associated with amyloid. To our knowledge, a primary tumour of the lung with production of amyloid is extremely rare and has previously been described only in three cases.¹⁻³

Case report

A 53-year-old man was referred to hospital complaining of cough, blood in the sputum, fatigue, shortness of breath, and loss of 4 kg over the past three months. He had smoked two packs of cigarettes daily for 30 years. Physical examination and laboratory studies were all within normal limits. A mass involving the inferior lobe of the left lung could be seen on the chest radiograph. At bronchoscopy a tumour, 0.5 cm in size, infiltrating the left lower lobe bronchus was seen. The right and left main bronchi were normal. The biopsy specimen taken from this area disclosed an epithelial malignant tumour consisting of anaplastic cells with eosinophilic stromal material. Using specific staining methods, this material was identified as amyloid.

The patient underwent a left lower lobectomy. He subsequently made an uneventful recovery and has had no recurrence in two years of follow-up.

The surgical specimen revealed a well-circumscribed tumour mass, 6 cm in diameter, involving the greater part of the left lower lobe and obstructing half of the bronchial lumen. The cut surface was mottled, greyish white and yellow. It was firm in consistency.

The tumour was vascular with local necrotic areas. It was composed of undifferentiated atypical cells of fusiform and polygonal shape arranged in irregular broad strands and solid sheets. Between the fibrous septa, a tendency toward nesting was apparent in many areas. The nuclei were round to oval, centrally located and generally vesicular. Occasional cells with hyperchromatic nuclei and little cytoplasm were encountered. Fontana-Masson stain was negative for argentaffin and argyrophilic granules. Reticulin preparation exhibited an epithelial pattern. Although

partially encapsulated, the tumour showed infiltration into the surrounding lung tissue.

A conspicuous feature observed between the tumour sheets was deposition of bands or masses of amorphous material containing tumour cell shadows, that stained homogeneously pink with haematoxylin and eosin (figs 1 and 2). This was identified as being

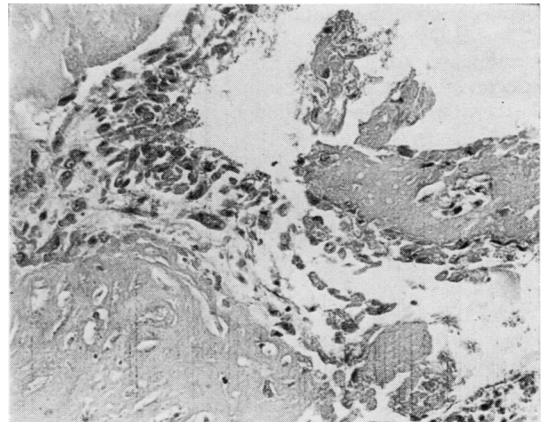


Fig 1 Light microscopy showing an undifferentiated malignant tumour with eosinophilic stroma containing cell shadows (haematoxylin and eosin, original magnification $\times 200$).

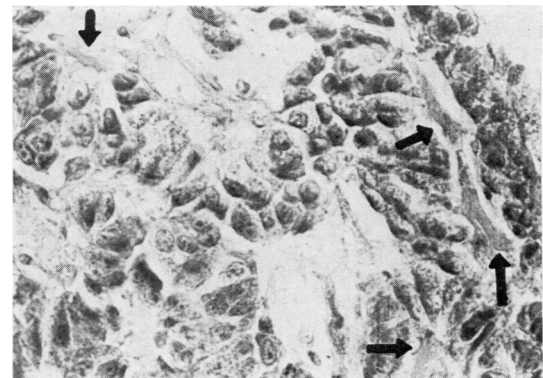


Fig 2 Light microscopy of tumour showing bands of eosinophilic material (arrowed) (Haematoxylin and eosin, original magnification $\times 500$).

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amyloid by its affinity to congo red, a strong metachromasia with crezyl violet. Sections stained with thioflavine-T showed bright yellowish-green fluorescence.

Discussion

The condition presented in this paper was unusual in two respects. Firstly, the tumour was intimately associated with amyloid. Since amyloid deposits were observed only in association with the tumour, it appears likely that the neoplasm produced this substance.

Deposits of amyloid in neoplasms are consistently associated with medullary carcinoma of thyroid which is a distinctive tumour of C cell origin.⁴ It has only recently been appreciated that amyloid deposits may also be found in those tumours derived from APUD cells. This association may occur wherever APUD cells are present.^{5,6} Such a concept provides a satisfactory explanation for the obscure relationships of many endocrine disorders and syndromes in various neoplastic conditions, and may be the explanation of the amyloid in our case, perhaps related to polypeptide hormones secreted by the neoplastic cells.

Secondly, the tumour was histologically an anaplastic carcinoma and although it constituted a large

mass, the clinical course was quite benign and there were no metastases at the hilar, mediastinal lymph nodes or elsewhere. Therefore, this case is also unusual because of its relatively indolent biological behaviour.

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