

Bronchial carcinoid with osteoblastic metastases

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Bony metastases in association with a lesion in the lung are usually regarded as secondary to bronchial carcinoma. This is generally true when the metastases are osteolytic. However, in the presence of a solitary lung lesion with osteoblastic metastases, the diagnosis of bronchial carcinoid should be considered. The following case illustrates this point.

Case history

A 48-year-old male accountant was referred to a chest clinic from the Mass Radiology Service in December 1974. His chest radiograph showed a small, rounded opacity in the periphery of the right lower lobe which was initially thought to be an area of pneumonitis. He complained only of some retrosternal pain. Physical examination was negative. His pulse was 74 per minute and the blood pressure was 130/80 mmHg. The investigations were as follows. Haemoglobin 16 g/dl, red blood cells $4.6 \times 10^{12}/l$, leucocytes $8.1 \times 10^9/l$, PCV 45, and ESR 141 mm/1st hour (Westergren). After six months of observation he was referred to the Thoracic Surgical Unit. He had developed no new symptoms and the chest radiographic appearance remained unaltered (Fig. 1). Thoracotomy was performed on 9 July 1975 when a hard, smooth mass, 4 cm in diameter, was found in the

right lower lobe. No lymph nodes were involved. Right lower lobectomy was carried out. The histology of the tumour was that of a carcinoid with a fibrous capsule breached by tumour cells in many places. There were areas of pleomorphism with invasion of vessels and perineural spaces. The bronchial resection margin and pleural surfaces were free from tumour. A histological diagnosis of bronchial carcinoid was made (Fig. 2). His post-operative recovery was uneventful.

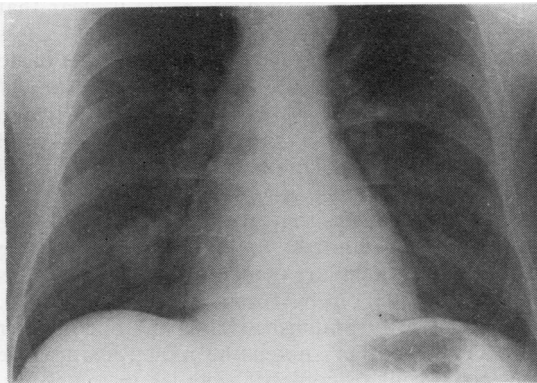


Fig. 1 Chest radiograph showing a lesion in the right lung.

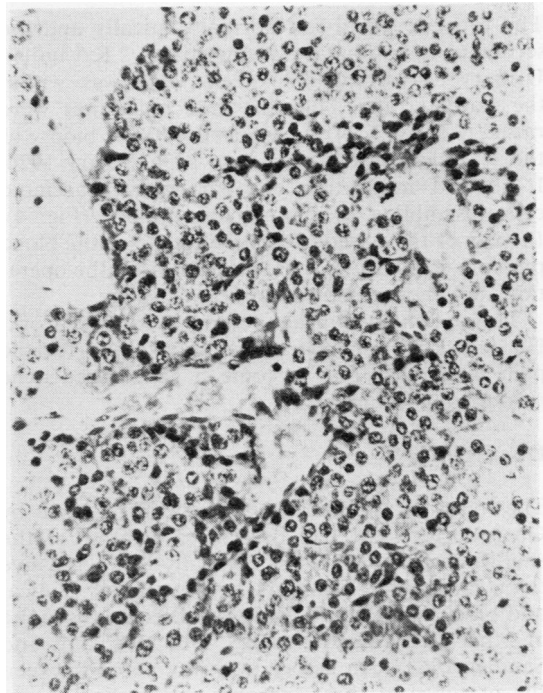


Fig. 2 Histology of lung tumour showing bronchial carcinoid. Haematoxylin and eosin $\times 210$.

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Seven months after the operation he complained of increasing pain in the right clavicle. His only other symptom was flushing of the face after alcoholic drinks which he now avoided. He was tender over the medial end of the right clavicle and the sternum. A radiographic skeletal survey showed multiple osteoblastic deposits in the right clavicle (Fig. 3), the vertebrae, and the sternum.

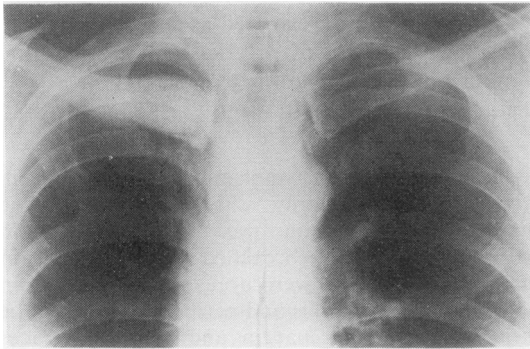


Fig. 3 Radiograph of osteoblastic metastasis in the right clavicle.

The prostate gland felt normal clinically and the serum acid phosphatase was normal (1.2 KA units). Urinary 5-hydroxyindole acetic acid was within the normal range, but the catecholamines were raised (224 $\mu\text{g}/24\text{ h}$) (normal=0–120). A biopsy of the clavicle was performed on 23 February 1976. It showed infiltration with malignant carcinoid cells resembling the pulmonary tumour (Fig. 4). In view of the raised catecholamine level the blood pressure was frequently recorded during the operation, but there was no significant change.

The patient is still active and is back at work. He occasionally takes paracetamol tablets for the pain which has now become a generalised ache throughout the body.

Discussion

The term 'Karcinoide' was first introduced by Oberndorfer (1907) to describe a tumour of the small intestine which was clinically less aggressive than carcinoma. Tumours having similar clinical and biochemical features were subsequently found at other sites (Sandler *et al.*, 1961; Williams and Sandler 1963). An association was noted between the presence of these tumours and a clinical syndrome as a result of various chemical substances produced by them (Biörck *et al.*, 1952; Lembeck,



Fig. 4 Histological appearance of tumour in the bone biopsy from clavicle. H and E $\times 210$.

1953; Stone and Donnelly, 1960; Main, 1972; Pearse and Welbourn, 1973; Mason and Steane, 1976).

Bronchial carcinoids constitute 4% of primary pulmonary neoplasms (Smith, 1976). They were originally regarded as benign but the occurrence of local and distant metastases made it clear that they are malignant. Eight per cent of 111 cases reported from the Mayo Clinic were found to metastasise (McBurney *et al.*, 1953). The sites of metastases in these cases were regional lymph nodes, liver, lungs, pleura, oesophagus and mediastinum, bone, brain, kidneys, and adrenal glands in descending order of frequency.

Bone metastases from bronchial carcinoids are osteoblastic in contrast to metastases from lung carcinomas which are generally osteolytic. This was first pointed out by Toomey and Felson (1960). They quoted four published cases and one of their own. These authors noted the numerous discrete and coalescent osteoblastic nodules in the pelvis, spine, and ribs of their patient with bronchial carcinoid. Similar cases were reported by Sacks and Timme (1961), Pollard *et al.* (1962), and Hyman and Wells (1964).

Bony metastases from most carcinomas are osteolytic. Osteoblastic secondaries are usually seen in carcinoma of the prostate gland and breast, less frequently in carcinoma of stomach, and rarely in thyroid and renal carcinomas (Willis, 1973).

In the present case, widespread osteoblastic secondary tumours were noted. It would appear, therefore, that considerable diagnostic significance should be attached to the clinical combination of a primary pulmonary lesion and osteoblastic metastases and in those circumstances a bronchial carcinoid should be strongly suspected.

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