Hepatic metastases in a case of intravascular bronchioloalveolar tumour

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SUMMARY This report describes the clinical and pathological findings in a patient with an intravascular bronchioloalveolar tumour who presented with hepatic metastases. These were originally diagnosed as hepatic veno-occlusive disease.

The intravascular bronchioloalveolar tumour is an uncommon tumour characterised by multiple pulmonary nodules whose slow expansile growth leads eventually to death from respiratory insufficiency. Extrapulmonary spread is extremely rare, and there has been only one report of the unusual histological features of such metastases.† This report describes the clinical and pathological findings of a case in which the patient presented with symptoms due to hepatic metastases.

Case history

A 23 year old white woman presented with a three week history of fever, arthralgia, malaise, and right hypochondrial pain. Six weeks previously she had had a protracted but otherwise uneventful labour culminating in the delivery of a normal full term infant. Investigations showed anaemia (haemoglobin concentration 9·8 g/dl), a raised erythrocyte sedimentation rate (103 mm in the first hour), considerably increased activities of glutamate oxaloacetate transferase (54 IU) and alkaline phosphatase (695 IU), but normal serum bilirubin concentration, white cell count, and serum electrolyte values. Radiographs of the chest showed multiple hazy opacities up to 1 cm in diameter throughout most of both lung fields. These had changed little since a chest radiograph two years previously and therefore their importance at the time was overlooked. A radionuclide liver scan showed multiple filling defects in both lobes. At laparotomy a tumour (maximum diameter 6·0 cm) was found in the posterior part of the liver, with numerous other nodules ranging from 0·5 to 2·0 cm in diameter. A biopsy specimen of one of these nodules showed what was thought to be intense fibrosis around an obliterated artery, with no obvious neoplastic or inflammatory infiltrates. Fibrous healing of hepatic infarction, possibly due to hepatic veno-occlusive disease, was diagnosed. The postoperative course was uneventful and was followed by spontaneous resolution of symptoms. Three years later she returned complaining of a continuous dull ache in the chest. There were no abnormal findings on physical examination, but radiography showed an increase in size and density of the pulmonary nodules. A repeat liver scan showed a decrease in the size of some lesions but an increase in others. A limited thoracotomy showed multiple, pale, well circumscribed nodules in the lung parenchyma, three of which were biopsied. These had the characteristic histological appearance of intravascular bronchioloalveolar tumour, prompting a review of the liver pathology.

Pathology

The lung biopsy specimen contained three solid, non-encapsulated nodules measuring 0·3 to 1·0 cm in diameter. Microscopically, each had a sparsely cellular, hyaline core with a more cellular periphery which projected into adjacent alveoli in a micropolyloid manner. Tumour could be seen extending into and obliterating the lumens of small pulmonary arteries, veins, and bronchioles. At the periphery the tumour was composed of cells with abundant eosinophilic cytoplasm and distinct cell borders, cell nuclei being round to oval. The number of cells and

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Fig. 1  Section from the edge of one of the lung nodules showing sparsely cellular tumour filling alveolar spaces. (Haematoxylin and eosin × 365).

Fig. 2  One of the hyaline liver nodules is seen at the centre of the field with relatively normal liver to the right. (Haematoxylin and eosin × 146).
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![Fig. 3 A small bile duct (a) and an adjacent blood vessel (b) within a portal tract. The vessel lumen has been obliterated by tumour. (Reticulin stain × 365).](image)

the amount of cytoplasm decreased towards the centre of each lesion, with bare nuclei appearing to lie in a fibrillar hyaline matrix. By means of standard immunoperoxidase techniques sections were stained for factor VIII related antigen (DAKO PAP kit K150), which is thought to be a specific marker for vascular endothelial cells. Positive cytoplasmic staining was seen in tumour cells, with weaker staining of the background stroma. This is in keeping with the current view that the tumour is derived from endothelial or vasoformative reserve cells.

The liver biopsy specimen contained multiple foci of fibrillar hyaline material containing sparse scattered nuclei reminiscent of the centre of the pulmonary nodules. At the margins of the lesions the hyaline material infiltrated between liver cords, isolating individual hepatocytes. In sections stained by the elastic Van Gieson method, blood vessels obliterated by neoplastic tissue could be seen in the portal tracts and fibrous septa. After diagnosis of the lung lesion, sections were stained for factor VIII related antigen. This showed positive cytoplasmic staining in individual cells embedded in the hyaline matrix and infiltrating between hepatic cords. These had initially been thought to be regenerating hepatocytes. Occasional tumour cells were vacuolated, but no true lumen formation could be seen.

Discussion

Intravascular bronchioloalveolar tumour was first identified by Dail and Leibow in 1975, and since then the distinctive nature of the tumour has been confirmed by occasional reports in the published work. The disorder is more common in women and tends to occur in the younger age groups, nearly half of all reported cases being under 30. Despite the apparent multicentric origin and propensity for vascular invasion, metastases seem rare. Only two of the 20 cases reported by Dail et al had metastases, one of these being in the liver. The latter case is illustrated in their paper, the appearance being identical to that in our case.

The appearance of the tumour seems to be governed partly by the structure of the host tissue. In the lung, gradual expansion into alveolar spaces gives the characteristic polypoid growth. In the liver, initial intravascular growth is followed by growth along and between liver cords. In the absence of other circulatory disturbance, infarction of the lung is uncommon after occlusion of small vessels, whereas the liver is more susceptible. We believe that in our patient the initial episode of pain was due to infarction following vascular occlusion by tumour, thus drawing attention to otherwise asymptomatic growth.

Although we made a diagnosis of hepatic metastases from the lung, we cannot rule out multicentric origin. We suggest that a slow growing, sclerosing endothelial tumour similar to intravascular bronchioloalveolar tumour should be included in the differential diagnosis of hepatic veno-occlusive disease.
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References


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