

Short report

Carcinoma metastasis to meningioma

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SUMMARY A metastasis from a carcinoma of the lung to an intracranial meningioma is described. This event is being reported more frequently, with most cases being seen since 1970. In patients with carcinoma, biopsies of intracranial tumours should include hyper- or hypodense regions in the tumour seen on CT.

Since the first report in 1930¹ of a carcinoma metastasising to an intracranial meningioma, a number of similar cases have been reported. A further case is described in which a carcinoma of the lung metastasised to a meningioma. The CT scan in this case can be compared with the macroscopic appearance of the tumours at necropsy, and may give a clue to the diagnosis of this condition before surgery.

Case report

A 79-year-old man was admitted to hospital in January 1982 with a history of increasing cough and shortness of breath for one month, and confusion for one week. He smoked 60 cigarettes a day. On examination he was confused and had a mild right hemiparesis. A chest radiograph showed an ill-defined opacity in the lower lobe of his right lung. Adenocarcinoma cells were present in a sputum sample.

On CT scanning of the head a large area of decreased attenuation was seen in the left frontal lobe. A slightly denser region was present anteriorly adjacent to the dura. After contrast injection, a moderately enhancing area about 2.5 cm in diameter was seen in the anterior pole of the left frontal lobe (fig (a)). On the anterior margin of this area, adjacent to the skull, was a small area which was more strongly contrast enhancing. Medial to this was a small hypodense region.

Despite treatment with corticosteroids the patient became increasingly confused and died two weeks after admission.

Pathology findings

At necropsy a large tumour (10 × 8 × 7 cm) was found in the lower lobe of the right lung. Histology showed this to be an adenocarcinoma of the bronchiolar type. Metastatic

deposits of adenocarcinoma were present in both adrenal glands. The left frontal lobe of the brain was indented by a grey tumour (3.0 × 2.5 × 2.5 cm), which was adherent to the dura mater (fig (b)). Histologically this tumour was seen to be a vascular meningioma. Small cysts were present in the antero-medial region. In the antero-lateral part of the meningioma was a macroscopically sharply demarcated pale nodule (0.7 × 0.5 × 0.5 cm) which was partially surrounded by the meningioma. Histologically this was a metastatic adenocarcinoma of the type seen in the lung (fig (c)).

Discussion

Two criteria can be used to assess when a true tumour to tumour metastasis has occurred: (1) The metastatic focus must at least be partially enclosed by a rim of benign histologically distinct host tumour tissue and (2) The existence of the metastasising primary carcinoma must be proven and compatible with the metastasis.² This case fulfils these criteria.

A metastasis from a carcinoma to a meningioma has in the past been considered to be a rare event; however it may occur more commonly than previously realised. Bernstein found 25 cases of carcinoma to meningioma metastasis in the literature;³ we found a further five cases;⁴⁻⁷ therefore, with this case 31 cases have been described. Of these, 22 have been reported since 1970. This recent increase in frequency of reporting could be due to patients with malignant disease living longer, the primary tumour then having more time in which to metastasise to distant sites, including meningiomas. If meningiomas removed surgically or seen at necropsy were examined histologically at multiple sites, the "rare" event of carcinoma to meningioma metastasis could probably be found more frequently.

The dense area seen on the pre-contrast CT, and the extremely dense area seen on the CT after contrast injection in the otherwise only moderately con-

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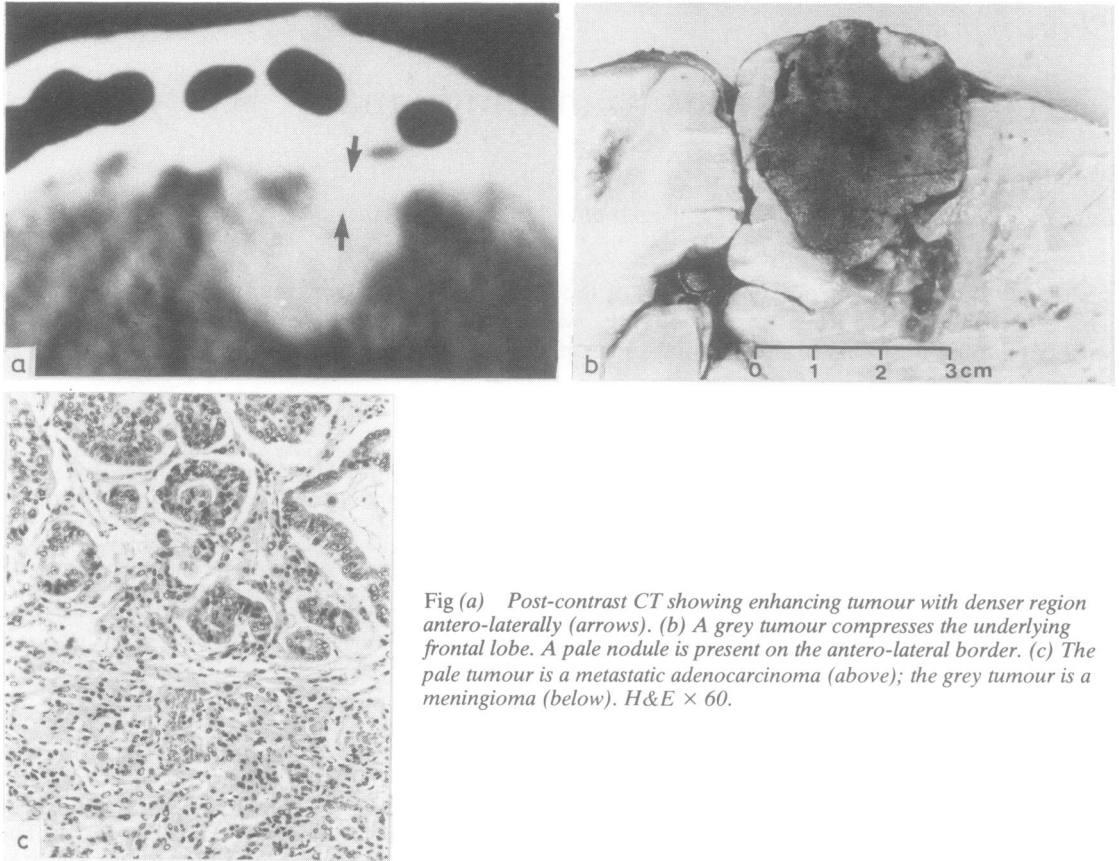


Fig (a) Post-contrast CT showing enhancing tumour with denser region antero-laterally (arrows). (b) A grey tumour compresses the underlying frontal lobe. A pale nodule is present on the antero-lateral border. (c) The pale tumour is a metastatic adenocarcinoma (above); the grey tumour is a meningioma (below). H&E $\times 60$.

trasting enhancing meningioma, correspond to the secondary tumour deposit seen at necropsy. This appearance is consistent with adenocarcinoma metastases seen elsewhere in the brain.⁸ The hypodense area medial to this is probably due to the meningioma being cystic in this region.⁹ Of the five other cases of a metastasis to a meningioma in which CT was performed, there was no indication of the secondary tumour in four.^{3 5 10 11} In one⁷ a hypodense area was seen in the meningioma, due to a partially necrotic secondary carcinoma.

Areas of low or high density seen in a meningioma on CT need to be interpreted cautiously, as they are present in many meningiomas without metastases.⁹ In a patient with a known extracranial malignancy, however, these areas of different density signify possible metastases within the meningioma.

A common clinical problem is that of a patient with a known extracranial malignancy who develops

a symptomatic solitary intracranial mass lesion. If the primary tumour is well controlled or slow growing a biopsy through a burr-hole is often performed to exclude a second treatable lesion such as a meningioma. An attempt should be made to include in the biopsy any areas of different density in the tumour seen on CT, as the chance of diagnosing a secondary tumour is likely to be increased. If a secondary tumour is found a more conservative approach to treatment and more guarded prognosis may be indicated.

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