Metastatic Carcinoma in a Meningioma

Report of a Case

P. V. Best, M.B.

Department of Pathology, University of Aberdeen, Aberdeen, Scotland

Metastatic tumour very rarely occurs in a meningioma and only 7 reports of such an association have been found in the literature.1-7 Osterberg described 2 cases, but in the first of these the diagnosis of “renal cell carcinoma metastatic to a meningioma,” seems to be open to question: the presence of a primary renal carcinoma was not confirmed and the clear cells described and illustrated in the meningioma could perhaps be interpreted as elements of the same tumour. Cytoplasmic vacuolation as seen in these cells is encountered not infrequently in meningiomas and is attributable to lipoid accumulation. Groups of cells with a very similar appearance can be identified, for example, in the meningioma that forms the basis of the present report.

Case Report

J. P., a man aged 48 years, was admitted to Aberdeen Royal Infirmary on April 17, 1962, complaining of headache, nausea, loss of appetite and loss of weight. He had been well until 3 months previously when he began to experience headache over the vertex lasting about 15 min. at a time with intervals of freedom from pain for up to 4 days. For the same length of time he had suffered from increasing anorexia and had lost a stone in weight. Nausea had been present for a week and there was one episode of vomiting. He had not worked for a week and was confined to bed for the last 3 days. He also reported an attack of dizziness one day before admission to hospital.

Examination. He was an ill-looking, emaciated man with a dry, furred tongue and a pulse rate of 60 per min. His speech was slurred and slow and there was a left-sided weakness. Early papilloedema was present, more marked on the right than the left. There were no other abnormalities of the nervous system. The erythrocyte sedimentation rate was 22 mm. in the first hour, the blood urea 68 mg. per 100 ml., and the urine was normal. Right carotid angiogram suggested the presence of a space-occupying lesion in the midtemporal region. Roentgenograms of the chest showed a rounded mass, about 5 cm. in diameter, in the anterior segment of the right upper lobe near the hilum, the appearances being those of bronchial carcinoma.

Operation. On May 1, 1962, right temporal craniotomy was performed by Mr. R. J. A. Fraser. The gyri were flattened and a cannula inserted into the temporal lobe entered a necrotic area from which greyish fluid was aspirated. An incision was made through the cortex and a considerable quantity of softened tumour was removed by suction. A very firm area could be felt in the lower and lateral part of the temporal lobe, and was considered at first to be a hardened area of secondary tumour. A large rounded mass adherent to the floor of the middle fossa was removed as completely as possible by finger-dissection, but some small fragments were still left adherent to the dura mater. As much as possible of the soft tumour, which extended deep towards the basal ganglia, was also removed. Considerable haemorrhage occurred, which necessitated transfusion of 2 pints of blood, but it was controlled eventually by diathermy and Oxycel and the wound was closed.

Course. Postoperatively drowsiness persisted for several days but this slowly improved. A course of radiotherapy was commenced on May 8 and the patient was transferred to the Department of Thoracic Surgery under the care of Mr. F. J. Sambrook Gowar on May 21. At this stage he had slight drowsiness, minimal weakness of the left upper limb, slight left facial weakness and mild residual papilloedema. His general condition was poor but improved considerably in the next fortnight and further investigation of his chest now revealed that the mass in the right upper lobe measured 8X6 cm., indicating fairly rapid growth; in later films excavation occurred, which necessitated transfusion of 2 pints of blood, but it was controlled eventually by diathermy and Oxycel and the wound was closed.

Pathologic Examination. The specimen consisted of a tumour, 3X2X2 cm. in size, together with a few smaller fragments of tissue. When the main mass was transsected it was found to be divided into two roughly equal parts with a fairly distinct line of demarcation between them. One part was solid and firm with a greyish-red cut surface and the remainder was soft and friable with a paler yellowish-grey cut surface on which obvious areas of necrosis were visible. The harder area appeared to be partly encapsulated while the soft component had an irregular surface, clearly without a capsule.

Histology. The firm part of the tumour has the typical structure of a highly vascular meningioma with numerous capillaries and sinusoid blood vessels separated by irregular groups of large cells. These capillaries appear to become obliterated by fibrosis and are seen as small concentrically laminated fibrous structures. Many capillaries appear to have become obliterated by fibrosis and are seen as small concentrically laminated fibrous structures. Scattered psammoma bodies are also present (Figs. 1 and 2) and it seems that at least some of these may have been derived from sclerosed blood vessels. The intervening cells have abundant eosinophilic
cytoplasm, the margins of which usually are not defined clearly although they can be seen in some areas. Vacuolation of the cytoplasm is not uncommon. The nuclei are round or oval, usually large, with a delicate chromatin net and one or two small nucleoli. Uninucleate giant-cell forms are encountered frequently, sometimes with bizarre nuclei, and usually these contain large nucleoli, but mitotic figures are not observed. The presence of an incomplete fibrous capsule is confirmed.

The soft component of the tumour, which at its edge interdigitates with meningiomaticous elements, presents the features of poorly differentiated squamous carcinoma (Fig. 2). Epithelial bridges can be identified in occasional foci but there is no cell-nest formation or keratinisation. Extensive necrosis is present and it is of interest to note that, in many of the necrotic areas, the ghost-like outline of hyalinized vessels identical to those seen in the meningioma can be recognised (Fig. 3) and the reticulin and collagen retain their staining characteristics. Scattered psammoma bodies also lie amongst the carcinomatous cells and in the necrotic tissue (Fig. 3). At one margin in two of the sections examined there is a rim of cerebral tissue invaded by carcinoma and in this area meningiomatous elements cannot be identified.

Discussion
The meningioma in this patient evidently was symptomless but the development of metastatic