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Clinical Records

Metastatic renal cell carcinoma presenting as an aural polyp

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Abstract
Renal cell carcinoma may metastasize to the head and neck region at different stages of its evolution. We present a case of an undiagnosed renal cell carcinoma presenting as an ear polyp, and discuss the difficulties of the diagnosis and the management of these tumours.

Key words: Carcinoma, renal cell; Neoplasm metastasis; Temporal bone

Introduction

Metastatic tumours of the temporal bone presenting in the external auditory canal are extremely rare (Zirul *et al.*, 1983; Kuhel *et al.*, 1996). The most common primaries are breast (29 per cent), lung (11 per cent), prostate (eight per cent), unknown primary (eight per cent) and kidney (six per cent). We describe a 50-year-old man who presented with aural symptoms resulting from a metastasis from an asymptomatic primary renal cell carcinoma.

Case report

A previously healthy 50-year-old man presented in clinic with a three-month history of discomfort in his left ear and zygomatic area, more noticeable on performing Valsalva-manoeuvre. He noted some hearing loss and a pulsatile tinnitus, but no vertigo. There was no evidence of systemic pathology, apart from gout and a mild hypertension. Clinical examination revealed a diffuse, non-tender soft tissue swelling in the left parotid region, approximately 6 cm in diameter. Otoscopy of the left ear showed exostosis in the posterior meatal wall and a middle ear effusion. The right ear was unremarkable, as was the remainder of the ENT examination. There was no cervical lymphadenopathy. Pure tone audiogram showed a mild conductive hearing loss of 20 dB on the left side and a tympanogram showed a type B curve. Full blood count, immunological screening (including auto-antibodies) and liver function tests were, normal but the ESR was elevated (29). There was no clinical evidence of renal impairment, and there was no macroscopic or microscopic haematuria. Parotid sialography was normal.

Over the next four weeks, he developed a red polypoid swelling in the anterosuperior part of the external ear canal, which was biopsied, and resulted in profuse bleeding. The pre-auricular swelling gradually increased in size and a fine needle aspiration (FNA) was performed but did not yield anything of diagnostic value. The

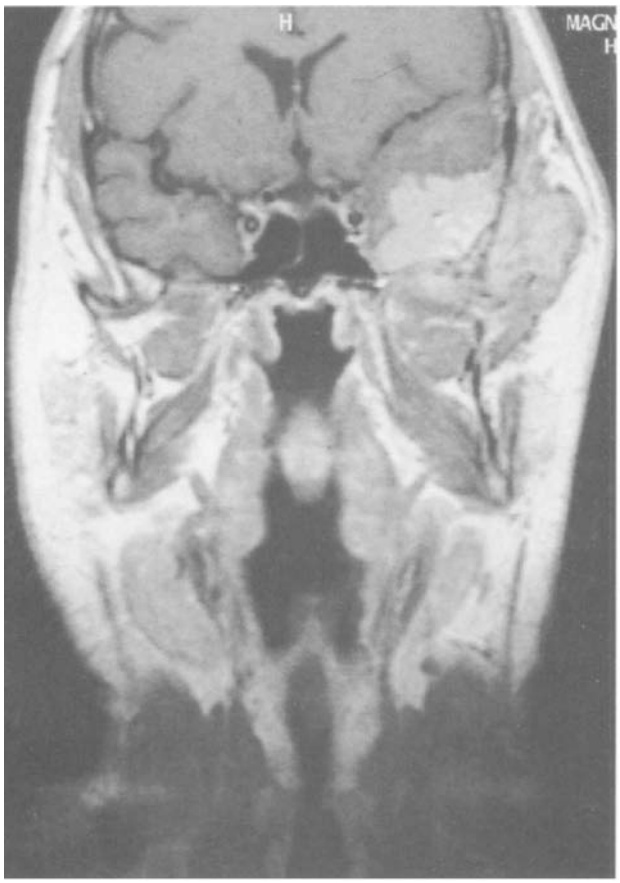

Fig. 1
Metastatic renal cell carcinoma to the left temporal bone (MRI).

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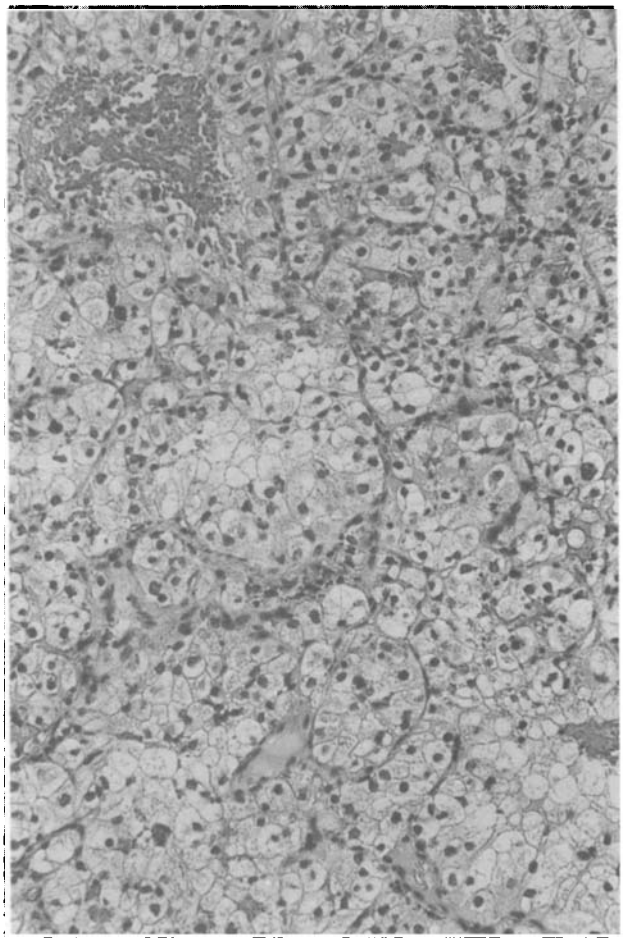

FIG. 2
Lobular arrangement of clear cells, typical of renal cell carcinoma (H & E; × 200).

histology of the aural polyp was strongly suggestive for carcinoma.

An magnetic resonance image (MRI) scan of the parotid and the brain showed an extensive tumour of the temporal bone, involving the left temporal lobe and extending just into the subcutaneous tissues. There was no evidence of lymphadenopathy and the parotid gland was normal (Figure 1).

An open biopsy was performed and histology confirmed the diagnosis of carcinoma, probably from renal origin. Ultrasound and DMSA scan of the kidneys revealed a 20 mm diameter tumour in the right kidney.

The patient underwent a decompression and subtotal resection of the intracranial extension making a good recovery, and a right nephrectomy was performed four weeks later. Histology confirmed the diagnosis of renal cell carcinoma with extensive vascular invasion.

The patient was treated palliatively with radiotherapy but developed other bony secondaries and pathological fractures, eventually dying 10 months after his first clinical presentation.

Pathological findings

The ear biopsy comprised small fragments of skin and underlying soft tissue, together measuring 3 mm in diameter, in which there were a few groups of carcinoma cells. They had granular cytoplasm, contained glycogen but neither mucin nor other specific features. The specimen from the open biopsy of the temporal bone comprised two fragments of soft tissue, respectively 12 and 2 mm long.

Microscopic examination revealed a carcinoma composed of an alveolar arrangement of cells, some of which resembled those of the first biopsy. However, most displayed clear cytoplasm, and the appearance was considered typical of metastatic renal cell carcinoma (Figure 2). The kidney weighed 250 g and included a 20 mm diameter tumour in the middle, close to the hilum, also with the characteristic pattern of a renal cell carcinoma. A subsequent biopsy of a pathological fracture of the femur again showed identical tumour tissue.

Discussion

Although renal cell carcinoma is relatively rare, it is the third most common lesion metastasizing to the head and neck from a primary tumour below the clavicles. It is surpassed in frequency only by the breast and the lungs, with the gastro-intestinal tract being the fourth most frequent site of occurrence (Hill and Kohut, 1976).

The biological behaviour and the therapeutic management of these tumours represent a challenge with respect to both diagnosis and treatment. They are unpredictable in their rate of growth, in the timing of metastasis and in the pattern of metastatic spread. Not infrequently, symptoms of the metastasis are the first manifestation of the disease, as in this case, while others demonstrate metastasis more than 10 years after a 'curative' resection of the renal primary (Som *et al.*, 1987). Six to 16 per cent of the renal cell carcinomas will metastasize to the head and neck during their course and in eight to ten per cent of these cases the symptoms resulting from this head and neck lesion will be the first manifestation of the disease (Ferron and LeClerc, 1982; Vaughan and Snyderman, 1986; Som *et al.*, 1987; Kennel *et al.*, 1991; Goldman *et al.*, 1992).

The most common sites of head and neck metastasis are the thyroid gland (36.6 per cent) and the nose and paranasal sinuses (9.1 per cent). Other locations in decreasing frequency are the skin, mandible, temporal bones, larynx, pharynx, tongue and oral cavity (Ferron and LeClerc, 1982). Typically all the metastases are highly vascular (Som *et al.*, 1987; Goldman *et al.*, 1992).

Renal cell carcinoma has apparently the ability to bypass the pulmonary capillary filtration mechanism and metastasize directly to the head and neck. The most reasonable explanation for this phenomenon appears to be tumour embolization via Batson's plexus, which is a valveless epidural and vertebral venous plexus communicating with the pelvic veins, the intercostal veins, the azygos and the vena cava on multiple levels (Som *et al.*, 1987).

Symptoms of aural metastasis are often not specific. They include hearing loss, aural mass or discharge, fullness in the ear, periauricular swelling, otalgia, tinnitus (often pulsatile), mild vertigo and facial nerve palsy (Kuhel *et al.*, 1996). Aural secondaries from a renal cell carcinoma can have a variety of macroscopic appearances including a granulomatous mass (Zirul *et al.*, 1983), a lobulated purple mass (Goldman *et al.*, 1992) and a pale pink polyp of the external ear (Ferron and LeClerc, 1982).

Microscopically, metastatic renal cell carcinoma is a considerable mimic of other tumours. The classical appearance of a neoplasm composed of clear cells must be differentiated from a locally arising paraganglioma and other metastases such as melanoma and thyroid carcinoma, and in these three immunohistochemistry (neuroendocrine markers, S-100 protein and thyroglobulin respectively) is valuable. It is less so with primary tumours of the parotid gland, where several entities may be characterized by cells composed of clear cytoplasm (Simpson, 1997). Similarly, microscopy and special stains are only of limited use in the differential diagnosis of sarcomatoid renal cell carcinoma from other spindle cell

neoplasms, and overall the most reliable method of confirming or excluding a carcinoma of the kidney is imaging of the kidney.

It is usually difficult to assess the extent of the carcinoma involving the ear by clinical examination only. The computed tomography (CT) appearance of renal cell carcinoma metastasis is an enhancing soft tissue mass on postcontrast studies (Som *et al.*, 1987). Magnetic resonance (MR) imaging is superior to CT in the evaluation of soft tissues. It can provide excellent delineation of soft tissue tumour margins, although the specificity of MRI with regard to the differentiation between tumour and soft tissue oedema or inflammation remains unclear (Kuhel *et al.*, 1996). CT however is unsurpassed for assessing the integrity of osseous structures of the temporal bone and the middle ear.

Treatment of renal cell carcinoma is usually radical nephrectomy. It is generally agreed that if a solitary metastatic lesion is detected, an operation should be considered as excision is associated with increased survival. There have been reports of complete regression of pulmonary and osseous metastasis after removal of the primary (Roukema *et al.*, 1991). Radiotherapy does not alter survival patterns but is useful to palliate symptoms.

The prognosis for patients with metastasized renal cell carcinoma at times of diagnosis is extremely poor, with over 80 per cent of patients dead of disease at one year. Patients with a resected solitary metastasis however have a 34 per cent five-year survival rate (Ferron and LeClerc, 1982; Vaughan and Snyderman, 1986).

Conclusion

Renal cell carcinoma represents a real challenge with respect to both diagnosis and treatment. Head and neck metastasis are uncommon but should be considered in the differential diagnosis of a highly vascular tumour. Microscopically, the differential diagnosis of metastatic renal cell carcinoma is difficult and the most reliable method of confirming or excluding a carcinoma of the kidney is imaging of the kidney.

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