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Post-irradiation liposarcoma of the temporal bone

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Abstract
The first reported case of liposarcoma of the temporal bone is presented. Its association with previous irradiation for benign parotid disease is discussed.

Key words: Liposarcoma; Temporal bone; Radiotherapy

Introduction

Liposarcoma is the second commonest soft tissue sarcoma found in adults next to fibrous histiocytoma (Enzinger and Weiss, 1988). The head and neck region accounts for around five per cent of all sites affected (Enterline *et al.*, 1960; Barnes, 1985; Enzinger and Weiss, 1988).

Reviews of the English language literature show that there have only been 86 reported cases of liposarcoma in the head and neck region. Wenig and Heffner, 1995 reviewed the literature for laryngeal and hypopharyngeal liposarcoma, finding 22 acceptable cases and adding a further eight to the series. The most common intraoral sites of liposarcoma are the cheek and floor of mouth (Baden and Newman, 1977). Stewart *et al.* 1994 summarize nine cases of oral cavity involvement, and found 12 cases of cheek involvement. In total, 35 cases arising elsewhere in the soft tissues of the head and neck have been described (Stewart *et al.*, 1994). We describe the first case of liposarcoma of the temporal bone and discuss its association with previous irradiation for benign parotid disease.

Case report

An 85-year-old woman presented with a two-month history of right-sided serosanguinous otorrhoea, and a 48-hour history of a right facial weakness. She had been treated 47 years previously for a benign parotid lesion with a combination of local excision and subsequent radiotherapy (dose unknown).

The skin over her right parotid region, including the right external auditory canal showed changes consistent with previous radiotherapy. Otoscopy revealed an ulcerating, friable, polypoidal lesion arising from the posterior wall of the bony external meatus. She had a complete right lower motor neurone facial palsy. Audiometry showed a symmetrical sensorineural hearing loss, consistent with presbyacusis.

A computed tomography (CT) scan (Figures 1 and 2) revealed a huge destructive tumour involving the right temporal bone. Air was visible in the external auditory meatus and middle ear cleft with integrity of the ossicles. However, posterior to this, tumour had largely destroyed the mastoid, and filled the antrum. There was possible fistula formation into the posterior semicircular canal. The tegmen tympani, sinus plate were destroyed with tumour abutting, and possibly breaching the dura just posterior to the internal auditory meatus.

Biopsy of the lesion was undertaken. Microscopy (Figure 3) showed sheets of cells demonstrating cellular and nuclear pleomorphism along with numerous mitotic figures, some of which were bizarre. The cytoplasm of the tumour cells contained numerous vacuoles. In some areas these vacuoles were scalloping the displaced nucleus giving the characteristic appearance of a lipoblast.

Immunohistochemistry revealed the tumour cells to be negative for leukocyte common antigen, carcinoembryonic antigen, CAM 5.2 and keratin. The tumour cells however, were positive for vimentin and showed varying positivity with S100. In summary, the lesion was consistent with a poorly differentiated round cell liposarcoma.

Due to the extent of the lesion, the age of the patient and her previous history of radiotherapy, only symptomatic care is being given.

Discussion

Liposarcoma arises either from lipoblasts or, more probably, primitive mesenchymal cells (Enzinger and Weiss, 1988). Enzinger and Winslow (1962) proposed the first classification of liposarcoma, currently used by the World Health Organisation, grouping the tumours as well-differentiated, myxoid, round cell or pleomorphic. Recurrence after surgical excision depends on differentiation, round cell or pleomorphic recurring locally more often than myxoid and well-differentiated varieties. Similarly, poorly differentiated tumours are more likely to metastasize. Local recurrence has also been shown to depend on location, with retroperitoneal lesions recurring more frequently (Enterline *et al.*, 1960; Enzinger and Winslow, 1962; Enzinger and Weiss, 1988).

Irradiation to the head and neck region is known to cause second primary tumours. The incidence of soft tissue and bony sarcoma following high dose irradiation is low, ranging from 0.02 per cent to 0.55 per cent (Phillips and Sheline, 1963). The latent period for solid tumours after

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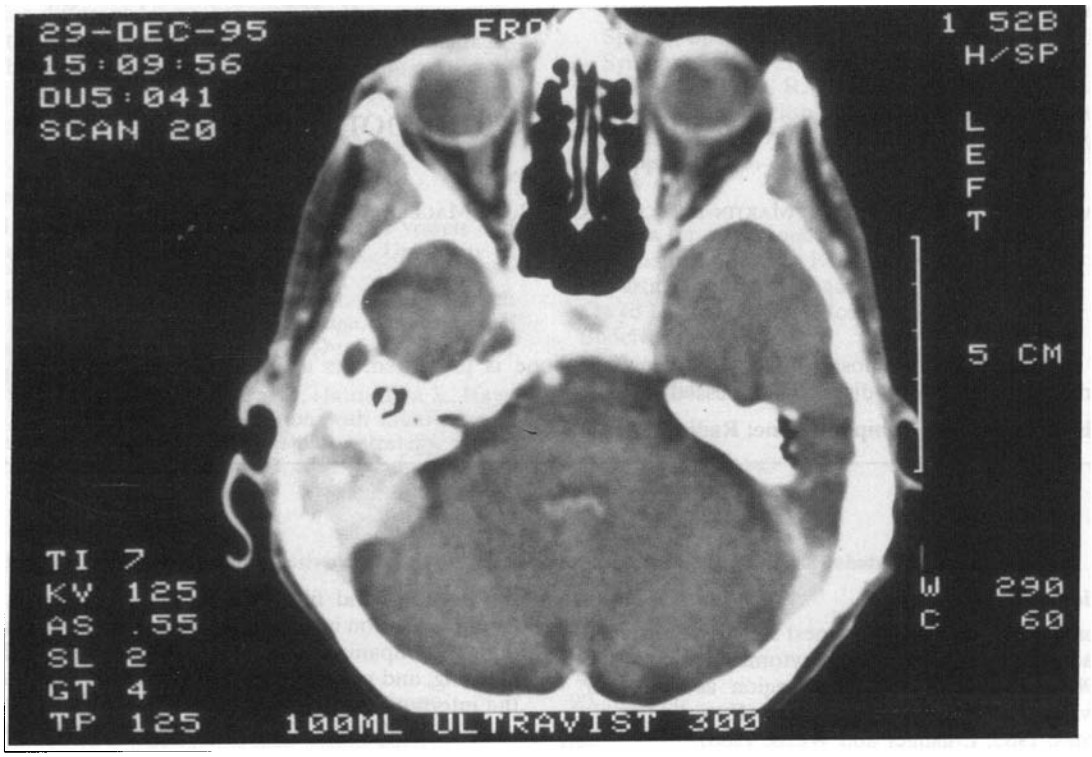

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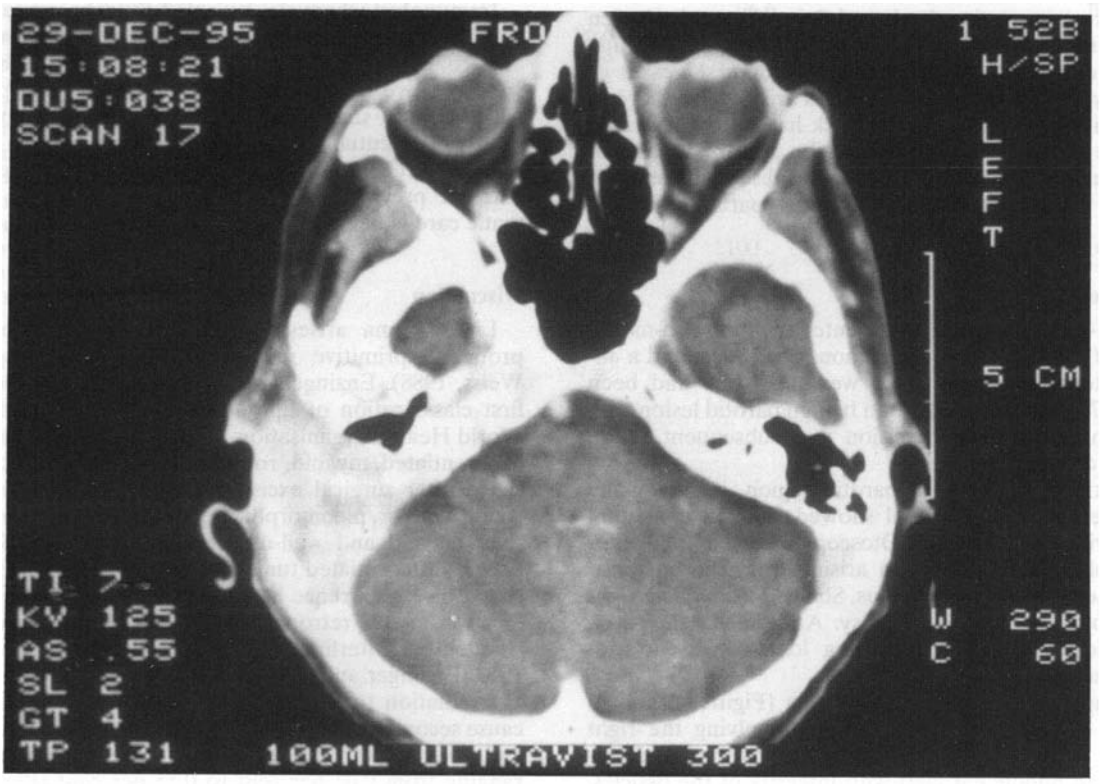

(2)

FIGS. 1 AND 2

High resolution CT scan, showing extensive destruction of the right temporal bone.

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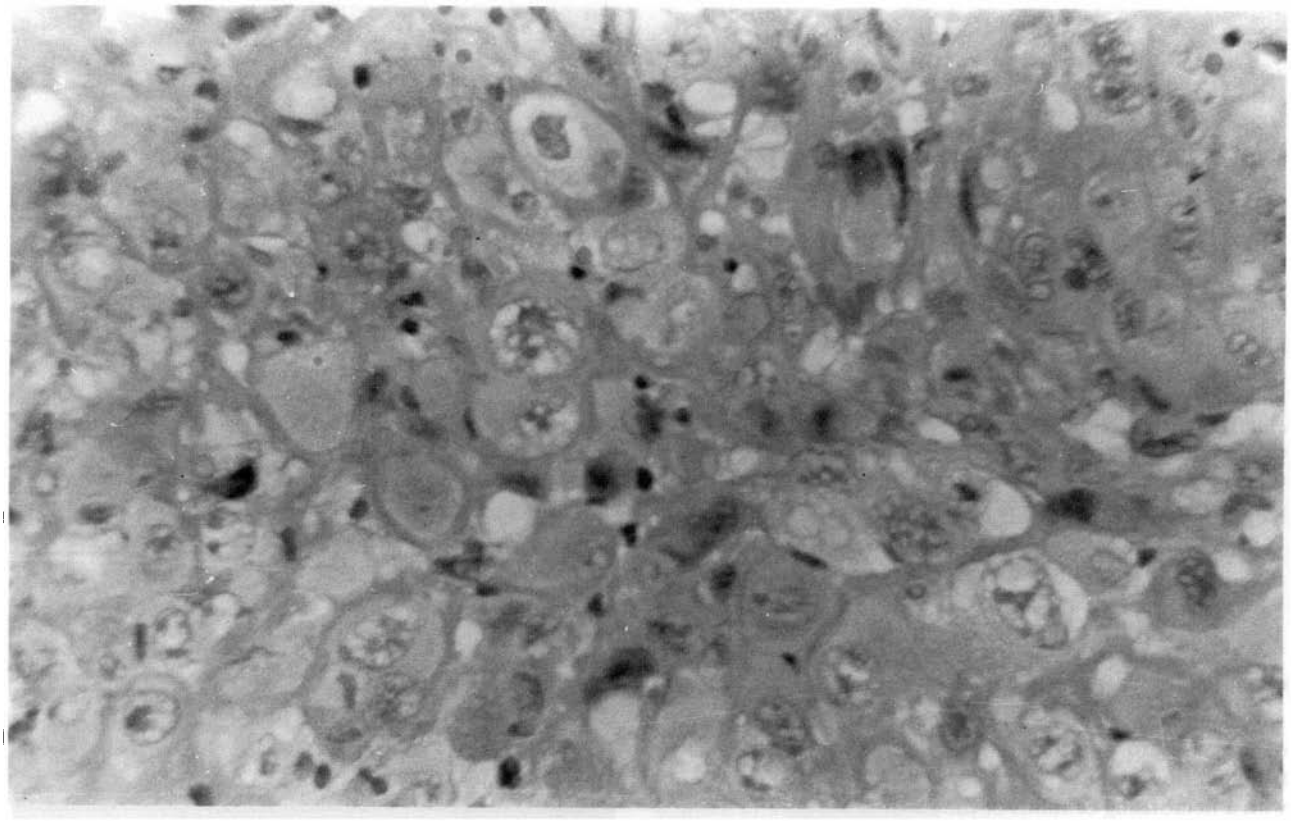

FIG. 3
High power view showing cells with vacuoles scalloping displaced nuclei, characteristic of lipoblasts.

therapeutic radiation is in the region of 10 years (Hall, 1991), but for low dose radiotherapy, the induction period averages 50 years (Van der Laan *et al.*, 1995).

Recent review of the literature (Van der Laan *et al.*, 1995), shows that 42 cases of radiation-induced sarcoma have been reported. Our case fulfils the criteria of Cahan *et al.* (1948) for radiation-induced neoplasms.

Treatment of liposarcoma depends on radical local excision, as the tumour invariably extends beyond the main tumour mass, with even well-differentiated tumours having a propensity to recur (Enzinger and Weiss, 1988).

Liposarcomas are radiosensitive, and post-operative radiotherapy has been shown to improve survival rates (Spittle *et al.*, 1970). No study to date supports the use of chemotherapy in the treatment of primary liposarcoma.

Unfortunately in this case, the extent of the tumour at presentation in an octagenarian obviated surgery, and her previous history of radiotherapy precluded this treatment modality.

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