Multiple cranial nerve palsies as a result of perineural invasion by squamous cell carcinoma

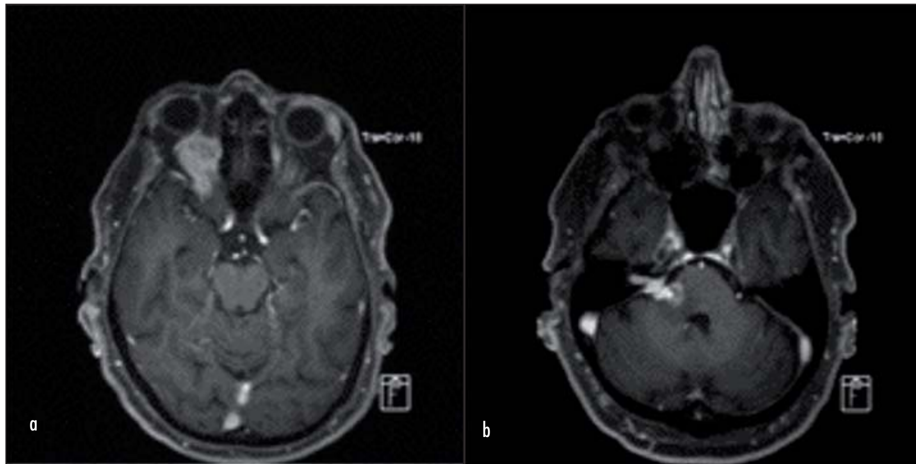

Figure 1. a. T1-weighted axial magnetic resonance imaging scan with gadolinium contrast shows a heterogeneous, enhancing right retrobulbar mass with extensive perineural involvement of the right ophthalmic branch of the trigeminal nerve. Some cystic degeneration is seen. b. Perineural invasion of the right facial nerve is demonstrated on this further axial magnetic resonance imaging scan, showing an enhancing mass in the right cerebellopontine angle, extending into the adjacent pons and right internal acoustic meatus.

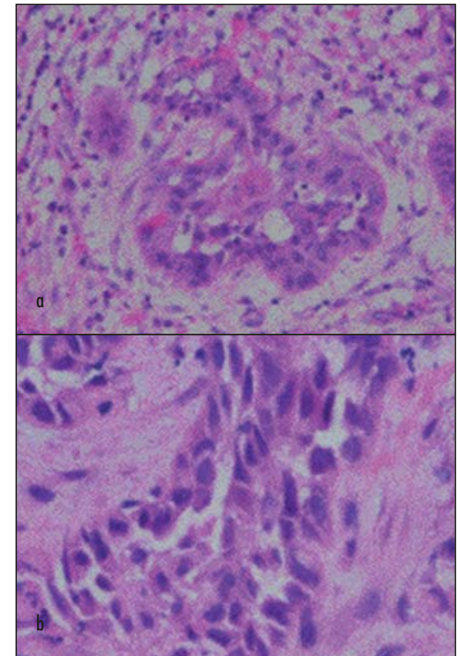

Figure 2. a. Micrograph of initial temporal biopsy showing nest of squamous cell carcinoma demonstrating central keratin formation. b. Micrograph of subsequent orbital biopsy showed large cells with hyperchromatic nuclei consistent with poorly differentiated carcinoma; immunoprofile confirmed poorly differentiated squamous cell carcinoma.

Introduction

Squamous cell carcinoma is notorious for perineural invasion, occurring in 2.5–14% of cases (Feasel et al, 2001). Recognizing the potential for perineural invasion is paramount in patient management as perineural invasion is often asymptomatic, but is associated with a poorer prognosis (Leibovitch et al, 2005). This article presents an unusual case of highly aggressive squamous cell carcinoma with symptomatic and simultaneous perineural invasion affecting both facial and trigeminal nerves with catastrophic results.

Discussion

Delayed recognition of perineural invasion is not uncommon (McNab et al, 1997) and may contribute to the poor prognosis associated with this neurotropic phenomenon; however, there are previous reports of perineural invasion

Case Report

A 70-year-old man presented with a 1-month history of right-sided proptosis, ptosis and intermittent dull ache of the right temple. Three years before, a squamous cell carcinoma had been removed from his right temple at another hospital; excision had been initially incomplete, requiring three further operations over 8 months. Two days after the last operation, he developed a right facial palsy, initially thought to be Bell's palsy and managed with prednisone with no effect. His right forehead, cheek and upper lip had also felt numb since around this time. Five months later, he lost hearing in his right ear and reported some loss of balance but no vertigo. Six months later, he lost sight in his right eye secondary to exposure keratopathy; an upper lid gold weight was inserted and right-sided temporalis transfer performed.

Examination revealed a complete right ptosis and 4 mm of proptosis with restricted extraocular movements in all directions. There was a right lower motor neurone facial palsy, reduced sensation in the distribution of the 1st and 2nd division of the trigeminal nerve and sensorineural hearing loss in the right ear. His right cornea was completely vascularized with a visual acuity of counting fingers. There was no relative afferent pupillary defect. No lymphadenopathy was detected. His imaging and histology results are shown in *Figures 1* and *2*. As a result of these findings, palliative radiotherapy was administered.

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presenting acutely (Jackson et al, 1980) and involving multiple nerves simultaneously (Clouston et al, 1990). As Lawrence and Cottel (1994) suggested, perineural invasion should be suspected when risk factors such as male sex, an initial lesion size greater than 2 cm, and head and neck tumours displaying aggressive features are present.

Histological detection of perineural invasion can also be problematic, because of the presence sometimes of only a single layer of cells in the perineural space; skip lesions have also been documented (Feasel et al, 2001). Mohs' micrographic surgery with an extra clearance level has been suggested (Feasel et al, 2001) as the standard in managing lesions demonstrating perineural invasion.

Conclusions

A prudent approach to cranial nerve palsies in the setting of previous squamous cell carcinoma is to assume perineural invasion until proven otherwise. **BJHM**

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