CASE REPORT

A primary squamous cell carcinoma of the orbit

Secondary squamous cell carcinomas (SCCs) account for 6.8% of histologically proven orbital tumours. These most commonly derive from the paranasal sinuses followed by the periocular skin, the nasal cavity, the nasopharynx, the epibulbar structures, and the lacrimal sac.[1] Metastatic orbital SCC is less common with 1/28 and 0/32 cases of larger series of metastatic orbital tumours.[2,3]

Primary orbital SCCs are extremely rare, with 6 presumed cases reported in the literature.[4–7] We present a case of primary orbital SCC.

Case Presentation

A 78-year-old Caucasian male presented with an 18-month history of horizontal diplopia and a 1-month history of left-sided ptosis, periorbital paraesthesia, and increasingly severe orbital pain. The visual acuity was unaffected. He had had 7 facial basal cell carcinomas (BCC) (nose, left cheek, glabella, and right temple) in the preceding 15 years, one of which (right ear) had had areas of squamous differentiation and had recurred before complete excision. Immunohistochemistry of this lesion was positive for Ber-EP4m and negative for epithelial membrane antigen (EMA).

He had had 2 recent cerebrovascular events and was on warfarin.

On examination he had 2 mm of left proptosis relative to right, complete left ophthalmoplegia, and a dense left ptosis. He had paraesthesia in the distribution of the 1st and 2nd branch of his left trigeminal nerve and wasted muscles of mastication. The pupil reactions, remaining cranial nerves, and colour vision were all normal. There were no suspicious skin lesions anywhere on the face or body.

Magnetic resonance imaging (MRI) demonstrated an avidly enhancing well-circumscribed lesion in the left orbit that infiltrated posteriorly into the cavernous sinus (Fig. 1). This was not present on MRI done to investigate a CVA 2 years prior. There was no evidence of sinus pathology on MRI or computed tomography (CT) of the head, and full-body positron emission tomography (PET) scanning was negative (Fig. 2). Histological examination of an orbital biopsy specimen found a poorly differentiated SCC. On immunohistochemistry, the tumour was positive for AE1/3, EMA, cytokeratin 7, and P63 with focal positivity for cytokeratin 5 and 6. Prostate-specific antigen, prostate-specific acid phosphatase, Ber-EP4, cytokeratin 20, synaptophysin, chromogranin, thyroid transcription factor 1, thyroglobulin, CD56, diastase periodic acid Schiff (DPAS), and S100 were negative.

Three management options were considered and explored with the patient: conservative management, primary radiotherapy, and palliative surgical debulking with adjuvant radiotherapy. The latter was decided upon because of the intolerable orbital pain and the possibility of a longer life expectancy. The patient underwent palliative exenteration with a single-stage contralateral forehead flap reconstruction. Histopathological and immunohistochemical examination confirmed the diagnosis with incomplete margins posteriorly. There was no evidence of extension to or from the periocular skin and no lymphovascular or perineural invasion. There was no involvement of the lacrimal gland. The patient suffered a hemorrhagic stroke perioperatively or immediately postoperatively and died 2 days later.

Discussion

SCCs arise from squamous epithelium present in the skin and the aerodigestive tract—in particular, the oral cavity, larynx, and the oesophagus.

The orbit does not typically contain squamous epithelium. However, other epithelial types are occasionally sequestered in the orbit such as conjunctiva and respiratory epithelium. It is plausible that squamous epithelium is sequestrated during embryogenesis and undergoes malignant change later in life. An alternative hypothesis is that a benign orbital epithelial choristomatous cysts, such as dermoid or epidermoid tumours, underwent malignant transformation to produce SCCs.[8] However, the absence of such a lesion on the MRI scan 2 years prior discounts this theory.

There was no evidence of a secondary or metastatic source in the present case. All the previous facial tumours were BCCs. Immunohistochemistry of the right ear BCC with squamous differentiation was positive for Ber-EP4m, which is indicative of BCC, and negative for EMA, usually positive in SCCs. In addition, it was on the contralateral side to the orbital SCC, making perineural spread extremely unlikely.

Mucoepidermoid carcinomas of the lacrimal gland can be difficult to differentiate from SCCs as they also can be positive for BerEP4 and EMA. In this case, however, a mucin stain (DPAS) was negative and the lacrimal gland was not involved.

PET scanning is the most sensitive way of searching for unknown primaries and did not reveal any FDG avid lesions in the present case.[9] FDG PET resolution is limited to 5 mm, and therefore a smaller lesion

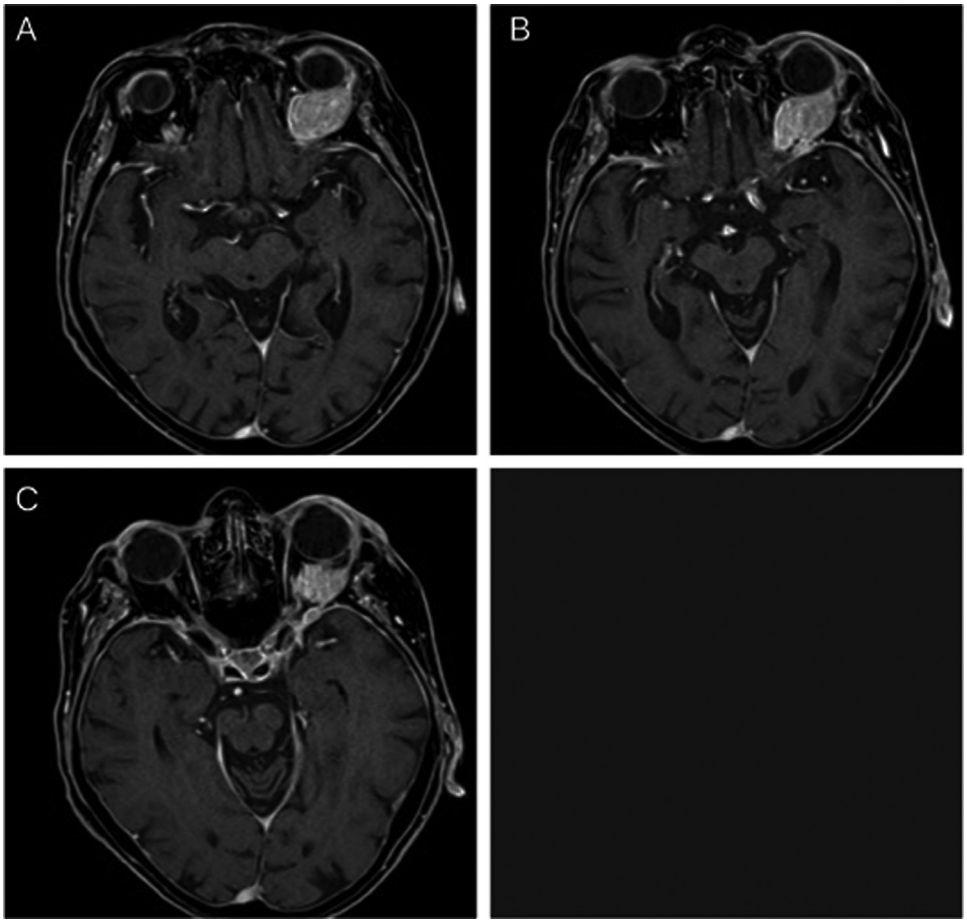

Fig. 1—Axial views of T2-weighted magnetic resonance imaging scan demonstrating the left orbital squamous cell carcinoma (A and B) with extension into the left cavernous sinus (C).

may be missed.[10] However, metastatic SCCs typically measure at least 15 mm in width and 2 mm in Breslow thickness.[11]

Six previous cases of presumed primary orbital SCC have been described.[4–7] Five of these had a negative PET scan. The method of systemic assessment was not described in the other case. Two cases were treated with surgery and then radiotherapy. Two cases were treated with radiotherapy alone, and 2 cases received radiotherapy combined with chemotherapy. In the 2 cases treated with radiotherapy alone, 1 was alive at 6 years and the other died at 1 year because of direct extension of the tumour. The 2 cases treated with a combination of surgery and radiotherapy were alive at 30 months and 2 years. Of the 2 cases treated with radiotherapy and chemotherapy, 1 was alive at 4 years, and the other died at 19 months because of a contralateral orbital SCC. There are not enough cases of primary orbital SCC to compare with the outcomes of secondary orbital SCC, which in a study are 100% survival at 2 years but 19% by 9 years.[12]

Primary orbital SCC, although rare, must be considered in the differential diagnosis of orbital masses. The prognosis after exenteration and adjunctive radiotherapy may be better than after radiotherapy alone.