Preoperative and early postoperative magnetic resonance imaging in two cases of childhood choroid plexus carcinoma

Abstract We present and illustrate the MRI appearances of two children with choroid plexus carcinoma. The MRI characteristics of these rare tumours are reviewed. Since total surgical resection is a significant prognostic factor, early postoperative MRI was performed in both cases to ensure surgical clearance. In one case a complete resection was documented and this patient remains well at short-term follow-up. Residual tumour was noted in the second case, but despite “second look” surgery there was subsequent local relapse.

Keywords Choroid plexus carcinoma · Magnetic resonance imaging

Introduction

Choroid plexus neoplasms account for 0.4–0.6% of intracranial tumours and 1.5–6.4% of all paediatric intracranial tumours [1, 2, 3]. Choroid plexus carcinoma (CPC) represents between 8 and 17% of all choroid plexus tumours [1, 4]. The MRI appearances of CPC have rarely been reported [2, 3, 4, 5, 6, 7, 8, 9]. These tumours are difficult surgical targets due to their large size, invasive nature, vascularity and location, and a complete resection is achieved in only 40–60% of cases [1, 10]; however, the extent of surgery is of major importance to clinical outcome [10, 11]. We used early postoperative MRI to evaluate the completeness of tumour removal and hence the need for “second look” surgery.

We describe the MRI appearances of CPCs in two children and review previous MRI descriptions. We also illustrate the use of early postoperative MRI in the management of these patients.

Case reports

Case 1

A 4-year-old girl was admitted to her local hospital with a 2-week history of intermittent vomiting, drowsiness and confusion. She had previously been well and had developed normally. Physical examination was normal apart from a subtle left-sided facial palsy. While waiting for a CT scan she became suddenly bradycardic and hypertensive. Following resuscitation, intubation and ventilation, she was managed in the intensive care unit. Fundoscopy was nor-
Fig. 1a–c Case 1. a T2-weighted axial, b T1-weighted coronal and c T1-weighted coronal post-gadolinium images demonstrate the heterogeneous mass, isointense in signal on T1- and T2-weighted images, which extends medially from the left lateral ventricular trigone. There is heterogeneous marked gadolinium enhancement and surrounding vasogenic oedema with associated blood degradation products and a posterior cyst. Bulky enhancing choroid plexus is seen within the body of the left lateral ventricle (arrow).

There was immunohistochemical positivity with epithelial markers (CAM 5.2, EMA), but it was largely negative for markers of glial differentiation (GFAP). The morphological appearances and immunophenotype were typical of CPC grade 3 (WHO) [12].

In view of the histopathological findings, a postoperative MRI (Fig. 3) was performed 30 h after surgery. High T1 signal was seen within the surgical cavity, related to the choroid plexus of the left lateral ventricle and along the surgical tract, but there was no pathological enhancement on immediate post-gadolinium T1-weighted imaging.

Postoperative recovery was uneventful, although there was a residual left facial weakness and a right sixth nerve palsy. Adjuvant chemotherapy was commenced and 3 months later the child remained well.