Table 1
Clinical features of reported cases of germinomas involving the midbrain

Authors (year)	Age/ Sex	Symptom	Location	Lesion	Hydrocephalus	Diagnostic procedure	Treatment	Outcome
Matsumoto et al. (1998)[4]	27/M	Parinaud's syndrome Nystagmus	Left upper midbrain	Solid	–	MRI-guided, stereotactic biopsy	Radiotherapy	Alive at 1 month
Ben Amor et al. (2004)[5]	15/M	Right hemiparesis Gait disturbance Left abducens palsy Parinaud's syndrome Personality changes	Bilateral midbrain–thalamus	Solid and Cystic degeneration	+	Stereotactic biopsy	Chemotherapy with radiotherapy	Alive at 1 year
Uchino et al. (2006)[6]	22/M	Parinaud's syndrome Nystagmus	Left midbrain–thalamus	Cyst	+	Neuroendoscopic biopsy	Chemotherapy with radiotherapy	Alive at 6 months
Koizumi et al. (2006)[7]	29/M	Oculomotor palsy Abducens palsy Right hemiparesis Ataxia Neurogenic bladder	Left pons– thalamus	Solid	–	MRI-guided, stereotactic biopsy	Chemotherapy with radiotherapy	Alive at 7 months
Present case	29/M	Parinaud's syndrome Nystagmus	Left midbrain–thalamus	Cyst	–	Open biopsy	Chemotherapy with radiotherapy	Alive at 5 years

The clinical and radiological features of midbrain germinoma show some differences from classical pineal germinoma, but the prognosis of midbrain germinoma is probably as good as for classical germinoma. Although midbrain germinoma is rare, primary intracranial germinoma should be included in the differential diagnosis of midbrain tumors. Additionally, biopsy continues to be important in the early diagnosis of such lesions. Furthermore, appropriate treatment has been shown to improve clinical outcome.

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An atypical case of head trauma with late onset of contrecoup epidural hematoma, cerebellar contusion, and cerebral infarction in the territory of the recurrent artery of Heubner

Shinsuke Sato, Tetsuryu Mitsuyama, Akira Ishii, Takakazu Kawamata *

Department of Neurosurgery, Tokyo Women's Medical University Yachiyo Medical Center, 477-96 Owada-Shinden, Yachiyo-shi, Chiba 276-8524, Japan

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ABSTRACT

We encountered a case of head trauma with very unusual delayed events. A 68-year-old woman was admitted to our hospital after receiving a direct impact to her occiput in a traffic accident. Head CT scans showed a thin acute epidural hematoma in the posterior fossa corresponding to a linear fracture, followed by late onset of contrecoup left frontal epidural hematoma and subsequent cerebellar contusion in the right cerebellar hemisphere. Fifteen days after the trauma, the patient developed mild motor weakness of right upper extremity. MRIs demonstrated an infarct in the territory of the left recurrent artery of Heubner. Although rare, atypical late events in patients with head trauma as reported here should be taken into consideration during subacute follow-up periods.

* Corresponding author. Tel.: +81 47 450 6000 (ext.7007); fax: +81 47 458 7047.
E-mail address: tkawamata@nij.twmu.ac.jp (T. Kawamata).

1. Introduction

A traumatic intracerebellar hematoma or contusion occurs in 0.55% to 0.82% of all head injuries,[1–25] with a poor outcome experienced by between 20% and 100% (average, 60%) of patients.[4–6,8,10,13,19,21,25] The prognostic factors for cerebellar contusion have been reported to be Glasgow Coma Scale (GCS) score at admission and concomitant presence of supratentorial lesions.[4] Most of the concomitant supratentorial lesions were contralateral acute subdural hematoma and cerebral contusion. Furthermore, delayed traumatic intracerebellar hematoma has been reported previously.[1,5,8,9,11–13,16,17,20,24] Barantham and Dennysin[20] reported that the incidence of delayed onset of cerebellar contusion was 0.025% (2 cases of 7,866 head injuries). Nagata et al. reported that 5 of the 14 reported cases died (a mortality rate of 35.7%).[8]

Acute epidural hematoma caused by contrecoup head injury is rare.[5,26–31] Only 7 cases have been reported.[5,26–31] Four of the 7 patients underwent craniotomy for the contrecoup epidural hematoma. One patient died of posterior fossa contusion and hematoma despite having undergone an operation for coup injury.[5]

Posttraumatic cerebral infarction is rare and reported in only 1.9% of patients who required head CT scans because of trauma.[32] Moreover, there are few cases of occlusion of perforating arteries after minor or severe head injuries.[32–37]

We encountered a patient with atypical head trauma with late onset contrecoup epidural hematoma, cerebellar contusion, and cerebral infarction in the territory of the recurrent artery of Heubner.

2. Case report

A 68-year-old female without carotid artery disease, cardiovascular disease or risk factors for vascular disease received a direct impact to her occiput in a traffic accident when she was walking. She lost consciousness and was transported to our hospital within 30 min of the trauma. On admission, her GCS score was 13. Physical examination showed a subcutaneous hematoma on her occiput only. A skull X-ray revealed a linear fracture in the occipital bone across the transverse sinus. An initial CT scan showed a thin acute epidural hematoma in the posterior fossa on the right side that corresponded to the linear fracture (Fig. 1). The blood tests showed a hemoglobin level of 12.5 g/dL, hematocrit 38.4%, platelet count 24.7×10^4 per mm^3, prothrombin time (PT) 56% of normal, activated partial thromboplastin time (APTT) 29 s, and target prothrombin time-international normalized ratio (PT-INR) 1.3. Conservative treatment was initiated.

Four hours after the trauma, a repeat (second) CT scan showed an epidural hematoma, which was not depicted on the initial CT scan, in the left frontal area (Fig. 2). The hematoma was most probably from a contrecoup injury. Because the patient's consciousness gradually recovered, conservative therapy was continued. On the next day after the trauma, a repeat (third) CT scan revealed contusion in the right cerebellar hemisphere (Fig. 3) without an increase in size of the left frontal epidural hematoma.

The patient developed mild motor weakness of the right upper extremity 15 days after the trauma. On the day of symptom onset T2-weighted MRI demonstrated a hyperintense lesion in the left caudate nucleus, which was considered to be an infarction in the territory of the recurrent artery of Heubner. This was compatible with a CT scan taken on the next day (Fig. 4). A magnetic resonance angiogram (MRA) showed no abnormality in the main arteries (Fig. 4). She was discharged 22 days after the injury without neurological deficits.

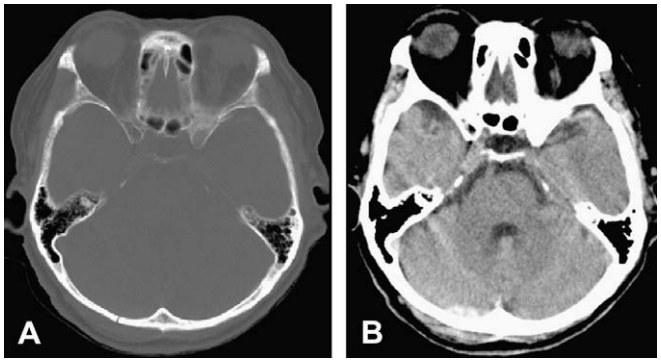

Fig. 1. Axial CT scans on admission showing (A) a linear fracture in the occipital bone across the transverse sinus and (B) a corresponding thin epidural hematoma in the posterior fossa on the right side.

Fig. 2. Axial CT scan performed 4 hours after trauma showing an epidural hematoma due to contrecoup injury on the left frontal region, with prominent scalp edema in the right occiput.

3. Discussion

D'Avella et al. reported a clinicoradiological analysis of 81 patients with a traumatic intracerebellar hemorrhagic contusion or hematoma.[4] They found that the factors for poor outcome were GCS score at admission (< 8) and a coexisting supratentorial traumatic lesions. Our patient with delayed cerebellar contusion had a good admission GCS score of 13 and relatively mild concomitant contrecoup supratentorial epidural hematoma, which may explain the good outcome.

Eighteen cases of delayed traumatic intracerebellar hematoma have been described.[1,5,8,9,11–13,16,17,20,24] In general, delayed traumatic intracerebral hematoma is a clinical entity demonstrated by CT scans, in which hematoma develops more than several hours after trauma.[38,39] The interval between trauma and hematoma appearance ranged from 4 hours to 4 days (average, 13.1 hours) in patients with delayed traumatic cerebellar hematoma.[5,8,9,11–13,16,17,20,24] The admission GCS score is also a prognosis factor in delayed traumatic intracerebellar hematoma. In the present case, delayed intracerebellar contusion with an occipital linear fracture did not develop into a large hematoma, resulting in favorable outcome without surgery.

In terms of the mechanisms of delayed traumatic intracerebellar hematoma, Tsubokawa et al.[40] proposed hyperoxidation caused