CASE REPORT

Unusual delayed presentation of head trauma complicating outcome of facial nerve decompression surgery

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SUMMARY

Late presentation of head trauma is rare. A young boy presented with a traumatic facial paralysis after head trauma. A CT scan of the head showed temporal bone fracture without intracranial insult. Facial nerve decompression was performed and paralysis started improving. However, he presented with vertigo and sensorineural hearing loss after 2 months. Clinical examination also showed cerebellar sign. We suspected iatrogenic injury to the cochlea; however, brain MRI showed haemorrhage in the area of anterior inferior cerebellar artery. The patient was managed conservatively and the vertigo improved. This case stresses on unusual late presentation of head trauma and cerebellar artery injury that complicated the outcome of facial nerve paralysis.

BACKGROUND

Direct neural or vascular injury in temporal bone trauma leads to sudden hearing loss and facial nerve paralysis. This facial nerve paralysis needs urgent decompression but hearing loss is managed by drugs. Facial nerve decompression carries the risk of hearing loss and vertigo that manifest instantly.

Cerebellar injuries also present with acute ataxia and vertigo. Simultaneous, cerebellar and vestibule-cochlear injuries are rare and occur mainly with injury to cerebellar arteries.¹ Vascular injuries present immediately and late presentation is rare.

In this case report, we present an unusual late presentation of vascular insult after head trauma that complicated the outcome of facial nerve decompression.

CASE PRESENTATION

A 11-year-old male child presented to emergency with head and left arm trauma after a fall from a height (tree). The patient also had facial asymmetry and bleeding from left ear. There was no episode of unconsciousness, seizure, hearing loss or vertigo.

On examination, Glasgow Coma Scale was 11 (E4V3M4). Otoloscopic examination showed clots in the left external ear canal and tympanic membrane was not visible. There was lower motor neuron type of facial nerve paralysis on left side.

INVESTIGATIONS

The patient was subjected to radiological investigations. A CT scan of the head showed longitudinal fracture of left temporal bone and pneumocephalus

(figure 1). X-ray of the left radius showed simple fracture.

Pure tone audiometry showed normal hearing threshold (15 dB) in right ear and conductive hearing loss (36 dB) in the left ear. Topodiagnostic tests of facial nerve showed injury at the level of first genu of fallopian canal.

DIFFERENTIAL DIAGNOSIS

The patient was diagnosed with a left temporal bone fracture with lower motor neuron facial paralysis and simple fracture of left radius.

TREATMENT

The patient was managed conservatively by the neurosurgeon and his left radius fracture was stabilised with cast by the orthopaedic surgeon.

We did facial nerve decompression under general anaesthesia. Peroperatively, fallopian canal and facial nerve were intact. There was a small anterior-superior perforation in the tympanic membrane that was repaired. The surgical procedure was uneventful and the patient extubated comfortably. The patient was started with oral steroids and antibiotics.

The postoperative period was uneventful and discharged on the 10th postoperative day. The facial nerve recovered to grade 3 (House Brackman) at the time of discharge. The patient was advised for follow-up after 2 weeks.

OUTCOME AND FOLLOW-UP

The patient did not attend the scheduled follow-up and presented in emergency after 2 months with giddiness and vomiting for the past 1 week. There was no loss of consciousness, fever, visual disturbances or seizure. On examination, there was a grade 1 central type of nystagmus with left facial palsy. He had dysarthria and hypoaesthesia along the left side of the face. Romberg test was positive with swaying towards left. Other features of left cerebellar pathology were positive.

Rinne's tuning fork test was positive in right and false negative in left ear whereas, Weber's tuning fork test was lateralised towards right. Pure tone audiometry showed normal hearing thresholds in right ear but more than 120 dB hearing thresholds on the left. There was complete left facial paralysis (grade 5). We kept the possibility of labyrinthitis with petrositis and cerebellar abscess due to iatrogenic injury during facial nerve decompression.

To cite: Thakur JS, Shekar V, Saluja M, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-200188

Figure 1 CT scan of the head showing longitudinal fracture of temporal bone.

An MRI of the brain showed haemorrhage in the left cerebellar hemisphere supplied by anterior inferior cerebellar artery. Cochlea and semicircular canals were normal (figures 2 and 3).

The parents did not give their consent for an angiography and the patient was managed conservatively on consultation with neurologist. Vertigo improved and the patient was discharged after 2 weeks of hospitalisation with consultation of physiotherapist. The patient and parents were advised to avoid trauma or infection in eyes and the normal right ear. He was advised for follow-up after 6 months but did not return.

DISCUSSION

Facial nerve decompression surgery carries major risk of sensorineural hearing loss. Nystagmus, vertigo with hearing loss after facial nerve decompression is generally due to injury to the labyrinth during surgery. Intraoperative labyrinth injury is detected by escape of clear fluid and bone defect should be plugged immediately. Postoperatively, the patient presents with vertigo, nystagmus and hearing loss. We conduct absolute bone conduction test in immediate postoperative period of a patient undergoing facial nerve decompression as the ear has pressure

Figure 2 MRI of the brain showing haemorrhage in the area of anterior-inferior cerebellar artery in the cerebellum.

Figure 3 MRI of the brain showing haemorrhage in the area of anterior inferior cerebellar artery in the cerebellum.

dressing. In the present case, the patient did not have nystagmus and hearing loss in the postoperative period and hence a labyrinth injury was excluded. Postoperative infective labyrinthitis can also lead to this presentation but it is normally associated with fever. Anterior-inferior cerebellar artery injury leads to facial paralysis, deafness, hypoesthesia in the ipsilateral face but contralateral half of body with cerebellar symptoms.¹

The interval between the trauma and haematoma development ranges from 4 h to 4 days. Delayed presentation of cerebellar insult in head injury is extremely rare and only 1% of cerebellar injuries present late.² There are few reported cases in the literature.^{3–9} Djaldetti *et al*¹⁰ reported a case of delayed cerebellar presentation after 5 years of head injury. There are numerous hypotheses for delayed presentation of cerebellar injury. Hirsch¹¹ reported that delayed post-traumatic intracerebral haematomas may be due to gradual bleeding into a previously unrecognised area of contusion. Tsubokawa *et al*¹² proposed that hyperoxidation secondary to local cerebral circulation disorders leads to delayed post-traumatic intracerebral haematomas. Late necrosis of parenchymal blood vessels secondary to brain injury also leads to clotting.¹³ Evans and Scheinker⁸ hypothesised that a sequence of vasoparalysis in the contused brain causing increased endothelial cell permeability followed by diapedesis and extravasation resulting in the formation of intracerebral haematoma.

We had an unusual case of delayed vertigo and sensorineural hearing loss after facial nerve decompression. However, clinical examination and investigations showed haemorrhage in the area of anterior inferior cerebellar arteries. Vascular injury presented late that tended to misdirect us but MRI helped to diagnose vascular insult. In vascular injury, angiography is confirmatory but we could not perform it.

This case report puts emphasis on thorough clinical examination in post-traumatic facial nerve decompression cases, where iatrogenic injury can be presumed as the cause of vertigo and no further investigations is carried out.

Learning points

- ▶ Vertigo and sensorineural hearing loss after facial nerve decompression is mainly due to labyrinth injury.
- ▶ The patient should be informed about rare late presentation of head trauma.
- ▶ Cerebellar artery injury should be suspected in late presentation of vertigo and hearing loss after head trauma.

Contributors JST was responsible for conception, draft and performed the surgery. Other authors were responsible for patient care, drafting, reference collection and critical revision. All authors have read and approved final version of this manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned, externally peer reviewed.

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