

Case Report

Delayed manifestation of unilateral 6th and 7th cranial nerve palsies following head injury

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Abstract:

Delayed manifestation of unilateral sixth (abducens) and seventh (facial) cranial nerve palsies following head injury is rare. We reported interesting case of a 27 year old male who complained of unilateral sixth and seventh cranial nerve involvement eight days following trauma. He was subsequently put on steroids and physiotherapy and is improving.

Key words: unilateral, delayed, sixth and seventh cranial nerve palsies, head trauma

Introduction

Incidence of cranial nerve injury following closed head injury varies between 5-23%. Though bilateral cranial nerve injuries have been reported, unilateral involvement of sixth and seventh nerves are rare. The challenge to the neurosurgeons in such cases are unremarkable initial assessment (with respect to the cranial nerves), delayed onset, tackling patient (nerve palsies are socially debilitating), management, time of intervention (surgical decompression) and finally their outcomes. We want to share a case of unilateral involvement of sixth and seventh nerve palsies following a road traffic accident.

Case report

A 27 year old male patient was admitted in our neurosurgical emergency with alleged history of road traffic accident. He had no history of loss of consciousness, vomiting or convulsion. On examination the patient was awake with spontaneous eye opening but irritable. Bilateral pupils were equal in size and reacting to light. His vision allowed him to count fingers from 6 feet. Extra ocular movements

of both eyes suggested normal movements in all axes. The patient was obeying simple verbal commands and moving all four limbs. His Glasgow Coma Scale (GCS) was calculated to be 14 (E4 V4 M6) from the above findings. He did not have any other focal neurological deficits. The patient had incurred a clean lacerated wound over the left forehead with a left sided supracondylar fracture of the humerus. No other associated injury (chest, abdomen) was noted. He was found to be haemodynamically stable and maintained oxygen saturation in room air. Investigations were carried out accordingly. CT scan revealed normal brain parenchyma and facial skeleton. Other reports were within normal limits. The lacerated wound was aseptically stitched by us. He was subsequently shifted to the emergency operation theatre for supracondylar plating of humerus fracture. The course of surgery was uneventful but due to hypoventilation he was put on ventilator. The patient was weaned off from ventilator after six days. On eighth day he started complaining of double vision of left eye, deviation of mouth to right side and lateral

gaze palsy on the left side which resulted from a unilateral abducens (sixth) and facial(seventh) nerve palsy. This prompted us to order for a MRI scan. It showed a thin strip of subdural hematoma in right occipital and left parieto occipital region. The patient was discharged with the advice to continue steroids, physiotherapy and facial exercises and report after every two weeks.

Discussion

Head injury patients may present with delayed onset of cranial nerve palsies. The cranial nerves most commonly affected following blunt head trauma are olfactory, facial and vestibulocochlear nerves.[2] Our case was novel as patient had an initial GCS of 14 and cranial palsies developed much later. Incidence of delayed manifestation of unilateral involvement of both abducens and facial nerves is not only rare but neurosurgically puzzling. Further, we were shaken by the paucity of information either from precedent experience of peers or available literature.

Abducens and facial nerves individually are susceptible to injury at various points in their intracranial course.

Abducens nerve

1) After it exits from the pontomedullary sulcus it courses through prepontine cistern to join the cavernous sinus in the petroclival region and finally innervates the lateral rectus muscle in the orbit. It has 3 angulations in the petroclival region.[3]

2) It vertically moves over the petrous bone (prone to fracture).[4]

3) It makes a 120 degree forward turn and passes below Grubers ligament and Dorellos canal (stretch injury).[5]

All the angulations are vulnerable to injury.

Facial nerve

1) It has a long, tortuous and intraosseous course in temporal bone (prone to penetrating,blunt trauma).[6]

2) It moves through internal auditory canal (injury in transverse fracture of temporal bone).

The patient in our case did not have any obvious fracture of skull bones as supported by a normal CT scan taken on the day of admission. HRCT was not done as there was not even a hint of fracture in the CT scan and cranial nerve examinations were normal. Immediate facial, abducens and oculomotor nerve injuries are easily identifiable as altered consciousness does not obscure their examination, besides its causes are easily explainable. The mechanism of delayed injury is not clear. It generally occurs 2-21 days after injury.[6] In our case we discovered it on the 8th day after patient was weaned from ventilator. Below are given few of the probable causes of delayed nerve palsies[7]

1. Ischaemic changes due to bleeding(into facial canal) and vasospasm (injury to meningodorsal artery in case of abducens nerve)
2. Mild pressure on nerve resulting in neurapraxia or conduction block due to segmental demyelination
3. Higher pressures leading to axonal damage with denervation.
4. Delayed swelling and oedema causing compression within the fibrous sheath,epineurium or surrounding tissue
5. Last but not the least elevated intracranial pressure.

The likely causes in our patient may have been ischemic changes, mild pressure and progressive oedema in surrounding space due to subdural haematoma.

Facial and abducens nerve palsies recover spontaneously with supportive treatment over varying period of time. In case of unilateral abducens palsy the recovery rate is between 12-73% in six months.[8] ,[9] Sometimes late surgery may be recommended in cases of non recovery or within six months of trauma in case of facial palsy if it's progressive in nature.[6] Our patient is improving on steroids and physiotherapy so we with held any intervention.

Conclusion: Delayed nerve injuries after head trauma do not necessarily require active

interventions but one should be cautious regarding its assessment, supportive treatment and adequate follow up.



Photograph : left sided 6th & 7th nerve palsy

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