

Isolated Oculomotor Nerve Palsy from Minor Head Trauma: A Case Report

Shivbrat Sharma¹, Shachita²

^{1,2}Medical Officer ENT Specialist, Zonal hospital Dharamshala (H.P), India
Corresponding author: [shachitakaushal\[at\]gmail.com](mailto:shachitakaushal[at]gmail.com)

Abstract : Oculomotor nerve is 3rd cranial nerve and supplies the extra ocular muscles as well as constrictor pupillae and ciliary muscles which helps in constriction and accommodation of the eye. Apart from this it also supplies the levator palpebrae superioris which functions to elevate the upper eyelid. We herein present a case report of a 20 year male patient with head trauma developing isolated oculomotor nerve palsy with other cranial nerves being normal which is a rarity.

Keywords: Oculomotor nerve, ptosis, levator palpebrae superioris

1. Introduction

Cranial nerve lesions are often the result of severe head trauma. Injury to the cranial nerve is the result of kinetic forces to the brain and skull vault. The trauma required to damage the oculomotor nerve (ON) usually is severe and associated with other neurologic deficits or other associated cranial nerve damage, basilar skull fracture, orbital injury or subarachnoid haemorrhage[1,2]. However, in rare instances, minor blunt head trauma can cause isolated oculomotor nerve palsy (ONP) without other cranial nerve palsy. Nevertheless, only a few reports have described the clinical features of these patients, and mechanisms and imaging studies of nerve damage have not been discussed in depth[3,4]. Oculomotor nerve injury often presents with the ptosis of the same side along with fixed or dilated pupils. We herein present a case report of a 20 year male patient with minor head trauma developing isolated oculomotor nerve palsy of the right side.

2. Case report

A 20 year male patient presented to ENT OPD with history of fall from height approximately 8 feet, sustaining minor head trauma on the forehead region right side followed by inability to open right eye (ptosis) immediately after fall with intact visual acuity of the both eyes. Patient developed diplopia along with swelling around the right eye after 2 days of trauma which were relieved spontaneously after 2-3 days. Mild nasal bleed was noticed from right nostril which stopped after some time. There was no history of watering from or pain to either eye, no history of fever before or after the fall. Complete general physical as well as systemic examination was done which was normal. Both eyes were examined to which left eye was completely normal in all aspects while on the right side there was moderate degree of ptosis (fig1) along with restriction of movement of eyeball in all directions except for lateral abduction and pupil was dilated and sluggish to react to light. All the cranial nerves were examined and were found intact except for the oculomotor nerve. Patient was taken for non-contrast CT scan of the brain and skull bones to which there was no fracture noticed on skull vault and no any intra or extra cranial haemorrhage. Both orbits were normal without any haemorrhagic contents. Patient was subsequently taken for

MRI brain to which nothing significant could be found. Subsequently patient was started on methylprednisolone followed by oral steroids, to which patient didn't responded well.



Figure 1: Clinical picture showing ptosis on the right side

3. Discussion

The oculomotor nerve supplies the following extraocular muscles of both eyes: superior rectus, inferior rectus, medial rectus, inferior oblique, levator palpebrae, ciliary muscle, and iris sphincter. Oculomotor nerve palsy of one side will lead to ptosis with the involved eyeball usually infraducted and abducted. In addition, pupillary dilatation can also be there along with paralysis of accommodation causing blurred vision for near objects. Isolated oculomotor nerve palsy due to closed head trauma is uncommon, with incidence ranging from 0 to 15% [5,6,7]. All these patients sustained moderate to severe head injury with or without significant loss of consciousness. The actual mechanisms of damage to the oculomotor nerve from minor head trauma are not clearly understood. Nagaseki et al [8] concluded that the ophthalmoplegia was due to downward displacement of the brainstem at the time of impact which directly injured the pupillomotor fibres on the ventromedial surface of the third nerve at the posterior Petro clinoid ligament. In addition to mechanical injuries such as rootlet avulsion and distal fascicular damage, Muthu and Pritty[9] suggested that the cranial nerves may suffer from disturbances in blood supply or detrimental biochemical effects arising from head injury. The prognosis of traumatic oculomotor palsy is poor and full recovery is uncommon [10]. A prolonged period (up to years) of healing process is usually anticipated. Definitive surgery was not available [11], occluding spectacle lenses

are helpful for patients awaiting recovery and botulinum toxin injection has been useful in treating exotropia of oculomotor nerve palsy in certain patients [12].

4. Conclusion

In conclusion, our case illustrated that minor head trauma can cause isolated oculomotor nerve palsy in the absence of abnormal findings on skull and brain imaging. Although rare, this condition should be kept in mind while treating all patients sustaining head trauma regardless if it is minor or major.

5. Declaration of patient consent

The authors certify that we have obtained all appropriate patient consent on forms regarding clinical information to be reported in the journal.

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Nil

7. Conflicts of interest

There are no conflicts of interest.

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Author Profile



Dr Shivbrat Sharma, Medical officer ENT Specialist, Zonal Hospital Dharamshala Distt Kangra (H.P)



Dr Shachita, (corresponding author), Medical officer ENT Specialist, Zonal Hospital Dharamshala Distt Kangra (H.P)