

A rare case of traumatic ophthalmoplegia possible trochlear or superior oblique muscle injury: A case report

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Abstract

We report a case of trochlear or superior oblique muscle injury following a history of motorvehicle accident. Patient, a 28-year-old Malay gentleman with history of alleged a motorvehicle accident sustained right eye upper and lower lid laceration wound with normal vision on presentation. 1-month post trauma, patient's vision fluctuates with bilateral ophthalmoplegia. Imaging and other test done were normal which in turn increases suspicion on malingering. He had a delayed onset of possible trochlear or superior oblique muscle injury. With patching of the affected eye, partial recovery of fellow eye was present after the 4th week. The indication for surgical intervention should be delayed to give room for spontaneous recovery.

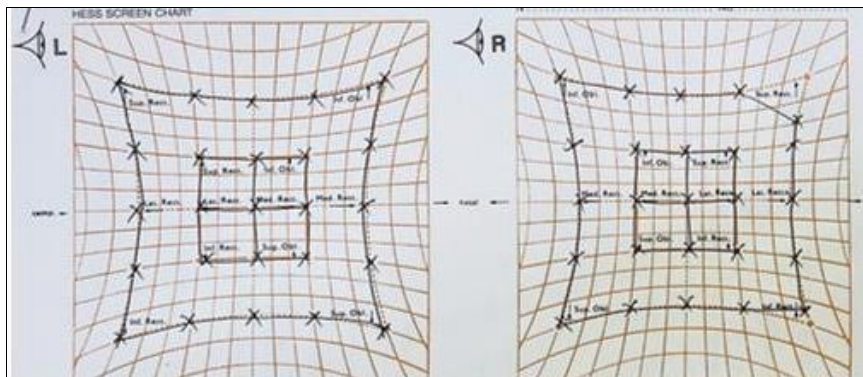
Keywords: Ophthalmoplegia, trochlear injury, superior oblique muscle injury, malingering, Hess chart

Introduction

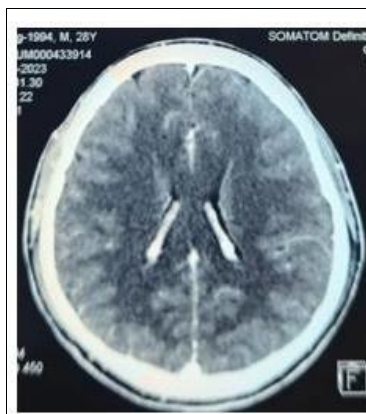
Traumatic ophthalmoplegia are more frequently seen in cases of orbital wall fractures caused by blunt orbital trauma [1]. However, physicians face challenges in clinical scenario when the cause is unknown especially when all the workouts turn out to be normal, thus it may result in suspicion of malingering. Extensive investigations and multidisciplinary approach often needed in trauma cases to establish diagnosis and deliver prompt treatment to reduce risk of long-term damage to patient.

Case Presentation

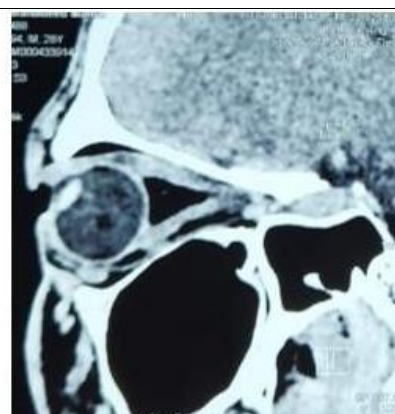
A 28 years old Malay gentleman with no previous history of medical illness alleged motorvehicle accident sustained right eye upper and lower lid laceration wound with periorbital hematoma and subconjunctival hemorrhage. Traumatic brain injury was ruled out. Initially, visual acuity was 6/9 OD and 6/6 OS with no relative afferent pupillary defect (RAPD). Lid toilet and suturing was performed with no complications.



Pic 3: Initial normal Hess chart



Pic 4: Normal CT Brain



Pic 5: MRI Orbit: right eye (Sagittal)

During follow up, bilateral visual acuity was 6/15 with a normal Hess chart and a negative RAPD was documented. However, 3 days post incident, visual acuity reduced for right eye from 6/9 to 1/60. Further examination revealed, normal anterior segment and fundus examination findings with no RAPD. In view of unexplained reduced vision, malingering was suspected and proceeded with fogging test which showed a visual acuity of OD 6/9. However, during subsequent follow up, right eye visual acuity fluctuates between 1/60 to 6/60 whereas left eye was 6/6. Patient's inconsistent right eye vision with normal examination findings further increases our suspicion on malingering. Therefore, fogging test repeated and it showed visual acuity of 4/60 right eye whereas Cadford drum test 6/36 right eye. One month later during follow up, noticed patient develop right partial ptosis and bilateral ophthalmoplegia at all gazes (persistent upgazed) with diplopia which accommodated with abnormal head posture; head tilt downward for vision. Hess.



Pic 1: Abnormal head posture

Pic 2: Primary gaze

chart was unable to perform due to severity of the condition and abnormal head posture. However, forced duction test was negative ruling out mechanical restriction of the ocular movement. Central nervous examination was unremarkable except for reduced sensation over right face. Patient subsequently underwent urgent imaging to rule out any missed pathology. However, it was negative for carotid cavernous fistula or other intracranial pathology. MRI brain/orbit was then ordered by neuromedical team, reported as not suggestive of demyelinating disease or immune cause. Subsequently, he was referred to oculoplastic team further evaluation. He was treated as:

1. Right eye possible Trochlear/Superior Oblique Muscle Injury.
2. Left eye Compensatory hypertropia – to alleviate visual disturbance and diplopia.

However, CT and MRI imaging discussion and review were done with radiologist and the diagnosis was still inconclusive and imaging does not support the diagnosis. Trochlear and superior oblique muscles are small structures located in the eye and injuries involving them are not clearly seen in imaging. He was then managed with patching of the affected eye; partial recovery of fellow eye was present after the 4th week.

Discussion

Traumatic ophthalmoplegia is a complication post head trauma or eye injury.

Ophthalmoplegia can be presented late but it's always a rare phenomenon [2]. It is commonly caused by fractured orbital

rim with entrapment of nerves, causing partial or total paralysis; fractured zygomaticomaxillary complex causing muscle imbalance or lesion to the medial longitudinal fasciculus (MLF). Patient often complain of diplopia and blurring of vision. Management of traumatic ophthalmoplegia depends on the severity and causing mechanism of the condition.

To our knowledge, this case is peculiar and challenging since patient had the delayed onset of ophthalmoplegia with uncertain diagnosis. Despite extensive investigations and multidisciplinary approach was done, the cause is still uncertain for this patient. Our management is purely based on clinical knowledge and patient's response now. Therefore, we came out with proposal of treatment for this patient as follows:

1. Monocular occlusion with a patch

It is done to alleviate visual disturbance and diplopia.

2. Eyeglasses fitted with prisms

Fresnel prisms can be a temporary option during the period of potential progressive resolution [6]. This option is especially useful when the angle of deviation is small. Correction of a less than 10 prism diopter (PD) is generally successful [7] though some patients may tolerate larger amount of prismatic correction with a Fresnel.

3. Botulinum toxin injection

Botulinum toxin injection is a treatment option to manage diplopia [7]. By blocking the release of acetylcholine at the motor endplates of neuromuscular junctions, botulinum toxin prevents muscle contraction, thus causing a temporary paralysis of the extraocular muscle injected. This allows the opposing muscles to align the eye by taking on a greater force movement [11, 10]. This intervention is rarely curative, but it can alleviate diplopia and compensatory anomalous head posture in some cases [8].

4. Strabismus surgery

Surgery aims to relieve diplopia by restoring binocularity and alleviating normal head positioning.

Conclusions

Ophthalmoplegia can be presented late in trauma case but it's always a rare phenomenon [4]. Extensive investigation and multidisciplinary approach often needed to establish diagnosis where masquerading can also be suspected. This case was a diagnostic dilemma as it's inconclusive despite an extensive investigation and multidisciplinary approach. Close follow up is still crucial to detect progression and manage symptoms. Successful treatment of superior oblique muscle palsy can also be achieved through surgical correction.

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