

Lateral Rectus Palsy: A Case Report

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ABSTRACT

Lateral rectus palsy also known as abducens nerve palsy, occurs mainly due to the damage caused in sixth cranial. Head trauma is one of the most common causes of abducens palsy. Orbital muscle or the facial muscle may also directly or indirectly affect the LR muscle after trauma. The evaluation of this condition is mainly by physical examination along with CT or MRI scan for confirmation. The pathophysiology of the LR palsy states that it occurs by ischemia or dysfunction of sixth nerve, or by lesion within surrounding nerve that affect sixth cranial nerve and develops symptom of diplopia. The management of this condition is difficult, it mainly resolves on its own in a six months duration, or can be subsided by recently developed Botulinum toxin injection. Here we report the case of Lateral rectus palsy which resulted with diplopia in a 40 years old female patient who was admitted with the complaints of head injury, episodic vomiting and irrelevant talk. The patient was treated in a private care hospital with neuroprotective drugs and corticosteroids.

KEY WORDS

LR- Lateral Rectus, MRI- Magnetic Resonance Imaging, CT scan- Computed Tomography, CRP- C-Reactive Protein

I. INTRODUCTION

Lateral rectus palsy is a rare clinical condition which can be caused by the abnormality in sixth cranial nerve.^[1] In this condition, the lesion can occur anywhere in between the sixth nerve nucleus in the dorsal pons and the lateral rectus muscle within the orbital muscle.^[2] The sixth cranial nerve has the longest subarachnoid course of all cranial nerves and with lateral rectus muscle which abducts the eye.^[3] The lateral rectus muscle is believed to have a dual embryonic origin and the abducens nerve, which is believed to innervate lateral rectus muscle by two or more trunk.^[4] It is believed to divide the lateral rectus into two

compartment : superior and inferior, either completely or partially affect one of these.^[5,6]

The clinical manifestations of the condition include sudden onset of horizontal double vision, which gets worsen when patient looks with affected eye and the patient may develop convergent strabismus when they looks at an object from a distance.^[7] The occurrence of this condition is caused by poor supply of blood to VIth cranial nerve due to high blood pressure, diabetes, direct pressure caused by tumor, middle ear infection, head injury during accident, or by inflammation in the specific nerve.^[8]

The diagnosis of Lateral rectus palsy in patients is done by taking detailed history, measuring the strabismus and assessing the eye movement, measuring the size of the area of single vision, blood test and MRI scan or CT scan of brain should also be taken for confirmation.^[9]

This rare condition mostly resolves within 3-6 months post head injury, or it can be corrected by either fitting temporary plastic prisms into patient glasses that reduce the condition or by Botulinum toxin injection into lateral rectus which reduce the size of the convergent strabismus.^[10] Here in this case also the patient had the condition of sudden double vision occurred after days of head injury and the formation of subdural hematoma on the bilateral frontal region after accident.

EPIDEMIOLOGY

The sixth cranial nerve palsy is a rare disease, commonly affected with limited incidence. In most of the cases it affect ocular motor nerve in adults. In children almost common with affecting fourth cranial nerve, with the incidence rate of 2.5 cases per 100,000.^[11] The incidence rate of the sixth cranial nerve palsy get vary depending on the severity of the symptoms. The condition for traumatic cause incidence rate occur between 3% to 30%. A 15-year study in United state revealed 4 cases of the bilateral sixth nerve palsy and 16 cases of multiple cranial nerve palsy.^[12]

II. CASE REPORT

We report the case of a 40 year old women with acute history of road traffic accident, skid and fall from bike around 8pm and presented with complaints of head injury, vomiting and irrelevant talk. The patient didn't had any fracture and there was no history of double vision.

Blood examination revealed anemia Hb 8.7g/dL and the total count was elevated by a value of 14320 lakhs/mm³. There was an elevated level of CRP 60.9mg/L indicating the condition of blood infection after hospitalization. Other parameters associated with liver function and renal functions were normal. The CT Brain evaluation showed Bilateral frontal lobe hemorrhagic contusion surrounding edema and also a mild increase in white matter edema with hemorrhagic contusions.

The patient was initially treated with antibiotics INJCEFUROXIME AXETIL+ POTASSIUM CLAVULANATE 1.5g IV BD, INJ BRIVARACETAM 50mg IV TDS, INJ TRANAXEMIC ACID 500mg IV TDS (to prevent bleeding) and T BETAHISTINE 16mg RT TDS (to treat vertigo), T PROCHLORPERAZINE 5mg RT BD. She was also treated with INJ FOSPHENYTOIN 150mg IV TDS which is used to manage the seizure episodes after head injury. INJ EDARAVONE 50mg IV BD was used for its nootropic and neuroprotective property.

She had elevated values of CRP and Total count which was treated with INJ DEXAMETASONE 4mg IV TDS, T DOMPERIDONE + NAPROXEN P/O TDS was

used for the present condition of headache, vomiting and sensitiveness to light and sound. At the end of the treatment she developed hyponatremia due to antiepileptic medication and it was managed with INFUSION SALINE 3%.

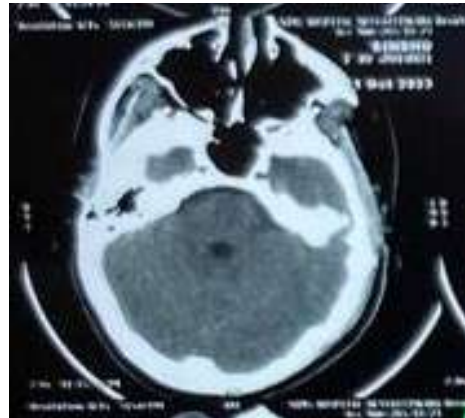


Fig.1. Isolated Sixth Nerve Palsy

In **Fig.1** Abducens nerve is the most affected among other cranial nerves in terms of isolated ocular palsy. The affected eye should turn medially and it cause more esodeviation while looking towards with affected eye or by focusing the distant objects. In **Fig.2A**, The bilateral sixth nerve is rare after head trauma and highly differential in CT Brain. The radiological finding include the inflammation (myositis) that primarily affect extraocular muscle in **Fig. 2B**.



Fig.2A. Bilateral Abducens Nerve Palsy

Fig. 2B. Swelling of lateral rectus nerve

III. DISCUSSION

Sixth cranial nerve palsy is a rare but known sequel form head trauma. The sixth cranial nerve, also called as abducens nerve. An abduction deficit, which may be complete (palsy) or incomplete (paresis), results in esotropia and

ipsilateral abduction deficiency. Patients may report with condition of diplopia. The sixth cranial nerve palsy can occur at any age. For the evaluation it requires the MRI brain and cerebrospinal fluid analysis. In this case, the patient had laboratory examination, CT Scan and MRI. The incidence rate

of the unilateral palsy of the sixth cranial nerve is reported to occur in 1% to 2.7% of all head trauma.

A case report by Adam Geressu et al ^[13] presents a case of a 29 year old who was admitted to the emergency department following a 15-foot fall from a roof. He was evaluated with a non-contrast computed tomography (CT) scan. A bony spur from the lateral wall was noted close to the left lateral wall was noted close to the left lateral rectus muscle. The patient were complained with diplopia and noted complete loss of abduction in the left eyes, his right eye was unaffected. After two weeks the bony spur was removed impinging on the lateral rectus muscle and reconstructed the orbital wall. It failed to resolve the condition and then revealed with atrophy of the left lateral rectus muscle and three months since onset patient showed a slow but marked improvement in abduction. The next case report by Hirota Kato et al ^[14] presents a case of a 50 year-old man who suffered from 5 transient diplopia episode in 16 months. His diplopia lasted between 2 weeks and 3 months and examination revealed an isolated left abducens palsy during the attack of diplopia. Magnetic resonance angiography and MR imaging with constructive interference in the steady state sequence showed neurovascular compression of the left abducens nerve at the point of exit from the brain stem. Together with a lack of the clinical manifestation on headache or febrile illness, report propose with neurovascular compression is a possible etiology of recurrent, isolated abducens nerve palsy. The next case report by David J. Fam et al ^[15] presents a case report on 83 year old female was the belted driver in motor vehicle accident in which she drove off-road and collided with rocks. Her GCS was reported as 15 when emergency services arrived. On evaluation with neurological examination of head revealed bilateral sixth nerve palsies, she complained of binocular diplopia on both right and left horizontal gazes. On magnetic resonance imaging scan of head showed no additional lesion on sixth nerve palsies. At the discharge (12 days later), her deficits had no resolved and double vision persisted at a 2 month follow up appointment. After 1 year, the patient reports with improved ability to abduct each eye but complained of residual abduction palsies and diplopia, was scheduled with surgery in upcoming month.

In our case, the finding which favored the diagnosis of Lateral rectus palsy was the computed Tomography Brain and the patient was treated as per the standard treatment guidelines such as

antibiotics, antiepileptic drugs, neuroprotective agents and with other supportive medications. Since Lateral rectus palsy is a rare condition, it is important to take special attention and care by the health care providers in treating the patients and also to take an appropriate critical approach in evaluating risks and harms.

IV. CONCLUSION

Lateral rectus palsy is also known as “abducens nerve palsy” which commonly occurs due to the damage caused in specific sixth cranial nerve. The disease develops common symptoms such as diplopia, irrelevant talk and seizure. The findings were favored by MR imaging, CT Brain. Here in this case report the patient developed an accidental trauma which resulted in sixth cranial nerve damage. The developed symptoms like diplopia, episodic vomiting, irrelevant talk, and headache. From the finding with physical examination and CT brain the patient were diagnosed as Lateral rectus palsy, a rare disease. The management of this condition is difficult, it mainly resolves on its own in a six months duration or can be subsided by recently developed Botulinum toxin injection, an expensive management. Here the patient were further managed symptomatically.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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