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Case Report

Wall-eyed bilateral internuclear ophthalmoplegia in posterior circulation stroke-a case report

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ABSTRACT

Internuclear ophthalmoplegia is characterised by restricted ocular motility in lateral gaze in which the affected eye shows impairment of adduction and it results from damage to medial longitudinal fasciculus (MLF). Wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) is an extremely rare neurological manifestation which has typical signs including primary gaze exotropia, vertical gaze palsy, ptosis, abducting nystagmus. The common and serious etiological factor is cerebrovascular accident involving the vessels supplying MLF and many cases have life threatening associated neurological impairment. In this case report we have discussed about a gentleman who presented with bilateral ptosis, primary gaze exotropia and headache. Patient found to have vertical gaze palsy and abducting nystagmus on examination. Computed tomography (CT) imaging shows infarct in pontine region and CT angiography revealed basilar artery occlusion supplying region of pons with involvement of posterior cerebral artery. Patient treated with antiplatelet and diplopia managed. Patient showed improvement on subsequent follow-up visits.

Keywords: Internuclear ophthalmoplegia, Exotropia, Abducting nystagmus, Vertical gaze palsy, Ptosis, Basilar artery stroke

INTRODUCTION

Wall eyed bilateral internuclear ophathalmoplegia (INO) is a rare ocular motility disorder of neurological origin. Manifestation is due to pathology in horizontal gaze center; MLF is responsible for conjugate movement and if impaired will result in Internuclear ophthalmoplegia characterised by defective ipsilateral adduction with abduction nystagmus. It has been found to be associated with 10-20% of multiple sclerosis patients; bilateral INO itself is very rare and also rarely found in patients with brainstem infarct especially with involvement of pons.[1,2] Typical findings in WEBINO include primary gaze exotropia, vertical gaze palsy, abduction nystagmus. In this case report we have briefed about a gentleman with signs of WEBINO and imaging showed pontine infarct with basilar artery and posterior cerebral artery occlusion; patient managed promptly and improved on follow-up.

CASE REPORT

Sixty-eight-year-old gentleman presented to the emergency department with complaints of sudden onset dropping of both upper eyelids and headache after waking up from sleep in the morning. He had complaints of diplopia on lifting the eyelids. No known co-morbidities like diabetes mellitus, hypertension or cardiac illness for the patient. On examination patient was conscious, oriented to time/place/person with Glasgow coma scale 15/15; vitals of the patient were stable and no evidence weakness of limbs. Visual acuity was 6/6 both eyes (measured after manually lifting eyelids using retro-

illuminated Snellen's visual acuity chart); bilateral complete ptosis noted with poor levator palpebrae superioris function of less than three millimetre in both eyes with frontalis muscle overaction.

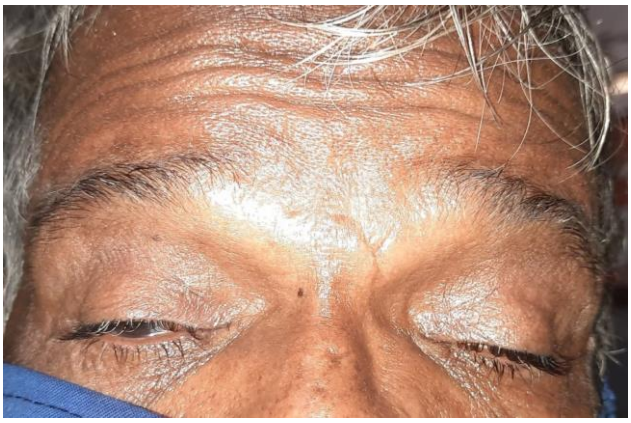

Figure 1: Complete ptosis with frontalis overaction of both eyes.

Patient had primary gaze exotropia of 45 degree with both eyeballs deviated down and out. Both eyes showed restriction of extraocular movements for adduction/elevation/depression with intact abduction; also found to have abduction nystagmus

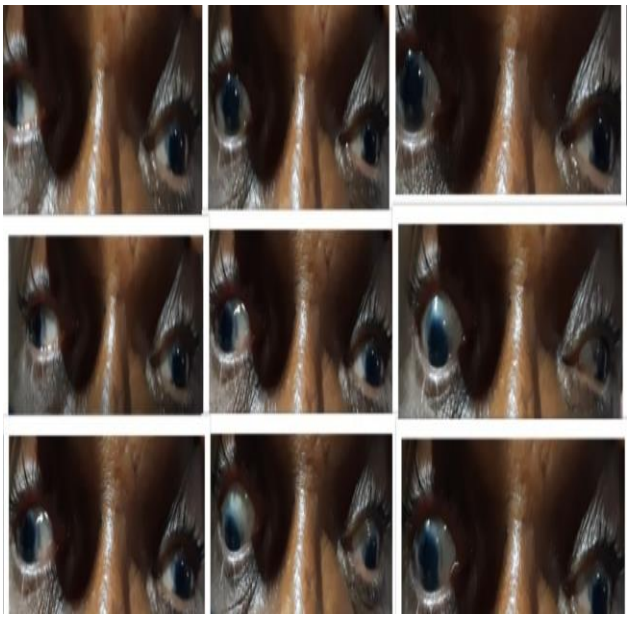

Figure 2: Patient with extraocular movements in nine gazes of restriction.

Forced duction test done was negative with no resistance felt while moving the eyeball. Bilateral pupils were 3 mm, round, direct and consensual reflex brisk with rest of the ocular examination within normal limit. Neuroimaging done for the patient and found to have lesion suggestive of pontine infarct and CT angiography showed basilar artery and posterior cerebral artery involvement.

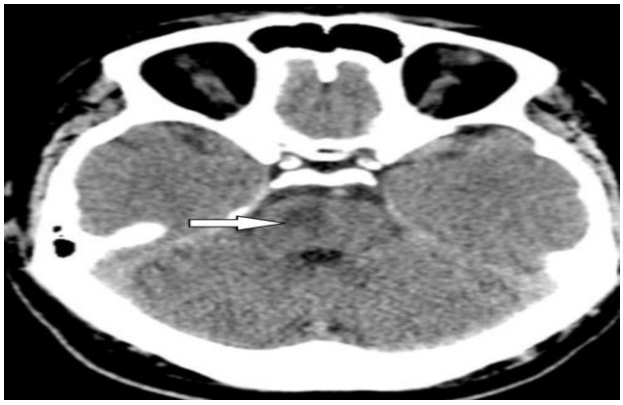

Figure 3: Non enhanced axial CT of hypodensity in right side of pons not crossing midline; possible infarct marked by arrow.

Patient has been treated with antiplatelet agents and left eye is patched to avoid diplopia in primary gaze. Patient didn't show any worsening and so discharged. On follow-up after 2-month patient showed improvement in ptosis and extraocular movement. Patient kept on lifelong antiplatelet therapy with monthly follow-up.

DISCUSSION

Ophthalmoplegia refers to weakness of extraocular muscle which will manifest as defect in ocular motility. Parapontine reticular formation (PPRF) and MLF are the centres responsible for conjugate eye movements; damage to MLF results in ipsilateral internuclear ophthalmoplegia. Various etiologies like head trauma, Central nervous system infections, neuro-degenerative disease (Multiple sclerosis) lead to MLF involvement.[3] WEBINO is a rare neuro-ophthalmological syndrome which occurs due to bilateral MLF involvement. The etiologies causing INO can lead to WEBINO; but it has been found to be relatively more common in brainstem infarct especially pontine lesions.[4] Due to MLF lesion patient will have restricted adduction with abduction nystagmus. Other typical features include downward & outward deviated eyeball; ptosis; diplopia; vertical gaze palsy. Mass lesions can cause pupil involvement also due to compression over pupillary fibres travelling in the periphery of third cranial nerve. Urgent neuro-imaging is indicated in these patients as cerebrovascular accident can be life threatening and rarely aneurysm in cerebral circulation can also be leading to it.

In this case report, we have discussed about a 68-year-old gentleman presented with sudden onset bilateral drooping of eyelids associated with headache and diplopia on manually lifting eyelids. No history of any systemic co-morbidities for the patient and patient vitals were stable. Ocular examination revealed normal visual acuity and complete ptosis with both eyes deviated downward and outward. Restriction of extraocular movements noted for adduction and vertical gazes with intact abduction and abduction nystagmus was found. Pupils both eyes were

briskly reacting and rest of the ocular examination were normal.

Urgent neuro-imaging done for the patient and CT revealed a hypodense lesion in pontine region suggestive of infarct. CT angiography showed involvement of basilar artery and posterior cerebral artery. Patient was started on systemic anti-platelets agents and left eye is patched to avoid binocular diplopia. Report by Yu-Tai et al described patients with pontine infarct and WEBINO had unfavourable systemic outcome despite treatment, but our study patient was discharged without further worsening and on subsequent follow-up patient ptosis and extraocular movements showed improvement.[5] Study by Chakravarthi et al had similar outcome as in our report with improvement noted with systemic antiplatelet agents alone.[6] Orthotropia has been achieved in a WEBINO patient by strabismus surgery who didn't showed improvement after a follow-up period of six months and found to be effective.[7]

CONCLUSION

Wall-eyed bilateral internuclear ophthalmoplegia is an extremely rare condition and can be found in patients with posterior circulation stroke even without other serious systemic manifestations. Urgent neuro-imaging and prompt intervention is needed to diagnose and treat the underlying infarct. Anti-platelet agents and diplopia management showed good response in our patient.

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