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A Typical Case Of Internuclear Ophthalmoplegia

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ABSTRACT
A 66-year-old man presented to our hospital with sudden onset double vision since one day.There was history of head injury followed with paralysis since 15 years. There had been no previous history of fever, cold, malaise, convulsions, or loss of consciousness. Ocular examination showed uncorrected visual acuity on the right eye was 6/60 with pinhole improving to 6/18 and on the left eye was 6/24 improving to 6/12 with pinhole. He had adduction paresis on his left eye, and right gaze-evoked nystagmus on his right eye. Vertical eye movement and convergence was unaffected. Patient was diagnosed as left Internuclear ophthalmoplegia.
A disease of eye movements known as internuclear ophthalmoplegia (INO) is characterised by contralateral dissociated abduction nystagmus with adduction limitation. Magnetic resonance imaging (MRI) is the preferred technique for diagnostic imaging of MLF lesions in patients with INO.
Keywords: *Internuclear ophthalmoplegia; medial longitudinal fasciculus; paramedian pontine reticular formation; magnetic resonance imaging*

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I. INTRODUCTION

A disease of eye movements known as internuclear ophthalmoplegia (INO) is characterised by contralateral dissociated abduction nystagmus with adduction limitation. Medial longitudinal fasciculus (MLF) lesions result in INO, which is characterised by weakness of adduction on the side of the lesion when the lesion is unilateral. This deficit can range from total loss of adduction beyond the midline to a slight reduction in adduction velocity without any restriction in range of motion.[1,2]

Multiple sclerosis and brainstem infarction are the most frequent causes of INO. Infection, hydrocephalus, lupus erythematosus, brainstem and fourth ventricular tumours, Arnold-Chiari malformation, head trauma, and hydrocephalus are additional reasons. A monocular nystagmus of the abducting eye and complete or partial failure to adduct one eye in lateral gaze are the clinical features of internuclear ophthalmoplegia. It might be both bilateral and unilateral. Magnetic resonance imaging (MRI) is the preferred technique for diagnostic imaging of MLF lesions in patients with INO.[2,3]

II. CASE

A 66-year-old man presented to our hospital with sudden onset double vision since one day. There was history of head injury followed with paralysis since 15 years. There had been no previous history of fever, cold, malaise, convulsions, or loss of consciousness. He has no history of headaches or pain with eye movement. And there was no history of diabetes mellitus and hypertension.

Ocular examination showed uncorrected visual acuity on the right eye was 6/60 with pinhole improving to 6/18 and on the left eye was 6/24 improving to 6/12 with pinhole. He had adduction paresis on his left eye, and right gaze-evoked nystagmus on his right eye. Vertical eye movement and convergence was unaffected. The anterior segments of both eyes revealed age related cataract. Relative afferent pupillary defect (RAPD) was absent. The intraocular pressure was within normal limits. In both eyes, the funduscopy was within normal limits. Left Internuclear ophthalmoplegia was diagnosed in the patient.

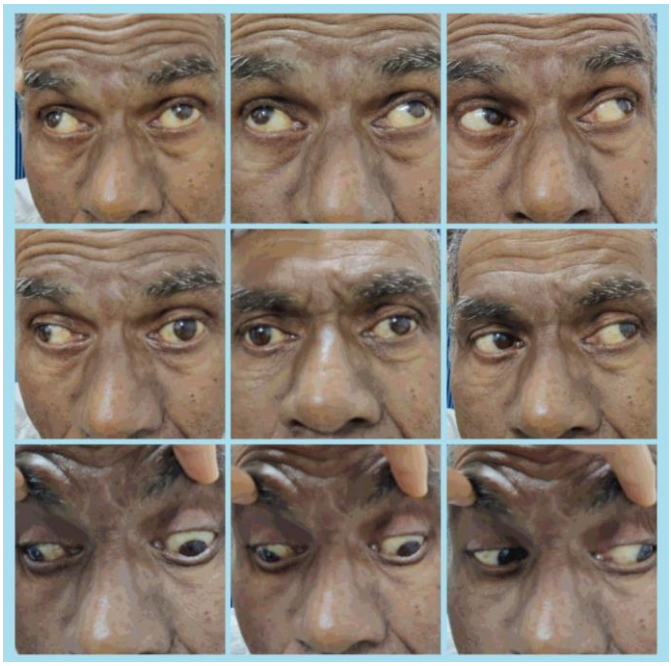

Figure 1: Coloured photograph showing extraocular movements in 9 cardinal gazes. In the primary position, there was exotropia, and the left eye had INO with limited adduction.

Magnetic resonance imaging brain showed non enhancing FLAIR hypersensitivity in left side of midbrain just anterior to the cerebral aqueduct (MLF), findings suggest possibility of subacute infarct/ demyelinating plaque.
The patient was referred to the neurologist for further management.

III. DISCUSSION

A lesion known as a "internuclear lesion" affects the MLF, a network of fibres that runs from the medial rectus subnucleus (of the third nerve) on one side of the midbrain to the sixth nerve nucleus on the other side of the pons. A lesion of this kind results in an INO. Damage to the MLF may result in damage to the abducens nucleus, fascicle, or both on either side of the brainstem. Lesions that injure the MLF on one side and the ipsilateral abducens nucleus result in the one-and-a-half syndrome, whereas lesions that damage the ipsilateral abducens fascicle result in horizontal ophthalmoplegia in the ipsilateral eye due to an INO and an abducens nerve palsy. Damage to the MLF on one side and the paramedian pontine reticular formation (PPRF) or abducens nucleus on the opposite side results in a horizontal gaze palsy towards the damaged PPRF or abducens nucleus. Because of the underlying horizontal gaze palsy, the INO cannot be detected in such cases. Damage to the MLF on one side and the contralateral abducens nerve fascicle will result in contralateral eye abduction weakness paired with ipsilateral eye adduction weakness. A "pseudo-horizontal gaze palsy" will occur in this situation while trying to look horizontally away from the side with the MLF lesion. The diagnosis may be suspected in a patient who appears to have a horizontal gaze that is asymmetric, with one eye (usually the adducting eye) being much more limited than the other.[1,2,3]

The MRI findings in this case was subacute infarct/ demyelinating plaque in the pons. Eggenberger et al.'s study on the prognosis of ischemic INO revealed that, in 33 patients with ischemic-related INO, magnetic resonance imaging (MRI) revealed the causative infarct in only 52% of cases; the presence of an MRI-demonstrable lesion was not significantly associated with prognosis for resolution; and MRI has limited yield in revealing the causative infarct.[4,5]

Although MRI diffusion-weighted imaging (DWI) has been proven to outperform CT in the identification of acute ischemic stroke, even DWI can result in erroneous negative diagnoses within the first 24 hours of presentation. Such false-negative findings are more common in strokes involving the posterior circulation, including the brainstem. Oppenheim et al discovered that 5.8% of 139 stroke patients had negative MRI findings within the first 24 hours after presentation in a study of 139 stroke patients. Repeat MRI after 24 hours of onset may be useful in finding lesions that are initially negative on MRI.[4,5]

IV. CONCLUSION

In conclusion, a basic physical examination is often sufficient to make the diagnosis of internuclear ophthalmoplegia. Despite the positive prognosis for the majority of isolated internuclear ophthalmoplegia cases, patients should be examined to identify the underlying cause.

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