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Case Report

Bilateral Internuclear Ophthalmoplegia Following Trauma

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Abstract

A 27-year-old male presented with complaints of diplopia and outward deviation of left eye following motor vehicle collision. Ocular examination exhibited adduction restriction with abducting nystagmus and bilateral exotropia. neuroimaging revealed haemorrhagic lesions noticed in peri aqua ductal gray matter with involvement of bilateral third nerve nuclei. The patient was managed without surgical intervention and showed improvement in the outward deviation of the eyes and double vision after one month of follow-up. The management strategy entails addressing the underlying pathology through conservative interventions, if feasible, particularly when the etiology is linked to trauma. Internuclear ophthalmoplegia (INO) arises due to a lesion impacting the medial longitudinal fasciculus (MLF), culminating in a distinct clinical presentation marked by bilateral adduction restriction along with contralateral abducting nystagmus. Common etiological factors encompass conditions like multiple sclerosis and ischemia; however, it is infrequently associated with trauma, as evidenced by our patient.

Keywords: Internuclear Ophthalmoplegia; Medial Longitudinal Fasciculus (MLF); Eye

Introduction

Internuclear ophthalmoplegia arises from lesions affecting the medial longitudinal fasciculus resulting in a distinctive clinical presentation. This condition is characterized by the inability to fully adduct one eye during lateral gaze, accompanied by nystagmus when attempting to abduct the contralateral eye [1]. In this paper, we present a unique case of traumatic unilateral internuclear ophthalmoplegia caused by a hemorrhage situated at the peri-aqueductal gray matter, as confirmed through advanced neuroimaging techniques.

Case Report

A 32-year-old man visited the outpatient department following a road traffic accident. The primary complaints were double vision and outward deviation of left eye following trauma. His pupils responded normally, and an examination using a slit lamp didn't show any abnormalities. Horizontal restriction of ocular movements on lateral gaze in both eyes (Figure 1). Also, on left gaze there was restriction of adduction in right eye and nystagmus in left eye. On right gaze, nystagmus in right eye and restriction of adduction in left eye was noted. Upward and downward gaze were unremarkable.

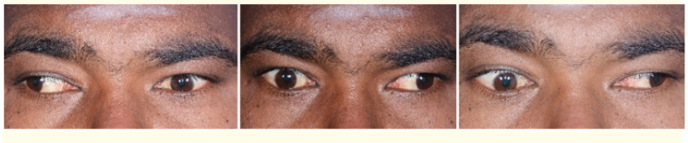

Figure 1: Restriction of adduction on both eyes in horizontal gaze.

MRI Brain revealed haemorrhagic lesions noticed in peri aqua ductal gray matter with involvement of bilateral third nerve nuclei (Figure 2). Within 4 weeks, his abnormal eye movements completely resolved, and he no longer experienced double vision.

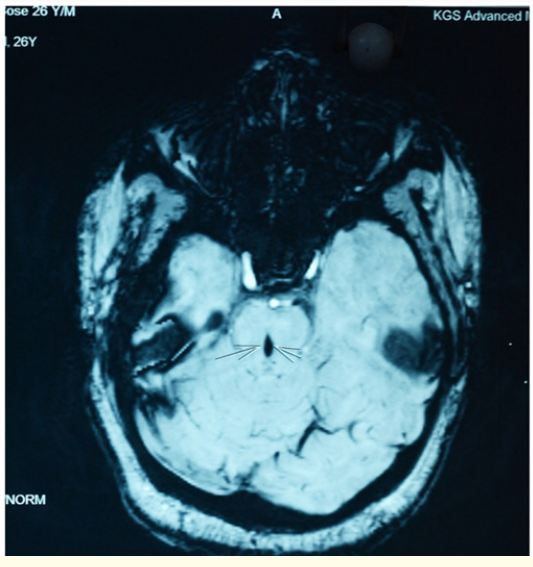

Figure 2: Haemorrhagic lesion in periaqueductal gray matter.

Discussion

Internuclear ophthalmoplegia is a condition where the ability to move the eyes horizontally is hindered due to a lesion in the medial longitudinal fasciculus. This fasciculus is a bundle of nerve fibers that runs from the abducens nucleus in the pons to the opposite-side oculomotor nucleus in the midbrain. There are two possible ways traumatic lesions can occur in this medial longitudinal fasciculus. One way involves the forces that cause different parts of the brainstem to shear, potentially stretching the small branches of the basilar artery. This stretching can lead to reduced blood flow (ischemia) [2]. The other possibility is the stretching of the medial longitudinal fasciculus fibres themselves [3]. The prognosis for traumatic internuclear ophthalmoplegia is generally positive, as it often resolves spontaneously. Recovery of medial longitudinal fasciculus function varies, with reported cases showing improvement within as little as 48 hours [4] or up to a year after the injury [5]. In the case of the patient mentioned, restoration of medial longitudinal fasciculus function occurred within 7 days following the accident.

Conclusion

This case serves as an illustration of how even minor head trauma can lead to a distinct pontine hemorrhage, presenting itself as bilateral internuclear ophthalmoplegia. While the occurrence of isolated internuclear ophthalmoplegia is uncommon, it is imperative to include INO in the list of potential diagnoses when confronted with a deficit in adduction in a patient who has recently experienced trauma.

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