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Idiopathic Unilateral Pupillary Sparing 3rd (OCCULOMOTOR) Cranial Nerve Palsy

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Abstract: ***Background*** ***:Cranial nerve III palsy, also known as oculomotor nerve palsy, may result from various causes; such as lesions such as trauma, aneurysms, infarction, tumour , infections across the course of nerve starting from the nucleus of oculomotor nerve at upper midbrain , through interpeducular fossa, to cavernous sinus , then through orbital fissure but oculomotor nerve palsy with pupillary sparing is seen in microvascular ischemia seen in diabetes , hypertension, ischemic neuropathy , however the etiology remains unknown in some instances.*** ***Case presentation****: This case report aims to present the case of idiopathic cranial nerve III palsy with pupillary sparing along with review of the literature. A 37 year old male having with no past medical history no risk factors presented to the hospital with right eye ptosis and diplopia. Patients has no complain of weakness, diurnal variation of symptoms, pain, fever, trauma, no any addictions. On examination eyes was in down and out position, pupils bilaterally reactive to light 2 mm, normal light reflex, no facial nor bulbar involvement, rest of CNS examination normal. All investigations CBC, ESR, CRP, Liver function test, renal function test, MRI Brain with orbit and brain angiogram, Hba1C, lipid profile, HIV, RPR were done and no cause was found so diagnosed with idiopathic unilateral oculomotor pupillary sparing palsy. After ruling out infections oral steroids at 1mg/kg were started and patient started recovery within 2 weeks and had complete recovery after 4 months.*** ***Conclusion****: Idiopathic cranial nerve III palsy can occur in otherwise healthy individuals and often recover in several months. Careful examinations further investigations to rule out ischemic, inflammatory, vascular(aneurysms), tumors, infectious causes and others, then steroid treatment should be considered after early diagnosis which in some patient shows improvement.*

Keywords: Cranial nerve palsy, oculomotor nerve, pupillary sparing, idiopathic, steroid treatment

1. Introduction

Isolated cranial nerve III palsy is a common neurological presentation in daily practice.

Although there are several causes of cranial nerve palsy, cerebral aneurysms and diabetes mellitus (DM) are the two main ones. A few other causes include trauma, meningitis, infarction, bleeding, tumor, demyelination, and post-viral infection[1]. Patients with DM are more likely to recover, and it can take a few weeks to months. Even though there are numerous established causes of palsy, in certain instances, doctors are unable to determine the cause. However, to our knowledge, the literature has only published a small number of instances linked to "idiopathic" oculomotor nerve palsy. Thus, we present the diagnostic workup, a review of the literature, and a case of idiopathic unilateral cranial nerve palsy.

2. Case Presentation

A 37-year-old patient male, labour by occupation, having no past medical history presented to the hospital with complain of diplopia and ptosis since last 2 days. When the patient was examined clinically, it was found that he had right upper lid ptosis with reduced levator function. Additionally, during ocular movement testing, their eyes moved abnormally when attempted to elevate, depress, or adduct the right eye. Pupillary reaction to light were normal.patient has no complain of pain over eyeball, fever, weakness of limbs, nor facial or bulbar weakness. No history of any addictions .no history of any head and eyeball trauma. Thorough evaluation including an ophthalmological and neurological assessment, a blood pressure check, laboratory testing, and an MRI of the orbit and brain. The CBC, LFT, RFT, coagulation screening, ESR, CRP, urinalysis, HBA1C, fasting lipid profile and CSF were among the standard laboratory testing. Laboratory testing revealed no evidence of diabetes, hyperlipidemia, infection, or inflammation in the patient. No any signs of acute infarction, cerebral mass lesions and any aneurysm in the MRI of brain with angiogram and in MRI orbit

Ophthalmological examination findings.

	Right eye	Left eye
Upper eyelid	Drooping until covering the limbus	Normal
Sclera	Normal	Normal
Cornea	Normal	Normal
Pupil size	2mm	3mm
Direct light reflex	Normal	Normal
Consensual light reflex	Normal	Normal
Accommodation reflex	Impaired	Normal
Fundus	Normal	Normal
Visual acuity	06-Jun	06-Jun
Medial movement	Restricted	Intact
Lateral movement	Intact	Intact
Downward movement	Restricted	Intact
Upward movement	Intact	Intact

3. Treatment

After ruling out a number of potential underlying causes, including as inflammation, malignancy, trauma, aneurysm, microvascular ischemia, and, the patient was diagnosed with idiopathic unilateral oculomotor nerve palsy with pupillary sparing. Steroid therapy was started at 1mg/kg for 1week and thereafter in tapering manner for a course of about one and half month. The patient also underwent oculomotor exercise, and patient started improving and was discharged on tapering dose of steroids. After 4 months patient had full recovery in ptosis and eyeball movement. ophthalmological and

neurological examination revealed no any further abnormalities.

4. Discussion

Cranial nerve III palsy may result from various causes: microvascular ischemia caused by diseases, including DM, hypertension, atherosclerosis, aneurysm, trauma, neoplasm, inflammation, neurosurgical intervention, and other known rare causes. oculomotor nerve palsy with pupillary sparing is seen in microvascular ischemia seen in diabetes, hypertension, ischemic neuropathy. Notwithstanding recent developments in neuroimaging, the cause of cranial nerve III palsy is still unknown in certain cases. 3-30% percent of the cases are "idiopathic," meaning having an unknown origin.It's worth noting that Lust Bader and Miller have reported an instance of a full, pupil-preserving oculomotor nerve palsy produced by a basilar tip aneurysm[4] .In this study, we examined earlier research on cranial nerve III palsy and described a case of idiopathic unilateral palsy with pupillary sparing of that nerve.It has been observed that isolated cranial nerve III palsy typically manifests after the age of 40, with an average age ranging from 39.3 to 61.4 years[2].Of the cases, 48.3%–70.3% showed signs of recovery. Vascular disorders including diabetes mellitus, hypertension, or atherosclerosis can produce palsies, most of which are transient. As previously reported, palsies with idiopathic origins also showed considerably high recovery rates (50%–72.1%). Conversely, there have been reports of poor recovery rates for cranial nerve deficits brought on by aneurysms, trauma, and neoplasms [1,3]. Six months is the average recuperation time. Patient in this trial recovered fully in less than three months. Even though recent developments in neuroimaging have facilitated early diagnosis, patients with isolated cranial nerve III palsies continue to present difficult therapeutic issues. The suggested courses of treatment differ depending on the etiologies. For instance, supportive therapy, which includes prism therapy and eye patches, is the mainstay of treatment for palsies resulting from vascular sources. While the exact mechanism is unknown, individuals with idiopathic cranial nerve III palsies, on the other hand, have been documented to respond well to steroid treatment and have good prognoses; in fact, patient in our study exhibited significant improvement following oral steroid treatment.

5. Conclusion

oculomotor nerve palsy can develop idiopathically in healthy persons, although it usually goes away in a few months. However, in certain situations, it may continue. We stress that steroid treatment should be considered following an early diagnosis if a thorough diagnostic workup is conducted in otherwise healthy persons in order to prevent misdiagnoses and rule out other reasons.

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