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Etiological study of self-referred patients with sixth nerve palsy presenting in ophthalmology outpatient department.

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ABSTRACT
PURPOSE : To study various etiologies associated with sixth nerve palsy in self referred patients presenting in the ophthalmology outpatient clinc.
MATERIALS AND METHODS: A total of 53 patients between the age group 21-65 years with only abducens nerve palsy were included in this study. The patients underwent complete clinical, ophthalmological and neurological examination. Computerised tomography (CT)-scan of the brain and laboratory tests were performed for each participant.
RESULTS: Overall, an etiological diagnosis was made. The common causes were vascular conditions (50.5%), trauma (22.6%) and idiopathic (18.8%) in our study.
CONCLUSION: Sixth cranial nerve palsy, common in diabetes mellitus has a good prognosis. Strict glycaemic control results in complete recovery.
KEY WORDS: sixth cranial nerve palsy, etiologies, self referrad.

I. INTRODUCTION

Abducens nerve palsy is the most common cranial nerve palsy leading to weakness of ipsilateral lateral rectus[1] The abducens nerve (cranial nerve VI) has the longest subarachnoid course of all the cranial nerves. The Sixth nerve (CN VI) has the longest course of travel from dorsal pons to lateral rectus muscle. So CN VI palsy may present as "false localising sign" due to injury or compression anywhere along its pathway.

The affected patients present with horizontal uncrossed diplopia with inability to abduct the ipsilateral eye, resulting in an esotropia[1,2]. The overall incidence of CNVI pals

The etiology of abducens nerve palsy includes increased intracranial pressure, microvascular cause (e.g diabetes mellitus) ,trauma, subarachnoid pathology (subarachnoid haemorrhage, meningitis, neoplasm, neurosarcoidosis) , cavernous sinus pathology(cavernous sinus thrombosis), pontine pathology (stoke, neoplasm, multiple sclerosis), intracavernous internal carotid artery aneurysm. The commonest cause is tumor in children and vascular etiology in adults . Trauma being the second common etiology.

Slowing of saccadic velocities of ipsilateral lateral rectus is one important feature that differentiates esotropa due to sixth nerve palsy from other cause. We conducted this study at ophthalmology outpatient department (OPD) with the aim to determine the etiology of 6th cranial nerve palsy in self referral patients.

II. MATERIAL AND METHODS :

The present study prospective analytical cross sectional study. It was undertaken in eye outpatient department in tertiary hospital. All patients presenting with diplopia due isolated 6th cranial nerve palsy in the age group between 14 to 65 years were included.

Other multiple cranial nerve involvement, associated with neurological manifestation , ENT diseases, sensory esotropia restrictive esodeviation like Duanes retaction syndrome, post surgical causes were excluded from study.

The following ophthalmological examination was done

1.Head position – head tilt, face turn, chin elevation/depression were noted
2. Any skull abnormalities
3. Eyelids – ptosis / retraction / lid lag / Marcus Gunn jaw winking phenomenon /Duane's retraction syndrome were noted
4. Extra ocular movements were noted both ductios and versions.
5. Pupil size, shape and reaction noted
6. 6. Anterior segment examined in detail with slit lamp.
7. A dilated fundus and refraction was done.
8. Colour vision, visual field testing and intra ocular pressure measurement were done for all patients
9. Diplopia charting, Hess charting and orthoptic evaluation
10. Forced duction and forced generation test

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Investigations included were plasma glucose, HbA1c ,urine proteins, radiological investigations (X RAY ORBIT, SKULL – AP/ LATERAL AND PNS, CT SCAN AND MRI) , serological tests were done in all patients.

Referral to other specialities included diabetologist, neurologist and ENT surgeon was done for all patients.

Sample size and Sampling: The sample size was calculated to be 55 participants, at 5% level of significance with effect size at 0.20, α error at 0.05 and power of the study (1-β) at 0.90.

III. RESULTS:

A total of 55 patients were enrolled in the study . The mean age of the patients include was . 27eyes (50.5%) were diagnosed with isolated sixth nerve palsy due to ischemic pathology. Of these diabetes mellitus was found in 21 (39.3 %), hypertension in 2(3.7%) and both DM and HTN in 4(7.5%). 12(22.6%)eyes presented with isolated sixth nerve palsy in patients with a history of head trauma or closed globe injury. For 10 eyes

(18.8%) cause could not be determined hence presumed under idiopathic.4 eyes (7.5%) were associated with idiopathic intracranial hypertension as false localizing sign.

Etiology	**Frequency**	**Percentage**
DM	21	**38.1**
Intracranial lesion	2	**3.6**
Trauma	12	**21.8**
HTN	2	**3.6**
DM&HTN	4	**7.2**
Idiopathic	10	**18.1**
Idiopathic intracranial hypertension	4	**7.2**
Total	55	**100**

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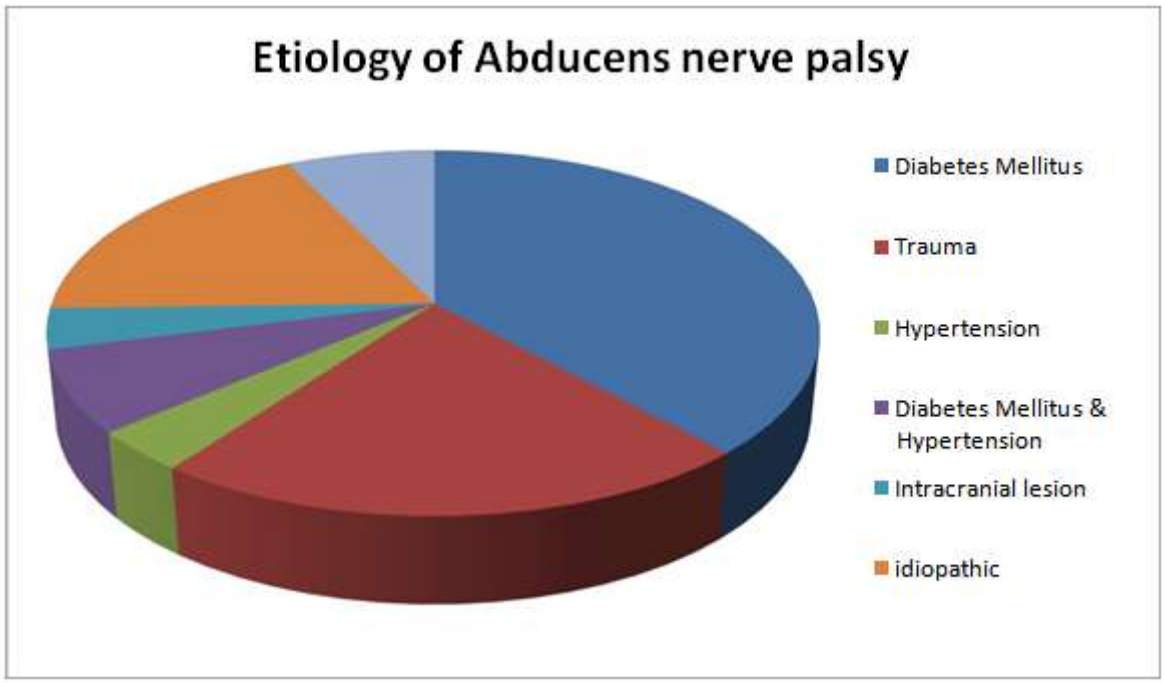

Fig 1:Etiologyof abducens nerve

IV. CONCLUSIONS:

The sixth nerve palsies occurs commonly in the age group between 51-60 years. In a population based study there was six-fold increase in odds of having diabetes and eight fold increase of having co-existent diabetes and hypertension in cases of sixth nerve palsy over controls[1,2]. Systemic hypertension alone did not appear to be associated with increased risk[1]. In our study also majority of self referral patients presenting with abducens nerve palsy at ophthalmology OPD had diabetes mellitus. Educating diabetic patients about strict glycaemic control and timely referral to diabetologist resulted in complete recovery of abducens nerve palsy in these patients[5]. In the absence of risk factors, a suggestive history, or positive laboratory and clinical findings, neuroimaging can serve as a useful diagnostic tool in identifying the exact cause of sixth nerve palsy.

Patients are labelled as benign abducens nerve palsies when no definte etiology is found mostly following viral or postvaccination. Most of these patients recover completely . If there is afailure to recover , it is an alarming sign of intracranial pathology. Resolution is 50% in post-traumatic cases and90% in inflammatory etiology. In idiopathic intracranial hypertension nerve within Dorello canal is injured.

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