

A STUDY ON THE AETIOLOGY OF OCULOMOTOR NERVE PALSY AND ITS RECOVERY

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ABSTRACT

BACKGROUND

Oculomotor nerve palsies may present in one of four ways. 1) An isolated partial or complete nerve palsies without any other neurologic signs and symptoms except those related to the palsy itself. 2) In association with symptoms other than those related to the palsy (pain, dysesthesia, paraesthesia), but without any signs of neurologic (or) systemic disease. 3) In association with other ocular motor nerve palsies, but without any other neurologic signs. 4) In association with neurologic signs other than the oculomotor nerve palsy.

MATERIALS AND METHODS

The present study was conducted in Ophthalmic OPD of Government Medical College & Hospital, Anantapur, Andhra Pradesh. 80 cases were examined by proper history taking, complete neurological examination by neurologist and ocular examination to include and exclude the cases properly and the study period was from Feb. 2013 to Jan 2017. All patients having infranuclear neurologic lesion of third cranial nerve who attended the Ophthalmology OPD were included in the study after taking an informed consent.

RESULTS

Of them, 10% of the cases are due to undetermined causes, 8.75% of the cases are due to head trauma, 10% of the cases are due to neoplasms, 56.25% of the cases are due to vascular pathologies (diabetes mellitus, hypertension, etc.), 2.5% of the cases are due to aneurysms, 12.5% of the cases are due to nonspecific neuritis and 2.5% of the cases are due to various other pathologies.

CONCLUSION

Of all the causes, vascular pathologies are the most common causes followed by post inflammatory causes due to head trauma and undetermined causes.

KEYWORDS

Oculomotor Nerve, Third Nerve Palsy, Diabetes Mellitus, Hypertension.

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BACKGROUND

The oculomotor nerve (third cranial nerve) is entirely motor in function. It supplies all the extraocular muscles except lateral rectus and superior oblique. It also supplies sphincter pupillae and the ciliary muscle. The factors causing disturbances in the nuclei and nerve paths of the third cranial nerve are extremely varied and their study opens up a large field not only of disease of the central nervous system, but also of the cardiovascular and other systems of the body as well as disturbances in the basal meninges, the chiasmal and orbital regions; it is a subject full of interest providing abundance of opportunity for diagnostic acumen. But, it must be remembered that, despite its diversity or rather because of it, a considerable number (probably some 15 to

20%) of cases always remains undiagnosed and must be classified as of uncertain aetiology despite the most careful investigation. There are many causes for oculomotor nerve palsy. In these cases, the third nerve has already left the nucleus, so the lesions affect only one side. There are various syndromes, which can occur depending on the site of lesion. They are due generally to an ischaemic, infiltrative or rarely inflammatory lesion. Patients with third cranial nerve palsy presents with the following symptoms- Double vision, droopy lid, blurred monocular vision at near range (rarely). Following signs² can be observed- ptosis, eyeball in the abducted position, limitation of movement of the eyeball in the adduction, elevation and depression, pupil is dilated and fixed with no reaction to light or near reflex, intorsion of the globe on attempted down gaze due to action of superior oblique muscle.

Aims of the Study

1. To study and determine the aetiology of infranuclear lesions of third cranial nerve palsy.
2. To study the recovery of patients from various causes of oculomotor nerve palsy.

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Inclusion Criteria- All infranuclear neurogenic lesions of third cranial nerve.

Exclusion Criteria- Patients with supranuclear, nuclear, myogenic and neuromuscular afflictions and other cranial nerve palsies were excluded from the study by doing suitable examinations and investigations.

MATERIALS AND METHODS

The present study was conducted in Ophthalmic OPD of Government Medical Collage and Hospital, Anantapur, A.P. 80 cases were examined by proper history taking, complete neurological examination by neurologist and ocular examination to include and exclude the cases properly and the study period was from Feb. 2013 to Jan 2017. All patients having infranuclear neurologic lesion of third cranial nerve who attended the Ophthalmology OPD were included in the study after an informed consent.

RESULTS

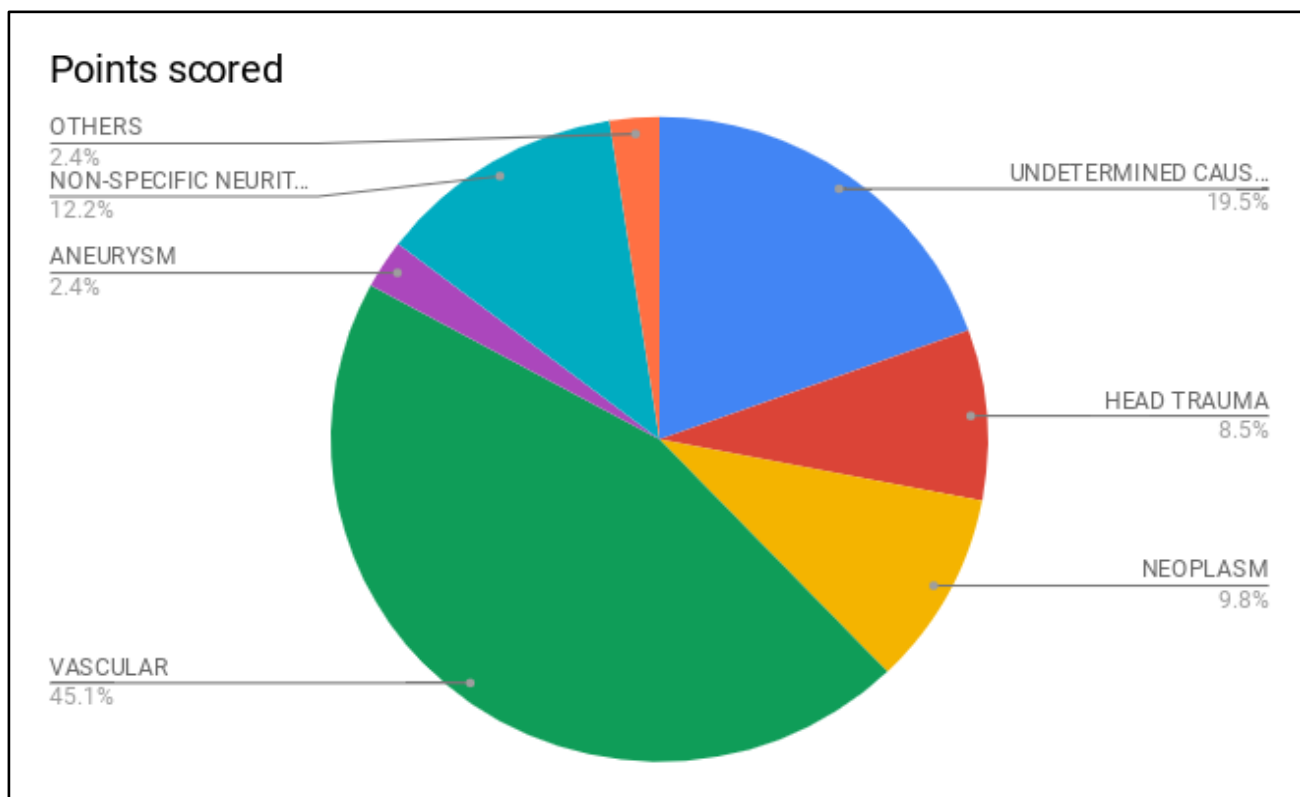


Figure 1. Points Scored

Causes	Rush and Younge ³	Richards and Younge et al ⁴	Menon et al ⁵	Present Study
Undetermined	23.1%	23.89%	30.15%	20%
Head trauma	16.2%	14.69%	22.2%	8.5%
Neoplasm	11.17%	12.42%	9.5%	9.8%
Vascular	20.7%	19.91%	6.3%	45.1%
Aneurysm	13.8%	15.84%	-	2.4%
Nonspecific neuritis	-	-	9.5%	12.2%
Others	14.5%	13.18%	22.2%	2.4%

Table 1. Table Showing Incidence of Oculomotor Nerve Palsy Due to Various Causes in Present Study and Comparison with Other Studies

In this present study, 20% of the cases are due to undetermined causes, 8.5% of the cases are due to head trauma, 9.8% of the cases are due to neoplasm, 45.1% of the cases are due to vascular causes such as diabetes mellitus (diabetic neuropathy), 2.4% of the cases are due to aneurysm, 12.2% of the cases are due to nonspecific neuritis, remaining 2.4% of the cases are due to other causes.

DISCUSSION

There are many causes of oculomotor nerve palsy.⁶ They are- 1) Acute and subacute ophthalmoplegia (infective encephalitis, organismal encephalitic conditions, acute CNS diseases), neuritic infections (polyradiculoneuritis, interstitial neuritis), toxic conditions (diphtheria, tetanus, botulism), allergic conditions (sarcoidosis, recurrent multiple cranial nerve palsies), third, intoxications from exogenous poisons (lead, carbon monoxide), metabolic conditions like (vitamin B1, B3, C deficiency states), vascular lesions

(atherosclerosis, haemorrhage and thrombosis in midbrain), neoplasms and cysts, trauma affecting the midbrain; 2) Chronic and progressive ophthalmoplegia- Tables and general paralysis, multiple sclerosis, diffuse sclerosis, syringomyelia (syringobulbia), amyotrophic lateral sclerosis; 3) Episodic ophthalmoplegia- Ophthalmoplegic migraine, D. Aberrant nerve regeneration.

Nuclear palsies are due to inflammatory, degenerative, toxic, vascular, neoplastic or traumatic processes. Undetermined causes are more in study of Menon et al. Cases due to neoplastic causes are more in study of Richards and Younge et al. Cases due to vascular causes such as diabetes mellitus and hypertension are more in this present study. A study of 1961 diabetic patients by Watanabe K et al⁷ showed that the incidence of cranial palsies in diabetics was significantly higher than that in nondiabetic patients. Recovery depended on the aetiology. Recovery was faster in nonspecific neuritis group. Patients with uncontrolled diabetes and diabetes of more duration showed slow recovery. Patients with hypertension recovered faster than diabetes. Recovery was better and faster when the patient presented early. Recovery was good in patients who had nonspecific neuritis, patients who presented early and in diabetic patients who are euglycaemic patients with third nerve palsy due to trauma did not recover well.

CONCLUSION

The oculomotor nerve palsy has multiple and varied aetiologies. Among the systemic diseases causing oculomotor cranial nerve palsies and diabetes is most common. Cases with vascular origin like diabetes and

hypertension recovered within 4 months. Poor long-term control of blood sugar preceded ophthalmoplegia due to diabetes. History, careful ophthalmic and neurological evaluation, basic investigations revealed the aetiology in most cases. CT and MRI are invaluable in the diagnosis, though financial constraints limit the use of these sophisticated investigations.

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