IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 9 Ser.2 (September. 2019), PP 62-67
www.iosrjournals.org

Clinical Study on Oculomotor Nerve

Dr.E. Sathya Narayana Murthy M.S,
Assistant Professor, Department of Ophthalmology, Siddhartha Medical College, Dr.NTR University of Health sciences, A.P, India.
Corresponding Author: Dr. G. Madhavilatha M.S
Assistant Professor, Department of Ophthalmology, Siddhartha Medical College, Dr.NTR University of Health sciences, A.P, India.

Abstract
Aim: 1.*To determine the prevalence, etiopathogenesis and clinical manifestations of oculomotor nerve palsies, 2. an analysis of incidence of various ophthalmic manifestations carried out.*
Methods*: The present clinical study comprises of patients who attended the ophthalmology out – patient department and patients who are admitted in neurology department. 36 newly diagnosed cases of isolated oculo motor nerve palsy or paralysis seen in Gov. Gen. Hospital, Vijayawada during the period of two and half years ,were included in the study. Inclusion of Criteria is Patients with isolated third cranial nerve palsy were included in this study. Exclusion criteria is Patients with Myasthenia gravis, Myopatheies and Thyroid Ophthalmopathy were excluded in this study.*
Obeservation: *There were 36 patients with isolated third cranial palsy. The mean age was 54.6 , maximum patients i.e. 16(44.4%)were in the age group of 4-60 years.The male and female ratio was 3:2, all the patients has unilateral involvement. Pupil was involved in 28% of cases, pupil was spread in majority of the cases72% with vascular aetiology , when compare to others. Pupil was involved in more than 50% of the cases, with head trauma.The commonest cause vascular micro angiopathy (42%) which was either due to uncontrolled diabetes mellitus or systemic hypertension or combination of both. The aetiology was undetermined in 28% of the cases in spite of neuro imaging have been done in all cases. Head trauma was accounted for 19% of the cases. Other causes 16% include par nasal sinus diseases (4) cases and Tubercular meningitis (2)cases. Spontaneous recovery occurred in 75% cases over period of 6 months. Vascular lesions had the best recovery rates (80%). Poor recovery 43% was seen in all cases with head trauma. All cases associated with Para nasal sinus disease recovered with treatment. Causes of paralysis still remain undetermined in some cases, but the prognosis for these cases is good.*
Conclusion: *The prevalence of isolated oculoomotor nerve palsies are maximum in the age group of 41-60 (44.4%) The incidence of male and female ratio was 3:2.Vascular diseases were play a major role (41%) in the etiology of oculo motor nerve palsies. Head trauma (19.4%) accounts the most second common cause for oculomotor nerve palsies. The etiology was undetermined in (28%) of the cases in spite of neuro imaging been done in all the cases. Vascular lesions had the best recovery rates (80%) in cases over a period of 6 months. In head trauma cases poor recovery rate about (43%). Vascular micro angiopathy (41%) cases were either due to uncontrolled diabetes mellitius or systemic hypertension or both. All cases with associated par nasal sinus diseases recovered with treatment.*

Key words: *Occulomotor nerve Palsy, Diabetes, Trauma, Hypertension , vascular micro angiopathy.*

Date of Submission: 23-08-2019 Date of Acceptance: 07-09-2019

I. Aims And Objectives

To determine the prevalence, etiopathogenesis and clinical manifestations of oculomotor nerve palsies
The clinical examination comprised of general examination for neurological signs and the ocular examinations
The Ocular examination include, examination of lids, position of the eyeball, ocular movements, conjunctive, cornea, papillary reflexes, visual acuity ophthalmoscopy, tonometry, diplopia charting.
From the data obtained an analysis of incidence of various ophthalmic manifestations carried out.

II. Introduction

Neuro –Ophthalmology may be defined as the study of eye symptoms and signs in relation to disease of the nervous system

The third, fourth and sixth cranial nerves innervate the extra ocular muscles that position the globes in the orbit. Extra ocular muscle paralysis resulting from lesions in one or all of these cranial nerves results in

failure of the eyes to move in co ordination. Ocular motor nerves paralysis in binocular diplopia with characteristic pattern of strabismus .However, clinical manifestation of oculomotor nerve paralysis may differ according to the type and the location of the lesions involving the third cranial nerve.

Diplopia is a common symptom of neuro ophthalmic diseases and may result from ophthalmologic, orbital, neuromuscular neurologic disorders.

Data on the prevalence and causes of ocular nerve palsy's in a defined population may be useful in guiding diagnosis and evaluation.

When encountering neurogenic diplopia, the clinician must determine whether oculomotor nerve is involved and what is the level of the lesion. Hence, when questioning the patient

It is important to identify whether diplopia is horizontal, vertical or oblique and the direction in which the two images are most widely separated. Associated features such as ptsosis, proptosis, weakness , numbness, vertigo and fatigue should be identified as their presence may localize the offending lesion, identify the cause.

There has been a few studies primarily concerned with the relative frequencies and etiologies of oculomotor paralysis. Those published have emanated largely from neurological tertiary referral centers rather than primary ophthalmology departments.

The possible causes of oculomotor paralysis are many. They may involve congenital ocular paralysis, traumatic oculo paralysis, disease of the orbit, general infection diseases, disease of central nervous system. But it must be remembered that , despite its diversity, or rather because of it., a considerable number(probably some 15 to 20%)of causes always remain undiagnosed and must be classified as of uncertain etiology despite the most careful investigation.

This study is undertaken, to determine the prevalence, etiopathogensis, clinical manifestations, and etiological prognosis of oculomotor nerve palsies.

III. Materials And Methods Of Study

The present clinical study comprises of patients who attended the ophthalmology out – patient department and patients who are admitted in neurology department. 36 newly diagnosed cases of isolated oculo motor nerve palsy or paralysis seen in Government General Hospital, Vijayawada during the period of two and half years were included in the study. The criteria for selection of the cases were presence of paralytic strabismus due to isolated paralysis of oculomotor nerve.

3.1.Inclusion of Criteria

Patients with isolated third cranial nerve palsy were included in this study.

3.2 Exclusion criteria

Patients with Myasthenia gravis, Myopathies and Thyroid Ophthalmopathy were excluded in this study.

3.3 Sampling Techniques

A complete history was taken and through clinical examination was done in all cases. General and ocular complaints like diplopia, defective vision ,drooping of eyelids , head trauma, head ache, vomiting, cough, cold, tinnitus, vertigo ,deafness were noted. Past history of systemic diseases like diabetes mellitus, hypertension, tuberculosis was noted.

Through ocular and systemic examination was done for all cases. Any abnormal head posture or facial asymmetry or ptosis was noted. The visual acuity, colour vision were recorded in all cases.

Extra ocular motility examination included Hirschberg's test, cover tests, ocular movements, diplopia charting, corneal and lid sensation, papillary size and reaction were recorded in all cases. Forced duction test was done where ever required. Direct ophthalmoscopy was done in all cases. ENT examination was also done.

All cases were subjected to a detailed neurological evaluation by a competent neurologist. Routine blood examination including blood sugar, mantoux test, X-ray (skull, orbit, PNS) was done in all cases. CT Scan (brain) without and with contrast was done in some cases.MRI and MRA were done whenever required.

All cases were followed monthly for a minimum period of six months and watched for recovery.

IV. Obeservation

There were 36 patients with isolated third cranial palsy. The mean age was 54.6, maximum patients i.e. 16(44.4%) were in the age group of 4-60 years.

The male and female ratio was 3:2, all the patients has unilateral involvement.

Pupil was involved in 28% of cases, pupil was spread in majority of the cases72% with vascular aetiology, when compare to others.

Pupil was involved in more than 50% of the cases, with head trauma.

The commonest cause vascular micro angiopathy (42%) which was either due to uncontrolled diabetes mellitus or systemic hypertension or combination of both.

The aetiology was undetermined in 28% of the cases in spite of neuro imaging have been done in all cases.

Head trauma was accounted for 19% of the cases.
Other causes 16% include par nasal sinus diseases (4) cases and Tubercular meningitis (2)cases.
Spontaneous recovery occurred in 75% cases over period of 6 months.
Vascular lesions had the best recovery rates (80%). Poor recovery 43% was seen in all cases with head trauma.
All cases associated with Para nasal sinus disease recovered with treatment.
Causes of paralysis still remain undetermined in some cases, but the prognosis for these cases is good.

Table: - 1 Age distribution

Age group	Total No of Cases	Percentage (%)
0 - 20	1	2.8
21 – 40	6	16.7
41 – 60	16	44.4
61 – 80	12	33.3
Above 80	1	2.8
Total	36	100

Pie Chart-1

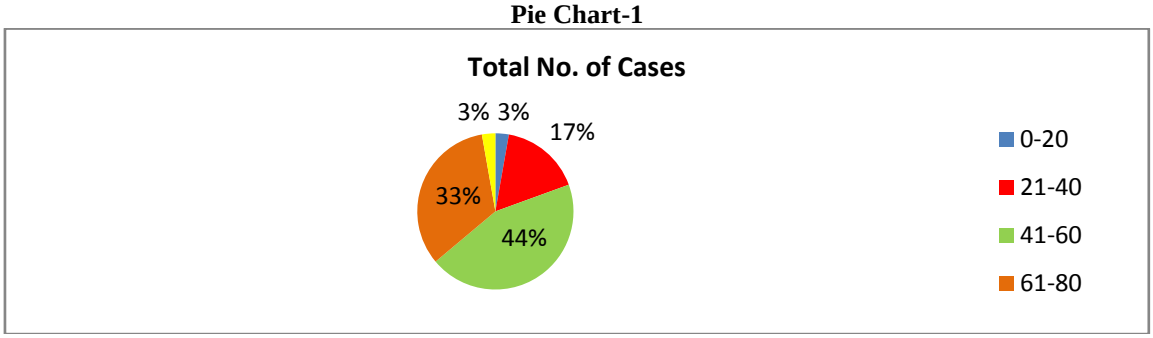

Table-2: Sex distribution

Sex	**No. of Cases**	**Percentage (%)**
Male	26	72
Female	10	28

Bar Chart-2

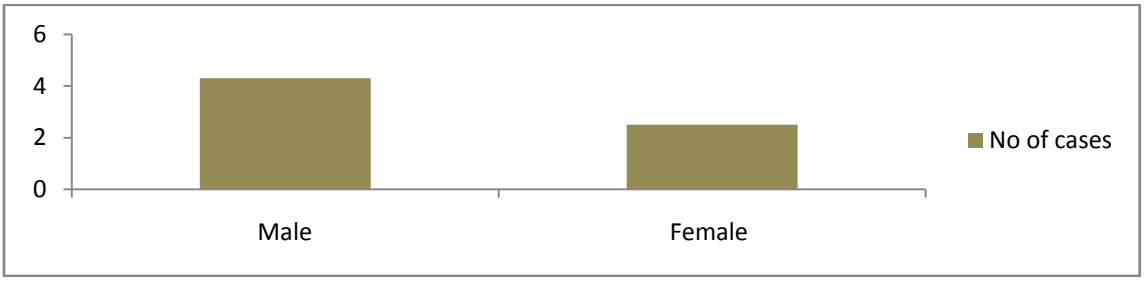

Table – 3: Causes of paralysis of Oculomotor nerve

Etiology	No.of cases	Percentage (%)
Vascular (Diabetes, Hypertenstion)	15	41.6
Head trauma	7	19.4
Others (TB/ Para nasal sinus infection, HIV, Collegen disorders, tumours)	6	16.6
Umdetermined	8	22.7

Bar Chart-3

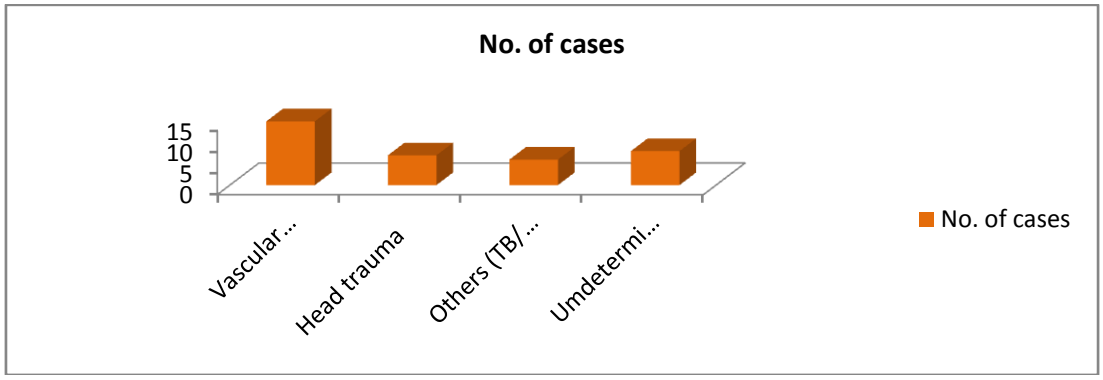

Table -4 : Clinical features

Symtoms	No. of cases	Percantage (%)
Pain and Diplopia	15	41.6
Diplopia	21	58.4
Drooping ofupper eyelid	36	100

Bar Chart-4

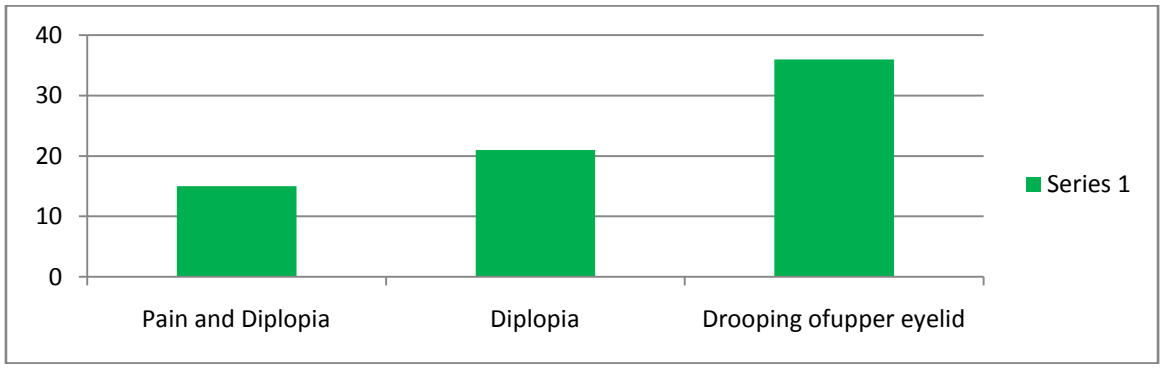

Table -5: Pupillary involvement according to Etiology

Etiology	No.of cases (Pupil involved)	No.of cases (Pupil not involved)
Vascular (Diabetes, Hypertenstion)	2	41.6
Head trauma	4	19.4
Others (TB/ Para nasal sinus infection, HIV, Collegen disorders, tumours)	2	16.6
Undetermined	2	22.7
Percentage	10 (28%)	26 (72%)

Bar Chart -5

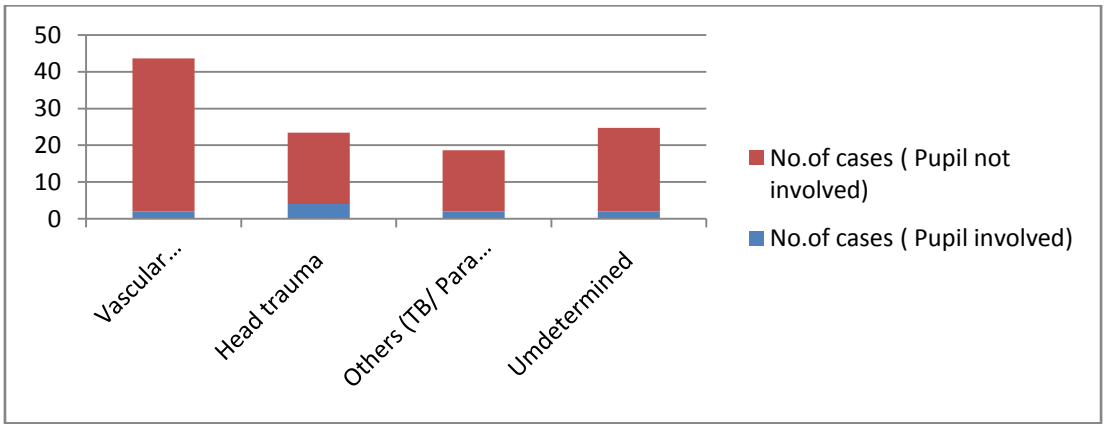

Table -6: Prognosis of Oculomotor nerve palsy according to Etiology

Etiology	Total recovery of cases	Partial recovery of cases	No recovery
Vascular (Diabetes, Hypertenstion)	8 (53%)	4 (26%)	3 (21%)
Head trauma	3 (43%)	1 (14%)	3 (43%)
Others (TB/ Para nasal sinus infection, HIV, Collegen disorders, tumours)	3 (50%)	1 (17%)	2 (33%)
Umdetermined	6 (75%)	1 (12.5%)	11 (12.5%)
Percentage	20 (55.5%)	7 (19.5%)	9 (25%)
Total	75%		25%

V. Discussion

In this study of 36 patients of isolated oculomotor nerve palsies, majority of patients were in the age group of 50-59 years.

A study of the age distribution reveals that, the incidence of isolated oculomotor nerve palsies are more in the older age groups .The greatest incidence of isolated third nerve palsy was in the sixth decade.

The male and female ratio was 3:2 , this was similar to the study conducted by **GREEN WR HACKETT ER,SCHLEZINGER NS,** who had sex incidence approximately equal on both sexes

All patients i.e.,(36)complain of drooping of upper eye lid .This was in the sharp contrast to the study by **GREEN WR** and associated in which only 29.23% of patients had ptosis.

The most common etiological factor was pathology ,15patients (41.6%)**RUCH J A et al** (1981)retrospectively analyzed a series thousand cases of paralysis of cranial nerves III,IV.&VI.

Vascular factor accounted for majority of the cases of isolated third cranial nerve palsies. **CARLOW T J (1989)** studied paralysis cranial nerves with respect to their clinical manifestation and differential diagnosis .An isolated third cranial nerve lesion was most commonly seen with vascular diseases (pupils spared)and trauma. **BERLIT P(1991)** analyzed retrospectively 412 patients with isolated or combine ocular nerve palsies. Vascular etiology account for 40% of ocular nerve palsies.

The second most common etiologic factor was head trauma 7 patients, (19.4%) followed by other causes, and undetermined cases.

GREEN WR and associated had found incidence of traumatic third nerve palsy as 10.8%. The trauma was direct and blunt in all the patients in this study as a result of road accidents.

HOOPER reported oculomotor nerve involvement in 12 of 58patients with trauma to head.Of the 335 cases of oculo nerve paralysis reported by **RUKER** (15.2%)was due to truma and almost half of these were injuries sustained in automobile.

RUSH J A and associates reported that the incidence of traumatic third nerve palsy is 16.2%.

DULAYAJNDA D, KORRIRU LEVOSGSP, SONGGEHAREONS(1991) prospectively analyzed96 diplopia patients . The resuilt revealed that the common causes of diplopia were head trauma(38.5%0systemic diseases like diabetes mellitus, hypertension (20.8%)undetermined group()15.6%. The incidence of diabetic third nerve palsy in this study was 16%. **RUSH J A** and associates had found that the incidence of diabetic third nerve palsy to be 8.60%,where as in **RUKER "S** series it was 6.26%

GOLDSTEIN JE ,COGAN DG noted that the oculomotor nerve palsy with normal pupils(pupils sparing) most commonly results from an intrinsic vascular lesion.

ASBURY A ,et al felt that presumably there is a central ischaemic infarct that spares the more peripherally laced parasympathetic fibres

VI. Conclusion

The following conclusion was drawn from this study

The prevalence of isolated oculoomotor nerve palsies are maximum in the age group of 41-60 (44.4%) .
The incidence of male and female ratio was 3:2.

Vascular diseases were play a major role (41%) in the etiology of oculo motor nerve palsies.

Head trauma (19.4%) accounts the most second common cause for oculomotor nerve palsies.

The etiology was undetermined in (28%) of the cases in spite of neuro imaging been done in all the cases.

Vascular lesions had the best recovery rates (80%) in cases over a period of 6 months.

In head trauma cases poor recovery rate about (43%).

Vascular micro angiopathy (41%) cases were either due to uncontrolled diabetes mellitius or systemic hypertension or both.

All cases with associated par nasal sinus diseases recovered with treatment.

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Dr. G. Madhavilatha M.S. "Clinical Study on Occulomotor Nerve." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 9, 2019, pp 62-67.