

## Intracranial Tumors: An Ophthalmic Perspective

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### Abstract

**Aim:** This study was aimed at determining the ophthalmic manifestations of patients presenting with brain tumors in a tertiary care centre

**Materials and Methods:** A prospective crosssectional review of patients with brain tumors in a tertiary care centre in Tamilnadu was conducted between Nov 2015 to April 2016. The study included 25 CT /MRI proven cases of Intracranial space occupying lesions who underwent detailed ocular, neurological and systemic examination.

**Results:** Out of 25 cases there were 9 males (36%) and 16 females(64%) and the mean age was 40±25 years. Headache(72%) was the common symptom followed by decreased vision(60%). Various Ophthalmic manifestations included papilloedema ,diplopia ,defective vision, proptosis and optic atrophy. Meningioma(32%) followed by CP angle tumor(20%) were the most common brain tumors encountered.

**Conclusion:** Ophthalmic signs and symptoms form a major part of presentation in patients with intracranial tumors. By careful ophthalmic evaluation, early diagnosis of Intracranial space occupying lesions could be possible thereby allowing localisation and early management of these tumors .

**Keywords:** Intracranial tumors, ophthalmic manifestation, headache

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### I. Introduction

Ocular features may be the earliest manifestation of intracranial tumors which help us to diagnose the disease earlier and to decrease the morbidity and mortality of the patient. Intracranial tumors expand in volume and replace normal neural tissues leading to an increase in intracranial pressure. Ocular features could result from their effect on the visual pathway, ocular nerves and orbito-ocular tissues. Ocular symptoms of raised ICP are deviation of eye, diplopia and diminution of vision (DOV) depending upon the area of brain involved . Ocular signs include nystagmus, papilloedema, optic atrophy ,cranial nerve palsies with abducent nerve palsy being common and scotoma. In patients with Intracranial space occupying lesions ocular features may be seen much earlier than general signs. These signs have immense localizing importance .More than 50 percent of these patients present to an ophthalmologist initially. Hence in cases of intracranial space occupying lesions, ophthalmologists play a vital role in early diagnosis and proper referral. The purpose of this study was to assess the types of intracranial tumors that caused impairment of vision, and thereby establish a relationship between the various ocular effects caused by the intracranial tumors, aiding their localisation.

### II. Materials And Methods

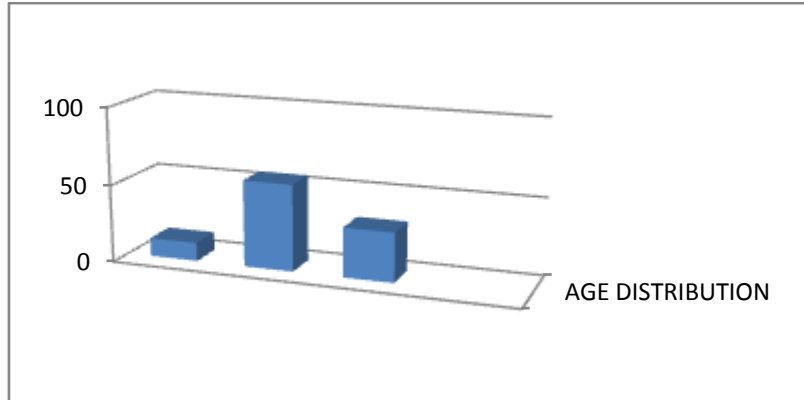
A prospective cross sectional study was conducted in a tertiary care centre in Tamilnadu from November 2015 to april 2016 on 25 patients diagnosed with intracranial tumors visiting ophthalmology and neurosurgery departments. Patients who were uncooperative on account of deteriorating general conditions, patients with history of previous head injury, cases of demyelinating diseases were excluded from the study. All the patients underwent detailed general and neurological examination in addition to CT scan and MRI . Complete ocular examination was done. Distant and near visual acuity of both eyes were recorded. Any abnormality in head posture that might be assumed to overcome diplopia was noted. The palpebral apertures were compared and to rule out lid retraction or lagophthalmos. Conjunctiva ,cornea and anterior chamber were examined. Pupils were assessed in terms of size, reactivity to light and any abnormal reactions. Uniocular and binocular eye movements were tested separately. Corneal sensations in both eyes were tested. Fundus examination of both eyes was done to find out any papilledema and optic atrophy. Cases of proptosis were evaluated thoroughly and local causes were ruled out. Detailed examination of cases presented with ptosis was done.. In cases of diplopia, chartings were done and charts were analysed.

**III. Results**

**Age Distribution**

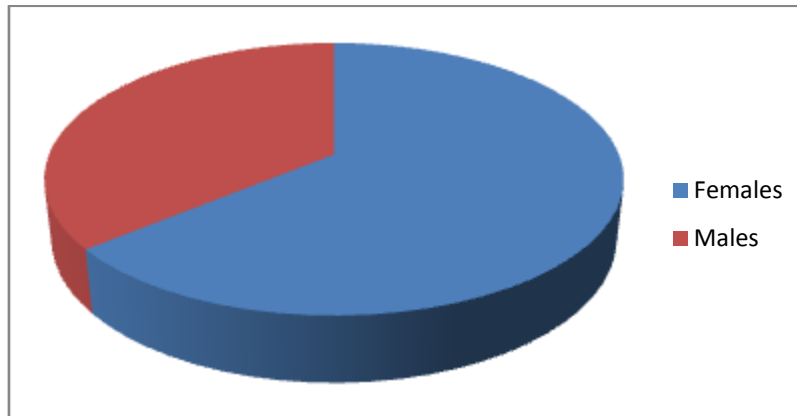
The age of patients ranged from 15- 65 years. The maximum incidence in our study was between 35 to 55yrs of age. This was comparable with other studies by Helen OO et al, which showed a 43.2% % incidence in 36-55 age group.<sup>[1]</sup>

AGE GROUP	PERCENTAGE
15-35 YRS	12%
35-55 YRS	56%
ABOVE 55 YRS	32%



**Sex Distribution**

Our study showed a female preponderance of 64%. This was comparable with other studies by Sefi-Yurdakul N.<sup>[7]</sup>



**Symptoms And Signs**

The most common systemic presenting complaint was Headache(72%). Diminution of Vision (60%) was the most common ocular presenting symptom.<sup>[7]</sup> Many patients presented with more than one symptom. Among the signs papilloedema (48%) was the most common ocular sign followed by Proptosis (4%), optic atrophy (7%) and Nystagmus (3%). Pupillary defect was seen in 24% of cases. Among nerve palsies, VI Cranial nerve palsy was recorded in 28% cases followed by VII cranial nerve palsy in 20% cases.

**Distribution Of Icsol**

In our study meningioma(32%) was the most common intraocular tumor encountered. This was comparable with other studies.<sup>[3]</sup> The other tumors encountered were CP angle tumor(20%), pituitary tumor(16%), astrocytoma(12%), cerebellar tumor(8%), ependymoma(8%) and craniopharyngioma(4%).

TUMOR TYPE	PERCENTAGE
Meningioma	32%
CP angle tumor	20%
Pituitary tumor	16%
Astrocytoma	12%

Cerebellar tumor	8%
Ependymoma	8%
Craniopharyngioma	4%

### Visual Acuity

In 15 cases visual acuity was in the range of 6/6-6/12. In 8 patients visual acuity ranged between 6/18-6/36 and in 2 patients it was finger counting at 1 metre distance

VISUAL ACUITY	NO OF CASES
6/6-6/12	15
6/18-6/36	8
FC at 1m	2

### Visual Field

Visual field defects were noted in 32% of cases. Blind spot enlargement was the most commonest. Bitemporal hemianopia was seen in cases of craniopharyngioma.

## IV. Discussion

In the present study majority of cases were detected in the 35-55 age group. Our study shows a female sex preponderance which is comparable with other studies by Sefi-Yurdakul N.<sup>[7]</sup> Headache, seizure, cranial nerve palsies and papilloedema have been reported to be the most common signs and symptoms of intracranial tumors. Site of Intracranial space occupying lesion can be correlated with the ocular manifestation. Most of the patient presented with headache followed by defective vision. Hence patients presenting with these symptoms should be examined carefully. Papilloedema was the most common sign. Most common Intracranial space occupying lesion was meningioma followed by CP angle tumors. Sixth cranial nerve followed by seventh cranial nerve were involved commonly.

## V. Conclusion

Ocular manifestations can occur very frequently in Intracranial space occupying lesion. These occur with increasing frequency in most of but not all intracranial tumors, thus making these patients seek early medical attention and most often help in localizing the lesion.. Early diagnosis and proper referral hence plays a vital role in the management and outcome of these tumors.

## References

- [1]. Helen OO, Oluwole KE, Folasade A, Kayode A, Adeyoyin KM, Abiodun AA, Oluremi OS, Ogunmorayo AA, Olukemi AB: Ophthalmic manifestations in patients with intracranial tumours: African Journal of Neurological Science. 2009; 28(1):53-9.
- [2]. Wadud SA, Ahmed S, Choudhury N, Chowdhury D: Evaluation of ophthalmic manifestations in patients with intracranial tumours: Mymensingh Medical Journal. 2014; 23(2):268-71.
- [3]. Masaya-anon P, Lorpattanakasem J: Intracranial Tumors Affecting Visual System: 5-Year Review in Prasat Neurological Institute: Journal of the Medical Association of Thailand 2008; 91 (4):515-19.
- [4]. Kitthaweesin K, Ployprasith C. Ocular manifestations of suprasellar tumors. J Med Assoc Thai.2008;91(5):711-715.
- [5]. Margalit N, Barkay G, Kesler A. Delay in diagnosis of meningiomas involving the optic apparatus: conclusions and guidelines for early imaging based on our experience in 100 patients. Harefuah.2013;152(3):135-138.
- [6]. Cheour M, Mazlout H, Agrebi S, Falfoul Y, Chakroun I, Lajmi H, Kraiem A. Compressive optic neuropathy secondary to a pituitary macroadenoma. J Fr Ophthalmol. 2013;36(6):e101-104.
- [7]. Sefi-Yurdakul N. Visual findings as primary manifestations in patients with intracranial tumors. Int J Ophthalmol. 2015 Aug 18;8(4):800-3.
- [8]. Wilne SH, Ferris RC, Nathwani A, Kennedy CR. The presenting features of brain tumours a review of 200 cases Arch Dis Child 2006; 91(6):502-6.
- [9].