



A CLINICAL STUDY OF PATIENTS PRESENTING WITH OPTIC DISC EDEMA AT A TERTIARY CARE CENTRE OF CENTRAL INDIA

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ABSTRACT

Optic disc edema, swelling of the optic nerve head due to all other causes not associated with increased intracranial tension while Papilledema is secondary to an increased intracranial pressure. A systematic approach to patient assessment is crucial for accurate diagnosis, appropriate management, and timely intervention to prevent visual impairment or loss. This study aimed to evaluate etiology and clinical features of patients with optic disc edema. **Methods-** This study was a cross sectional study conducted over 90 patients with optic disc edema at a tertiary care center in Central India between March 2023 and December 2024. Complete ophthalmological examination including visual acuity, color vision, fundus examination and visual field analysis was done. Neuroimaging with the help of MRI [brain + orbit] was done whenever required. **Results-** Total 90 patients were examined in the study. The most common age group of patient was 20- 40 years [57.78%] comprising 42 males (46.67%) and 48 females (53.33%). The most common cause for optic disc edema was idiopathic intracranial hypertension (42.22%). Majority of the patient complained of blurring of vision and head ache (42.22%). Among the eyes affected 34.44% of patients had BCVA 6/6-6/12. Visual acuity, color vision and pupillary reaction were normal in majority of cases of IIH and but it was deranged in cases with optic neuritis. The most common visual field defect was isolated enlarged blind spot [40%]. **Conclusion-** When evaluating a patient with disc edema, it's essential to consider both systemic and local causes. A detailed clinical history, along with complete ophthalmic examination should be conducted. A Comprehensive ocular examination and neuroimaging play a crucial role in the neuroimaging play a crucial role in the early detection of intracranial lesions in cases of papilledema. Early diagnosis can significantly improve prognosis and may even be life-saving through timely intervention.

KEYWORDS : Optic Disc Edema, Idiopathic Intracranial Hypertension, Papilledema, Optic Neuritis

INTRODUCTION

Optic disc edema is a critical neuro- ophthalmic emergency that requires timely diagnosis and intervention. Identifying the exact cause is essential, as different etiologies require distinct treatment strategies. While bilateral optic disc edema is commonly associated with raised ICP and warrants urgent neurological evaluation, unilateral swelling is often indicative of localized pathology such as optic neuritis, ischemic optic neuropathy, or inflammatory conditions.

This study focuses on analyzing cases of optic disc edema in a tertiary care center of Central India, aiming to determine its prevalence, clinical presentation, and visual outcomes. By systematically evaluating these aspects, this research will contribute to improved diagnostic accuracy, optimized treatment approaches, and better patient outcomes in neuro-ophthalmic practice.

MATERIALS & METHODS

This study was a Cross sectional study conducted on patients diagnosed with optic disc edema at a tertiary care center in Central India between March 2023 and December 2024. In our study, a total of 90 patients were enrolled. Patients were registered and informed consent was taken.

Inclusion Criteria

- All patients presenting with optic disc edema
- All patients willing to give written consent to participate in the study

Exclusion Criteria

- Patients having pseudo optic disc edema [optic nerve head drusen & hypermetropia]

Methodology

Patients were evaluated with a detailed clinical history of symptoms including diminution of vision, head ache, nausea, vomiting, ocular pain. followed by complete ophthalmological examination visual acuity using Snellen's chart or illiterate E chart of both eyes, color vision by ishihara color vision chart, anterior segment examination by slit lamp bio microscopy, fundus examination using +78 D/+90 D lens and visual field analysis using automated perimetry with Humphrey 3-2 programme. Neuroimaging with the help of MRI [brain + orbit] were done whenever required. Pseudo optic disc edema will be ruled out by clinical examination, refraction ad USG B scan.

RESULTS

Table. No1: Distribution of Age and Gender Among the Study Participants

CLINICAL PRESENTATION	FREQUENCY	PERCENTAGE
DOV only	16	17.78

DOV+ headache	38	42.22
DOV + pain	2	2.22
DOV + pain+ Headache	14	15.56
Head ache only	14	15.56
Nausea + vomiting	4	4.44
Pain+ Headache	2	2.22
Total	90	100.00

The majority of patients (57.78%) fell within the 20–40 years' age group, with equal representation among males and females (61.90% and 54.17%, respectively).

Table. No2: Clinical Presentation of Optic Disc Edema Among the study Participants

Age (In years)	Males		Females		Total	
	No.	%	No.	%	No.	%
0-20	4	9.52	14	29.17	18	20.00
20-40	26	61.90	26	54.17	52	57.78
40-60	10	23.81	6	12.50	16	17.78
60-80	2	4.76	2	4.17	4	4.44
>81	0	0.00	0	0.00	0	0.00
Total	42	100.00	48	100.00	90	100.00

The most common clinical manifestation was diminution of vision (DOV) with headache, observed in 38 patients (42.22%).

Among 154 affected eyes, 48 [31.16 %] eyes have best corrected visual acuity [BCVA] of 6/6-6/12.

An analysis of laterality revealed that the condition was bilateral in the majority of cases (64 patients, 71.11%), while unilateral involvement was seen in 26 patients (28.89%), with 12 affecting the right eye and 14 the left.

Out of 90 patients, 54 patients (60%) had normal red-green color perception, which may suggest early-stage disc edema or non-neuropathic causes like raised intracranial pressure without direct optic nerve compromise (e.g., papilledema). And 30 (33.33%) showed abnormal red-green color vision, indicating varying degrees of optic nerve dysfunction.

The most common cause of optic disc edema in this study was Idiopathic Intracranial Hypertension (IIH), accounting for 42.22% of cases.

The most commonly observed visual field defect was an enlarged blind spot, seen in 36 patients (40%). Normal visual fields were recorded in 14 patients (15.56%), followed by Central and centrocecal scotomas (combined total of 6.66%)

Table. No3: Etiological Profile of Patients Presenting with Optic Disc Edema

AETIOLOGY	FREQUENCY	PERCENTAGE
Cavernous Sinus thrombosis	2	2.22
Grade IV hypertensive retinopathy	12	13.33
ICSOL	8	8.89
IIH	38	42.22
Optic neuritis	24	26.67
Sinus thrombosis	2	2.22
Trauma	4	4.44
Total	90	100.00

DISCUSSION

The most common age group affected in our study was 20-40 years [57.78%] comprising 42 males (46.67%) and 48 females (53.33%). Garg G et al found that 53% of patients were aged 21–40 years. Were 60 females and 40 males. Jung et al reported a mean age of 53.4 years for non-arteritic anterior ischemic optic neuropathy (NA-AION) and 29.2 years for optic neuritis (ON), a male predominance was noted in both groups. Solanki D et al, reported the most commonly affected age group to be 11–20 years, with male female ratio 4.1:3. Yamijala

neha srija et al. found the mean age of the study population was 31.51 ± 13.33 years, with 44 [54.3%] males and 37 [45.6%] females.

Majority of the patient complained of diminution of vision and head ache (42.22%) Followed by diminution of vision only [17.78%] in our study. However, in the study by Jong Jin Jung et al. reported that the chief presenting complaints in both NA-AION and ON groups were decreased visual acuity and visual field defects. Gautam Garg et al. found that headache was the most common presenting symptom, affecting 64% of patients. Vangla et al. reported a higher prevalence of headache (85%), followed by vomiting (56%). Mona Abbas et al. similarly found headache as the predominant symptom in 90% of patients, with reduced visual acuity observed in 10% of cases.

In our study the most common cause of disc edema was IIH [42.2%], followed by ON [26.6%], Grade 4 hypertensive retinopathy [13.33%], ICSOL [8.89%]. According to Isha K. Patel et al ON [46%] was the most frequent cause. Other causes included IIH [20%], Grade 4 hypertensive retinopathy [8%], Ijeri R et al found that papilledema accounted for 57.14% of bilateral optic disc edema cases, followed by optic neuritis (11.11%), hypertensive retinopathy (9.52%), VKH syndrome (7.9%), neuroretinitis (4.8%), CMV retinitis (3.2%), and an unknown cause in 6.3% of cases. Parajuli A et al found that IIH [37.5%] was most common case followed by ON [25.9%], ICSOL [6.3%], Grade 4 hypertensive retinopathy [5.4%] & sinus thrombosis [2.5%]. Osaguona VB et al.83 reported that the most common causes of optic disc swelling were papilledema (30.3%), optic neuritis (28.8%), and pseudopapilledema (16.7%). Meanwhile, Selma Urfalioglu et al.93 identified IIH as the leading cause of optic disc edema, with optic neuritis being the second most common (22 patients).

Among 154 affected eyes, 48 [31.16 %] eyes have best corrected visual acuity [BCVA] of 6/6-6/12. Jong Jin Jung et al. reported initial logMAR visual acuity values of 0.39 ± 0.41 in the non-arteritic anterior ischemic optic neuropathy (NA-AION) group and 0.32 ± 0.37 in the optic neuritis (ON) group, with no significant difference between them ($p = 0.569$). However, the ON group demonstrated a significantly better visual prognosis compared to the NA-AION group, with final logMAR values of 0.12 ± 0.32 versus 0.49 ± 0.35 ($p = 0.001$). Similarly, Rani et al. found that 77.4% of patients presented with best corrected visual acuity (BCVA) greater than 6/18. In the current study, 63% of patients had BCVA >6/18 in the right eye, while 64.4% had BCVA >6/18 in the left eye. This was primarily attributed to papilledema in most cases.

An analysis of laterality revealed that the condition was bilateral in the majority of cases 64 patients, (71.11%), while unilateral involvement was seen in 26 patients (28.89%), with 12 affecting the right eye and 14 the left. Solanki et al. reported unilateral disc edema in 30% of cases and bilateral involvement in 70%, consistent with the findings of Gautam Garg et al Similarly, Yamijala Neha Srija et al. found that bilateral disc edema was the most common presentation, affecting 83.9% of patients in their study. Osaguona et al. observed that a total of 109 eyes were affected, with bilateral involvement in 43 patients.

The most commonly observed visual field defect was an enlarged blind spot, seen in 36 patients (40%). Normal visual fields were recorded in 14 patients (15.56%), Central and centrocecal scotomas (combined total of 6.66%). Similarly, in a study by Ambika et al 62.5% eye had enlarged blind spot.

CONCLUSION

When evaluating a patient with disc edema, it's essential to consider both systemic and local causes. A detailed clinical history, along with complete ophthalmic examination should be conducted. A Comprehensive ocular examination and

neuroimaging play a crucial role in the neuroimaging play a crucial role in the early detection of intracranial lesions in cases of papilledema. Early diagnosis can significantly improve prognosis and may even be life-saving through timely intervention. Therefore, a thorough ocular evaluation is vital for the early identification of disc edema, allowing for prompt treatment to prevent disease progression and potential vision loss.

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