

STUDY OF PAPILLOEDEMA AND ITS CAUSATIVE FACTORS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

To study the etiology of papilloedema in north indian population. Our hospital based retrospective study enrolled 50 patients of papilloedema, who fulfilled our inclusion criteria. Demographic details, chief complaints and detailed history was taken from all the patients. All the patients underwent blood pressure measurement by a mercury sphygmomanometer, Visual Acuity testing, Slitlamp Biomicroscopy, IOP measurement, Fundus examination. Fundus photographs were obtained using a fundus camera. Other investigations included B-scan, MRI, MRV, CT and required blood investigations were done wherever necessary. Although papilloedema occurred in a vast variety of age group but maximum patients (32%) were from the age group of >18-31 years and males (64%) were more affected than females according to our study. 66% of the patients had good vision with papilloedema. In our study all the patients had bilateral papilloedema and 54% of patients were diagnosed with early papilloedema. Idiopathic Intracranial Hypertension was the main etiology for papilloedema. In this study we concluded IIH (a diagnosis of exclusion) as the most common underlying etiology for papilloedema.

KEYWORDS:- Papilloedema, Intra-Cranial Pressure (ICP), Idiopathic Intracranial Hypertension, Visual Acuity (VA), Optic Nerve Head (ONH).

INTRODUCTION

Papilloedema can be defined as "bilateral passive non inflammatory edema of the optic disc due to raised intracranial pressure which is almost always bilateral and without any visual deficit" (1). Although papilloedema cannot occur in the absence of raised ICP, but raised ICP can occur even without the presence of papilledema. Papilledema is commonly symmetric and bilateral, although unilateral cases and cases with asymmetric papilloedema have also been reported (2).

ICP as defined by Monro-Kellie hypothesis is a quantification of total amount of blood, CSF, and brain parenchyma present in the fixed volume of cranial space. With the increase in the volume of intracranial space, an inverse decrease in volume from another intracranial component must take place, as evident by both radiologic and clinical manifestations such as a decreased cerebral blood flow and headache (3). Any imbalance in this phenomenon results in high ICP which can be seen in the following conditions: Increase in CSF such as from Obstructive Hydrocephalus, Brain Tumor or Hemorrhage, Increase in blood volume, as by Idiopathic intracranial Hypertension. Other etiologies of papilloedema are intracranial tumors, intracranial haemorrhages,

venous sinus thrombosis, neurosarcoidosis, granulomatous meningitis, idiopathic intracranial hypertension (4).

Papilledema is characterized as Early, Fully developed (Established), Chronic, and Atrophic (Late) based upon the condition of Optic Disc Swelling. In early papilledema, there occurs Disc hyperemia, disc swelling, blurring of the disc margins along with blurring of the RNFL. Marked elevation of the ONH accompanied by engorged and dusky veins, peripapillary splinter hemorrhages, subchoroidal folds, retinal striae are seen in fully developed papilledema. In chronic papilledema, the optic disc cup is completely obliterated, few hemorrhages and hard exudates are seen within the nerve head along with less disc hyperemia is seen. In atrophic papilloedema, disc edema resolves, retinal arterioles are thinned out or sheathed, secondary optic atrophy occurs, and the optic disc is visualized as dirty gray and blurred due to gliosis (5).

In this study, we put in our efforts to study the underlying causes of papilledema as well as their relation with visual acuity and different grades of papilledema. Knowing the cause of papilledema is very important both from prognostic point of view, and

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DISCUSSION

A total of 50 cases of papilloedema which presented in north Indian medical university were taken and a male predominance was noted with 64% cases. These findings corroborated with Subramaniam et al(6), in which they found 55% of males to be affected but Ambika S et al in her study noted a female preponderance in which 80% of females were affected. In our study 32% of patients were from 21-30yr of age, similar to the study done by Subramaniam et. al. where 52% of patients were from the age group from 21-30yrs of age (Fig. 1,2).

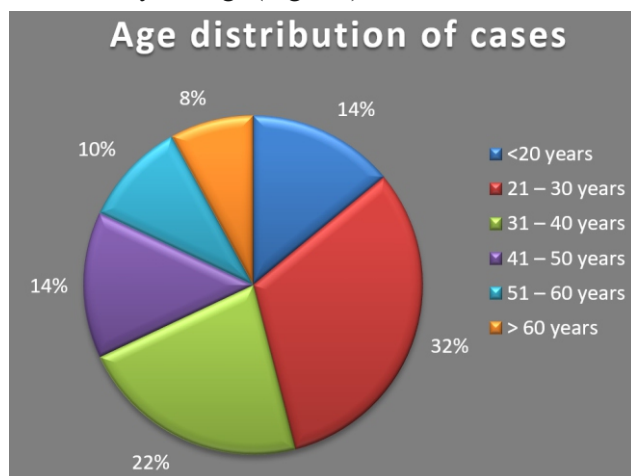


Fig. 1: Age distribution of Cases.

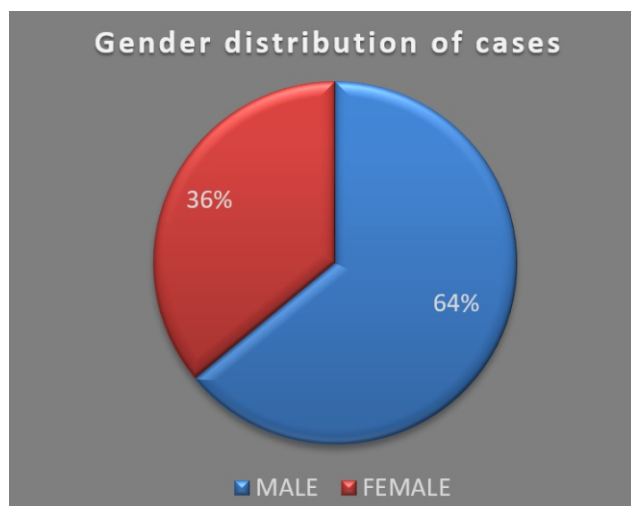


Fig. 2: Sex Distribution of Cases

In our study 54% of cases presented with acute onset of disease which collaborated with the study done by Rani et al(7), where maximum number of subjects were of acute onset. In a study conducted by Chetan P. Saoji (8) majority of patients had early papilloedema, followed by established papilloedema & chronic (long standing) papilloedema. These findings were similar to our study in which maximum cases had early papilloedema followed by established and then chronic

which were 54%, 26% and 16 % respectively. Small number (4%) of patients also had atrophic papilloedema in our study (Table 1).

Grading	No. of cases	%
Early Papilloedema	27	54%
Established Papilloedema	13	26%
Chronic Papilloedema	8	16%
Atrophic Papilloedema	2	4%

Table 1: Grading of Papilloedema in Stages

In our study we tested the visual acuity by snellens chart and also by finger counting. We found out that 72% cases have good visual acuity (<6/18) and these similar statistics were also there in a study done by Chetan P. Saoji et al(7), in which 58% of papilloedema cases had good vision. Other investigators like Grehn F et al(9), Corbett JJ et al(10) and Wall. M et al (also recorded similar results11) (Table 2).

Visual loss	Gradings of Papilloedema			
	Early	Established	Chronic	Atrophic
Good (>6/18)	22	9	2	0
Moderate (6/60-6/24)	4	2	4	1
Poor vision (<6/60)	1	2	2	1

Table 2: Visual Acuity in Relation with Grading of Papilloedema

According to our study, Idiopathic Intracranial hypertension was the most common etiological factor for papilloedema is i.e 46%, followed by space occupying lesion (28%) and the rest (26%) were malignant hypertension, anemia, TB meningitis and thrombosis (Table 3).

According to a study done by Kei Lijima et al(15), he noted raised ICP in 59% cases, pseudopapillitis in 16% cases, uveitis in 8% cases and hypertensive retinopathy in 5% cases of papilloedema. Chetan P. Saoji et al(7) reported tumors and haemorrhage as the most common etiological factor that is 14 cases (77.8%) in his study.

also for quick recognition and its prompt treatment so that patient can have a better visual outcome. Therefore, the motive of our study was to know about the causative factors of papilloedema in respective patients and to know about the changes occurring in their optic disc and classify papilloedema accordingly.

MATERIALS AND METHODS

Our study is a hospital based retrospective study undertaken at a tertiary care hospital of North India. For the purpose of this study, we obtained records of 50 cases of papilloedema referred to us from various departments in our tertiary care hospital during the study period from June 2019 to July 2021.

After taking Ethical clearance from the Institute Ethical Committee, Informed consent was taken from all the cases for our study.

INCLUSION CRITERIA

1. Cases with papilloedema >18 years of age and of both sexes

EXCLUSION CRITERIA

1. Patients in whom fundus examination was not possible.
2. Patients who were contraindicated for pupil dilatation.

Each patient was asked about their basic information including names, age (in years), residential address and their occupation. Detailed history of symptoms like ocular straining along with headache, blurring of vision for both distant or near vision, diplopia, transient loss of visual, deflection of eyes were noted along with their duration, onset and progression. History of Diabetes Mellitus, Hypertension and any other systemic illness along with any ongoing treatment. All the patients were clinically examined and a detailed history including duration of illness, past medical history of hypertension and ophthalmic examinations were obtained. The subjects underwent blood pressure measurement by a mercury sphygmomanometer, Visual Acuity (VA) testing using Snellen's chart, slitlamp biomicroscopy (Carl Zeiss slit lamp, model SI 115 Classic), intraocular pressure by applanation tonometry (Inami applanation tonometer model L-5110) and fundus examination using indirect and direct ophthalmoscope (+90D and +20D lens). Fundus photographs were obtained using a fundus camera (Carl Zeiss VISUCAM 524). B-scan (Logiq P9), Magnetic Resonance Imaging (MRI) (Hitachi Aperto 0.4T), Magnetic Resonance Venography (MRV) (Hitachi Aperto 0.4T), Computed Tomography (CT) (Siemens Somatom 384 slices) and Blood investigations were done wherever necessary.

Following classification was used to grade papilloedema (5).

Early Papilloedema; Disc edema, obscuration of the disc margins, Disc hyperemia, and blurring of the RNFL.

Established Papilloedema; Elevation of the ONH, tortuous and dusky veins, peripapillary splinter hemorrhages, subchoroidal folds and retinal striae.

Chronic Papilloedema; Complete obliteration of Optic disc Cup with Few hemorrhages, less hyperemic disc, and exudates within the ONH.

Atrophic Papilloedema; Disc swelling subsides but Secondary optic atrophy sets in, retinal arterioles are thinned out or sheathed, and the optic disc is dirty gray and blurred due to gliosis

Statistics using SPSS (Statistical Package for Social Sciences) software, Version 26.0 and p-value of <0.05 was considered to be statistically.

OBSERVATION AND RESULTS

Our cross sectional study included data from 50 patients diagnosed with papilloedema and following observations were obtained.

Maximum number of cases i.e. 54% presented with early papilloedema, followed by established papilloedema in 26%, chronic papilloedema in 16% and only 4% cases had atrophic papilloedema.

Out of 33 cases with good visual acuity 22 had early papilloedema, 9 had established and 2 had chronic papilloedema.

11 cases had moderate visual acuity, of which 4 cases had early papilloedema, 2 had established, 4 had chronic and only 1 had atrophic papilloedema.

Only 6 cases had poor visual acuity, of which 1 had early papilloedema, 2 had established papilloedema, 2 had chronic and 1 had atrophic papilloedema.

Out of 27 cases of early papilloedema, 18 were diagnosed with IIH, 3 had malignant hypertension, followed by 2 cases each of intracranial tumor and TB meningitis, 1 case each of anemia and cortical vein thrombosis.

In our study etiology of established papilloedema included 5 cases with IIH, 3 cases of intracranial tumor, 2 cases, each of malignant hypertension and anemia and 1 case of dural vein thrombosis.

Among patients with chronic papilloedema, 3 cases had intracranial tumor, 2 cases had TB meningitis and 1 case each of IIH, Malignant hypertension and Anemia.

Among patients with atrophic papilloedema, 1 case was diagnosed with Intra cranial hypertension and 1 case of cortical vein thrombosis.

This study focuses on the etiological factors of papilloedema and by doing this study we could get a fair idea about the different risk factors associated with it. Idiopathic intracranial hypertension was the most common etiological factor of papilloedema in our study. Though further extended studies are needed to support our findings

Etiology	Gradiings of Papilloedema			
	Early	Established	Chronic	Atrophic
Idiopathic intracranial hypertension	18	5	1	0
Intracranial Tumor	2	3	3	1
Malignant hypertension	3	2	1	0
Anemia	1	2	1	0
TB meningitis	2	0	2	0
Thrombosis	1	1	0	1

Table 3: Etiology Wise Papilloedema Grades

CONCLUSION

Diagnosis of papilledema can lead to divert the concern to a critical etiology like as Obstructive Hydrocephalus, Brain Tumor or Hemorrhage, Venous Sinus Thrombosis, or by Idiopathic intracranial Hypertension. However, in this study we concluded IIH (a diagnosis of exclusion) as the most common underlying etiology for papilloedema.

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