



ORIGINAL RESEARCH PAPER

Medicine

NEUROIMAGING PROFILE OF PATIENTS WITH PAPILLEDEMA

Key words: papilledema frisen scale, meningeal enhancement , intracranial hemorrhage , cerebral venous thrombosis, ICSOL, idiopathic.

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ABSTRACT

Papilledema is a finding which harbors multiple etiologies. Hence a better understanding of this condition will assist in the early management and prevention of complication from papilledema itself as well as condition causing it. untreated papilledema can lead to progressive irreversible visual loss and secondary optic atrophy in up to 31% of patients. The first step in the investigation of a patient with papilledema is a neuroimaging study, either by CT or MRI, as well as contrast-enhanced CT venography or MR venography.

AIM: To assess the neuroimaging findings in the patients presenting with papilledema.

METHOD AND MATERIALS: 100 patient with initially confirmed papilledema as per modified frisen papilledema scale were retrospectively studied at Gandhi Medical College and Hamidia Hospital from May 2014 to December 2014. Patients underwent a detailed clinical evaluation followed by laboratory investigations and neuroimaging studies. Patient having optic disc edema other than raised ICT and patient with head injury were excluded.

RESULTS: Present study showed female preponderance with F:M 1.2:1. Incidence was common in age groups of 2nd and 4th decade. Meningitis was the most common etiology associated with papilledema, meningeal enhancement observed in 38%, followed by intracranial hemorrhage(23%), cerebral venous thrombosis (20%),intracranial space occupying lesion (10%),idiopathic(9%).

CONCLUSION: Neuroimaging helps in early diagnosis of several intracranial lesions in patients with papilledema, which provides better prognosis and saves the life of the patient by early intervention.

INTRODUCTION

Papilledema is the term used to describe optic disc swelling associated with ICP. 1, 2 studies have demonstrated papilledema to be an indirect marker of raised intracranial pressure. Since the first descriptions of papilledema on fundoscopic examination, a variety of diseases have been reported as presenting with papilledema. Modern evidence suggests that papilledema is caused by an increase in ICP that is transmitted to the SAS surrounding the optic nerve, thereby interrupting the metabolic processes of the nerve and consequently leading to edema, ischemia, and eventual visual impairment or loss. 3 The urgency of this condition and the need for its prompt recognition are as important now as they were in 1937 when Dr. Gordon Holmes addressed the Ophthalmological Society, saying: "As the essential etiological factor in papilledema is increase in ICP, the relief of this pressure will lead to its disappearance and remove the risk of blindness or serious deterioration of vision if it can be effected before secondary changes have developed in the disc. 4 Papilledema has gained increasing interest in recent years among neuro-ophthalmologists as the result of several clinical studies demonstrating that it may have not only diagnostic potential as a measure of increased ICP 5, 6, 7 but also therapeutic potential as a measure of disease severity and response to treatment. 8 Although bilateral disc swelling is often encountered in routine clinical practice, there is lack of recent Indian report that have studied neuroimaging findings of this condition

Need for the study Previous studies suggested varied distribution of etiology in papilledema in different geographic area. In our study we evaluate patient with papilledema presenting to medicine department.

OBJECTIVE: To assess the neuroimaging findings in the patients presenting with papilledema.

Material and methods

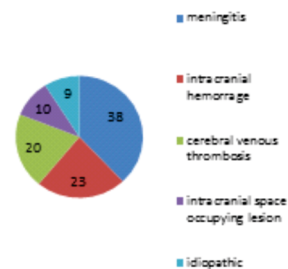
This study was conducted at Gandhi Medical College and Hamidia Hospital, Bhopal for a period of 8 months from May to December 2014. After informed consent 100 Patients with papilledema admitted in medicine department were examined thoroughly as per proforma. We included patients with papilledema on ophthalmoscopic examination admitted in department of medicine.

We excluded patients with optic disc swelling d/t other cause that do not involve raised intracranial pressure, and Patient with head injury. All subjects were subjected to routine and special investigation to ascertain the Etiological Proportion of papilledema. In this study patients included on the basis of fundus examination done by swan ophthalmoscope, and graded according to frisen scale of papilledema . Patients who had papilledema undergoes to evaluation of history, general examination and investigational work up. Then all patient had neuroimaging to detect intracranial pathology and lumbar puncture done in those patient who have no contraindication

Result:

This study population consisted of 45 male and 55 female with average age of (35). In this study cohort ,the most common etiology of papilledema was meningitis (38), followed by intracranial hemorrhage (23) ,cerebral venous thrombosis (20) ,intracranial space occupying lesion (10) and idiopathic account for (9) Figure 1.

Figure 1 etiology of papilledema



On neuroimaging of patients, 38 patients had meningeal enhancement , 23 patients had intracranial hemorrhage, 20 had cerebral venous thrombosis, 10 had intracranial space occupying lesion, 9 had normal MRI brain findings. Table 1

Table 1 neuroimaging finding

Neuroimaging findings	n
meningeal enhancement	38
intracranial hemorrhage	23
cerebral venous thrombosis	20
intracranial space occupying lesion	10
normal MRI brain	9

Patients having meningeal enhancement were further divided in groups based on associated findings, 20 out of 38 patients had basal exudation, 11 patients had hydrocephalus, 7 patients had granuloma. Table 2

Table 2 distribution of patients with meningeal enhancement based on associated findings

Neuroimaging	n
basal exudation	20
hydrocephalus	11
granuloma	7

In patients with cerebral venous thrombosis, 14 had sagittal sinus thrombosis, 6 patients had transverse and sigmoid sinus thrombosis.

Table 3 neuroimaging of cerebral venous thrombosis

Neuroimaging findings	n
sagittal sinus thrombosis	14
Transverse and sigmoid sinus thrombosis	6

Categorization of brain tumours revealed 9 primary brain tumour and one metastatic, the most common type of brain tumour was meningioma (6) followed by astrocytoma (2), glioma(1) carcinoma of lung with metastasis to cerebellum(1). most common site was frontal lobe. table 4

Table:4 categorisation of brain tumor

Brain tumour	n	Tumour site		
		Frontal	occipital	cerebellum
meningioma	6	4	2	-
astrocytoma	2	1	-	1
glioma	1	-	-	1
metastetic	1	-	-	1

Discussion Papilledema is optic disc swelling due to raised intracranial pressure. Optic disc swelling from the causes that do not involve increased intracranial pressure is not considered papilledema.

This is a facility based descriptive cross sectional study of patients with papilledema where we studied etiology of initially confirmed papilledema. Although many text books have listed the etiology of bilateral disc swelling, there has been no recently published studies in Indian context that have listed the percentage of each etiology. In this study 100 patient were included after initial confirmation of papilledema with ophthalmoscope following which history of illness was taken, general examination and investigational work up was done. Then patients underwent neuroimaging to detect intracranial pathology and lumbar puncture was done in those patients who had no contraindication.

After complete work up, patients were distributed in group based on symptoms, neuroimaging finding and etiological proportion.

We compared our current findings with study that were published in 2014 by **Kei Iijima et al** ⁹ n a group in japan. 38% of patients were diagnosed be suffering from meningitis making it the most common etiology in our study. In previous study most common cause of papilledema was ICSOL. Incidence of meningitis in this study was high probably because infectious diseases are more common in india as compared to other developed countries.

In this study Intracranial hemorrhage constituted 23% as compared to 7% in previous study reflecting poor compliance to drugs and follow up of patients in developing country

Incidence of cerebral venous thrombosis in our study was 20% as

compared to 5% in previous study showing prevalence of more risk factors for CVT like anemia, dehydration, poor postnatal care etc.

Incidence of ICSOL in our study 10% compared to 44.4% in previous study. This study did not include patients of other department unlike Japanese study where they included patients of Kitasato University, Kanagawa, Japan.

Idiopathic group comprised of 9% of total cases whereas it was 6.9% in previous study.

CONCLUSION Ocular features are considered as the portal to the brain from which neurological disorders can be diagnosed. Early detection of intracranial space occupying lesions and cerebral venous thrombosis could be possible through ocular examination and it should be confirmed by imaging techniques. Thus neuroimaging helps in early diagnosis of several intracranial lesions in patients with papilledema, which provides better prognosis and saves the life of the patient by early intervention.

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