

Optic Disc Oedema: Presentation and Causes at a Tertiary Centre in North Karnataka

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Aim:- Optic disc oedema is one of the important fundus findings seen in the eye. Many a times, it indicates a systemic pathology. In this study, we try to evaluate various causes of optic disc oedema and their presentation.

Materials & Methods:- This observational study was conducted at a tertiary hospital in North Karnataka. This study was conducted from June 2015 to May 2017. Detailed ocular examination including visual acuity, slitlamp examination, detailed fundus evaluation using indirect ophthalmoscope and 90 Diopter lens, and fundus photography was done. Other investigations like blood examination, Visual field analysis and radiological investigations like Computed Tomography scans and Magnetic Resonance Imaging were done when required.

Abstract

Results:- A total of 43 consecutive cases with optic disc oedema were enrolled in this study. Twenty were females and twenty three were males. Out of the 43 cases, 15 cases had papilloedema, 20 cases had optic neuritis, one had anterior ischemic optic neuropathy (AION), 2 had diabetic papillopathy, 2 had Vogt Koyanagi Harada Syndrome (VKH), one had hemiretinal vein occlusion and 2 cases had neuroretinitis. A total of 34.9% patients had papilloedema, 46.5% had optic neuritis, 4.6% each had neuroretinitis, VKH and diabetic papillopathy, and 2.3% each had AION and hemi-retinal vein occlusion.

Conclusions:- Optic neuritis was the commonest cause, followed by papilloedema, leading to optic disc oedema.

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Keywords: optic disc oedema, papilloedema, optic neuritis

Introduction

Optic disc swelling is a pathological condition with a variety of causes. The clinical causes associated with unilateral optic disc swelling are optic neuritis (ON), non-arteritic anterior ischemic optic neuropathy (NA-AION), compressive optic neuropathy, retinal-vein occlusion, diabetic papillopathy etc. Cases with bilateral optic disc swelling are often associated with papilloedema, infiltrative optic neuropathy, toxic optic neuropathy, and malignant hypertension.¹ The most common cause of optic disc swelling in Caucasians has been reported to be anterior ischemic optic neuropathy.² However, there have been no studies on the common causes and clinical features of optic disc swelling in India. Therefore, the purpose of this study was to determine the clinical manifestations and aetiology of optic disc oedema in Indian patients. Often, there is confusion in differentiating the cause when the finding is only optic disc oedema. This study is an attempt to prioritize the diagnosis in order of incidence.

Materials and Methods

This is an observational study. This study was conducted at the Department of Ophthalmology in a tertiary hospital in north Karnataka. This study was conducted from June 2015 to May 2017. All consecutive cases of optic disc oedema diagnosed at the department of Ophthalmology were enrolled for this study. The study population consisted of 43 patients out of which 23 were males and 20 were females. All the patients were subjected to detailed ophthalmic examination including visual acuity, detailed slit lamp

examination, 90D examination, indirect ophthalmoscopy examination, colour vision, fundus photography, Fundus fluorescein angiography whenever indicated. The diagnostic criteria were as follows: Optic Neuritis were defined by the criteria of Optic Neuritis Treatment Trial (ONTT)³ (Figure 1). Papilloedema was diagnosed when optic disc oedema was present with signs of elevated intracranial pressure (Figure 2 & 3). Patients with AION were recruited according to the Ischemic Optic Neuropathy Decompression Trial (IONDT) criteria⁴, and criteria for the diagnosis of diabetic papillopathy included the presence of diabetes and optic disc oedema, and the absence of substantial optic-nerve dysfunction, evidence of ocular inflammation or elevated intracranial pressure (Figure 4). Other diseases were diagnosed by their characteristic clinical features.

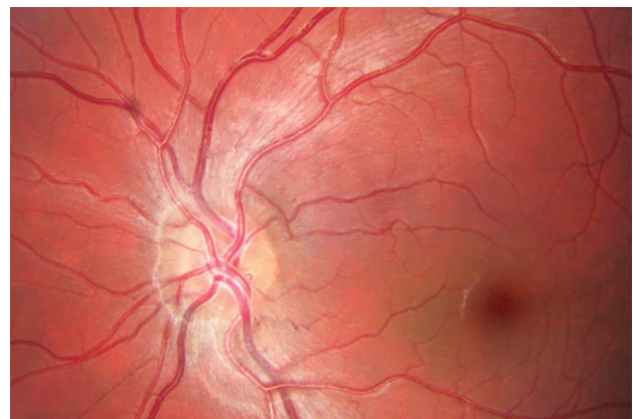


Figure 1: Optic Neuritis

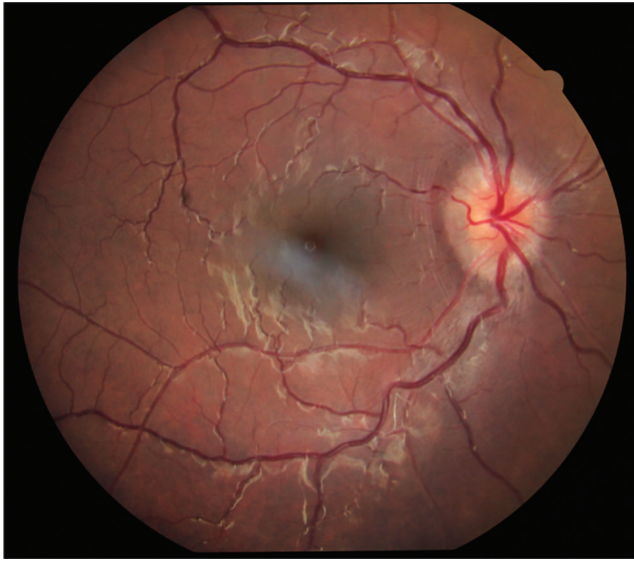


Figure 2: Papilloedema

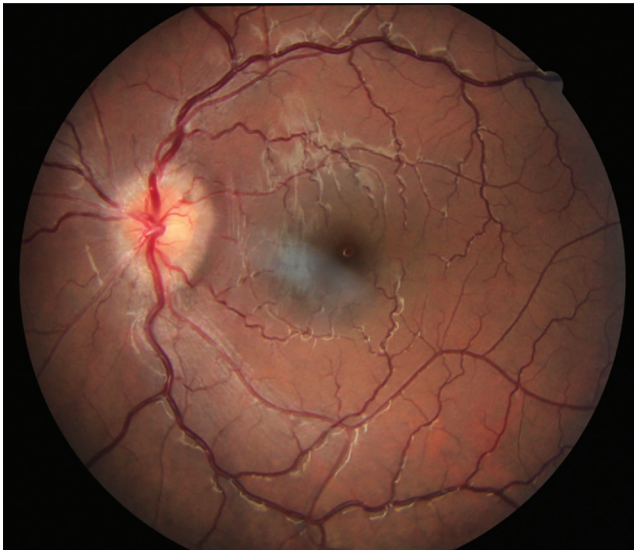


Figure 3: Papilloedema

Results

Our study included 65 eyes of 43 patients. Among 43 patients, 23 were males and 20 were females. The mean age of patient was 32.93 (Range 15 to 62 years). Majority of the patients were between the age group of 30 to 60 years (Figure 5). Two patients were within the age group of 10 to 20 years.

The most common cause for optic disc swelling in our study was optic neuritis which was seen in 20 patients. The next common cause was papilloedema which was seen in 15 patients. It was followed by diabetic papillopathy, VKH syndrome and neuroretinitis seen in two patients each. AION and hemiretinal vein occlusion was seen in one patient each (Figure 6). Twenty two patients had bilateral optic disc swelling. Among them 15 patients had papilloedema, 4 had optic neuritis, 2 had VKH and one had neuroretinitis (Figure 7). Of the 15 cases who had papilloedema, 6 had

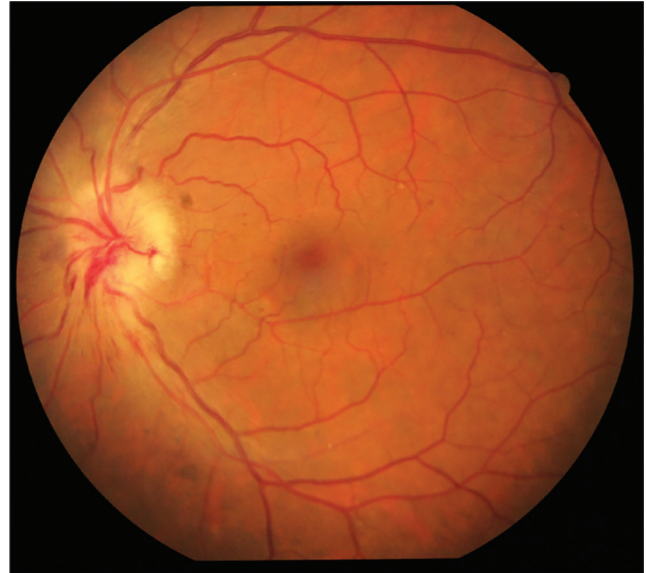


Figure 4: Diabetic Papillopathy

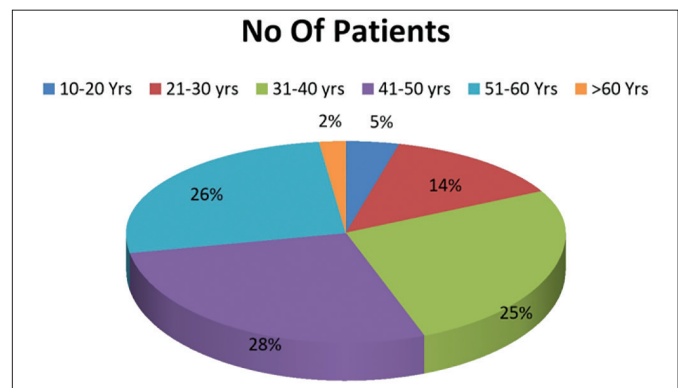


Figure 5: Age Distribution

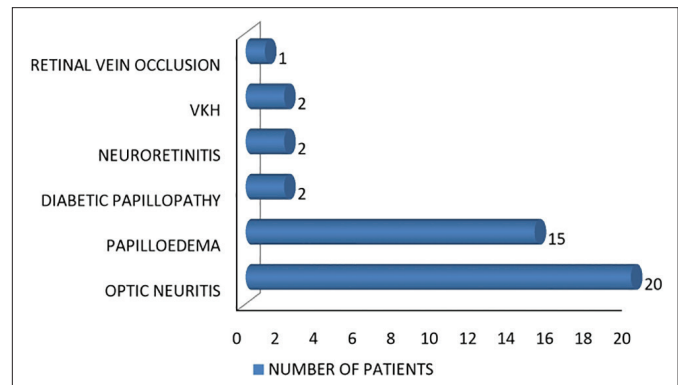


Figure 6: Causes for Disc Oedema

meningitis, 3 had superior sagittal sinus thrombosis, one had intracerebral haemorrhage, one had subdural haematoma, one had grade IV hypertensive retinopathy and in 3 cases, the cause was unknown (idiopathic) (Figure 8).

Decreased vision was the main complaint in the study, followed by headache and eye pain. Decreased vision was seen in 28 patients (65.11 %), it was seen in all patients

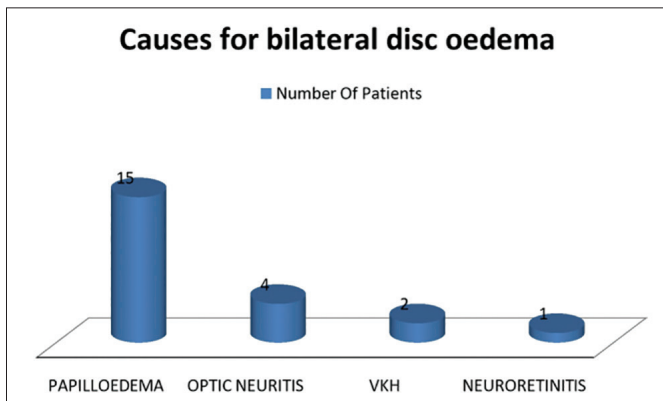


Figure 7: Causes for Bilateral Disc Oedema

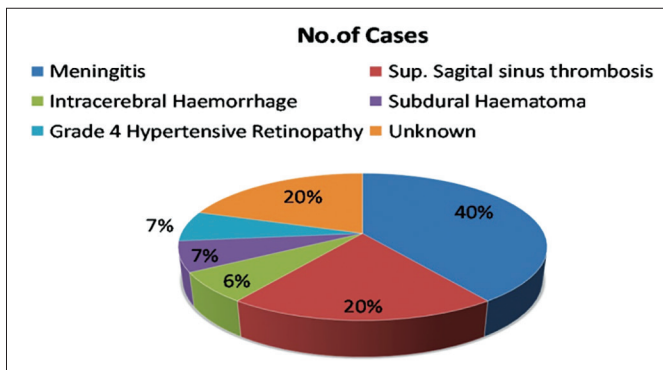


Figure 8: Causes for Papilloedema

of optic neuritis, AION, neuroretinitis, vein occlusion and diabetic papillopathy. Patients with optic neuritis rarely complained of headache. Eye pain was seen in 18 (41.86%) patients which was more common in optic neuritis patients. Headache was seen in 25 (58.14%) patients, most commonly in patients with papilloedema.

Discussion

Compression of the optic nerve is caused by a variety of reasons which may lead to dysfunction or a partial arrest of axoplasmic transport and may manifest as optic disc oedema. The term papilloedema is commonly referred to a condition of the optic nerve due to raised intracranial pressure. The term optic disc oedema can be used instead of papilloedema, in case the disc oedema is not because of increased intracranial pressure. Pathophysiology of optic disc swelling is due to blockage of axoplasmic transport, which may be because of mechanical and vascular causes 5. In this study, we tried to find out the most common cause and presentation of optic disc oedema in our region. There are many international studies on optic disc oedema but very few small case series from India. In our study we included only the new cases of optic disc oedema, old cases with pale disc were excluded from this study.

In this study, optic neuritis was the most common cause followed by papilloedema, neuroretinitis, VKH, diabetic papillopathy and vein occlusion. Optic neuritis was the commonest cause for unilateral optic disc oedema while papilloedema was the cause in bilateral cases.

Optic neuritis was seen in 20 patients who presented usually with decreased vision. Ocular pain was seen in 90% of patients in optic neuritis treatment trial, only 30% of our patients with optic neuritis complained of ocular pain.⁶ Headache was seen in 5 patients or 25% of the optic neuritis cases. In ONTT, it was seen in more number of patients.

In NA-AION, optic disc oedema is due to axonal ischemia and capillary leakage in the optic nerve head.⁷ It is stated that occurrence of disc swelling in VKH was significantly correlated with age and disc morphology, rather than the severity of inflammation. Sometimes, it may be the only finding in case of VKH.⁸ Sometimes, AION may be associated with VKH.⁹⁻¹⁰ In VKH patients with crowded discs, circulatory disturbances of the branches of the short posterior ciliary artery and/or centripetal branches from the peripapillary choroid due to severe choroidal inflammation may cause axonal flow stasis and secondary axonal swelling of the optic nerve¹¹ (Figure 9 & 10).



Figure 9: Vogt Koyanagi Harada Syndrome

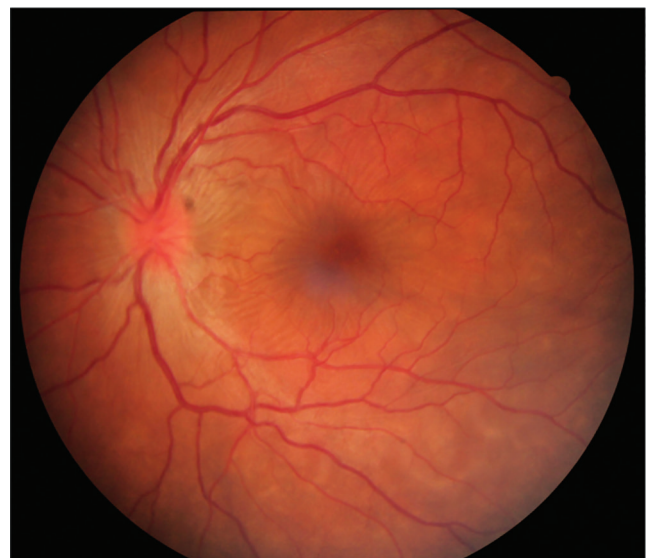


Figure 10: Vogt Koyanagi Harada Syndrome

Papilloedema was seen in 15 cases. The causes for papilloedema were meningitis, venous sinus thrombosis, intracranial bleed, hypertensive retinopathy and in few cases, a cause was not found. Causes like intracranial tumors, brain abscess were not seen in our study which was reported in earlier studies.¹² Two cases of Neuroretinitis were noted in our study which were not reported in earlier studies. NA –AION was also seen in our study although it was not as common as reported in earlier studies.

The limitations of our study are smaller sample size and a single centre study. It would be better to do a multicenter study to know the actual statistics of optic disc oedema. The strength of this study was that this was a prospective study whereas all previous such studies were retrospective.

In conclusion, optic neuritis and papilloedema were the most common cause of optic disc oedema in our study.

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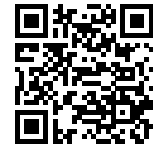
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