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OPTIC DISC SWELLING – PRESENTATION AND ANALYSIS OF CAUSES.

Ophthalmology

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ABSTRACT

Aim: To evaluate various causes of optic disc swelling and their presentations.

Material and Methods: This observational study was conducted from September 2016 to August 2018, includes 48 patients with optic disc swelling. Detailed ocular examination including visual acuity, slitlamp examination, and indirect ophthalmoscopy with other investigations like visual field analysis, blood investigations and CT / MRI were done when required.

Result: Out of 48, 20 (41.67%) patients had Non arteritic anterior ischemic neuropathy (NAAION). Twelve (25%) patients with Optic neuritis, 8 (16.67%) patients with papilloedema, 2 (4.17%) patients each with Vogt Koyanagi Harada syndrome (VKH), Neuroretinitis & Diabetic papillopathy and 1 (2.08%) patient each with compressive optic neuropathy & optic disc drusen were evaluated.

Conclusion: NAAION was the most common cause followed by optic neuritis, leading to optic disc swelling.

KEYWORDS

Optic disc swelling, NAAION, Optic neuritis, Papilloedema.

INTRODUCTION:

Optic disc swelling (ODS) is a characteristic presentation of various diseases, such as intrinsic ocular disease, as well as intracranial lesions and systemic disease[1]. The clinical causes associated with unilateral optic disc swelling are optic neuritis (ON), non-arteritic anterior ischemic optic neuropathy (NA-AION), 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[2]. Optic disc oedema is a descriptive term used to signify oedema of the optic nerve head. However papilloedema is optic disc oedema due to raised intracranial tension, thus it is a specific term indicating intracranial pathology[3-4]. The purpose of this study was to determine the clinical manifestations and etiology of optic disc swelling.

MATERIAL AND METHODS:

This is an observational study conducted at the Department of Ophthalmology, SKN general hospital, Pune. This study was conducted from September 2016 to August 2018. All consecutive cases of optic disc swelling irrespective of age at presentation were enrolled for this study. The study population consisted of 48 patients out of which 27 were males and 21 were females. All the patients were subjected to detailed ophthalmic examination including visual acuity, detailed slit lamp examination, indirect ophthalmoscopy, colour vision, fundus photography, Fundus fluorescein angiography, visual field analysis, blood investigations and CT/ MRI whenever indicated.

The diagnostic criteria were as follows: patients with NA-AION were recruited according to the Ischemic Optic Neuropathy Decompression Trial (IONDT) criteria, and Optic Neuritis (ON) was defined by the criteria of Optic Neuritis Treatment Trial (ONTT)[5-6]. Papilloedema was diagnosed when optic disc edema was present with elevated intracranial pressure. Compressive optic neuropathy was confirmed by positive findings on imaging studies. Criteria for the diagnosis of diabetic papillopathy included the presence of diabetes and optic disc edema and the absence of substantial optic-nerve dysfunction, evidence of ocular inflammation or elevated intracranial pressure [7]. The optic disc drusen was defined by ultrasound scanning or computed tomography. Other diseases were diagnosed by their characteristic clinical features.

RESULT:

In our study among 48 patients, 27 were males and 21 were females. The range of age of patient was 09 to 67 years. Majority of the patients were between the age group of 30 to 60 years. In our study most common cause of optic disc swelling was Non arteritic anterior ischemic neuropathy (NAAION), seen in 20 (41.67%) patients which was more seen in males (12 patients) and at older age. The next common cause was optic neuritis, seen in 12 (25%) patients which was more common in females (8 patients). It was followed by papilloedema with 8 (16.67%) patients, 2 (4.17%) patients each with Vogt Koyanagi Harada syndrome(VKH), Neuroretinitis & Diabetic papillopathy and 1 (2.08%) patient each with compressive optic neuropathy & optic disc drusen.(Figure 1).

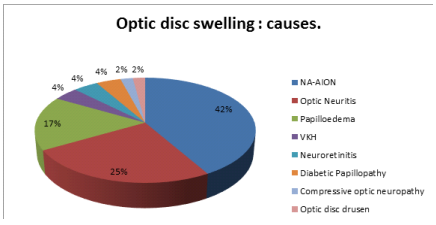

Figure 1 : Optic disc swelling : Causes.

Of the 08 cases that had papilloedema, 4 had grade IV hypertensive retinopathy, 2 had meningitis and 2 had superior sagital sinus thrombosis. Compressive optic neuropathy was noted in 1 patient, was 9 years of age and diagnosed with haemangioblastoma at sellar and suprasellar region with features of extension involving optic chiasma.

In our study 16 patients had bilateral optic disc swelling. Among them 08 patients had papilloedema. Three cases with optic neuritis, 2 cases with VKH and 1 case each with Neuroretinitis, diabetic papillopathy & compressive optic neuropathy were noted.

Decreased vision was the main complaint in the study, followed by headache and eye pain. Decreased vision was seen in all patients with different severity. Eye pain was seen in 11 (22.92%) patients which was more common in optic neuritis (7 cases) patients. Headache was seen in 19 (39.58%) patients, most commonly in patients with papilloedema. The types of visual field defects varied in this study. The most common visual field defect in the NA-AION group was an inferior altitudinal defect. For the ON patients, sectoral scotoma, arcuate scotoma, and blind-spot enlargement presented in similar frequencies.

DISCUSSION:

Pathophysiology of optic disc swelling is due to blockage of axoplasmic transport, which may be because of mechanical and vascular causes [8]. In this study, we tried to find out the most common cause and presentation of optic disc oedema in our region.

The most common cause of optic disc swelling in our study was NA-AION (figure 2) followed by optic neuritis. The most common cause of optic disc swelling in Caucasians has been reported to be anterior ischemic optic neuropathy[9]. Jung et al. reported the causes of Optic disc swelling in Korean population, and they compared NA- AION and optic neuritis[10]. NA-AION was diagnosed at an older age in this study. Many patients with NA-AION had other medical conditions (e.g.,

DM, hypertension, and hypercholesterolemia). These conditions may be associated with the higher rate of NA-AION diagnosed in older patients[10].The most common type of visual field defect in NA-AION was an inferior altitudinal defect [4] .The results of this study correlate well with those of previous studies.

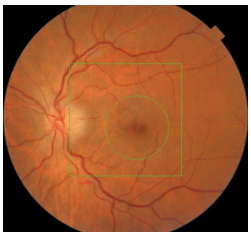

Figure 2 : NA-AION

Optic neuritis (figure 3) was seen in 12 patients who presented usually with decreased vision. Ocular pain was present in approximately 90% of patients in the ONTT [6]. By contrast, about 60 % of patients with Optic Neuritis had ocular pain in this study. Wang et al.[11] studied the etiology and clinical features of 31 Asian patients with Optic Neuritis and reported on the associated ocular discomfort. These results might in part be due to ethnic differences.[10]

Figure 3: Optic neuritis.

Papilloedema (Figure 4) was seen in 8 cases. The causes for papilloedema were Grade IV hypertensive retinopathy, meningitis and venous sinus thrombosis. In grade IV hypertensive retinopathy, there will be a macular star (ring of exudates from the disc to the macula) and optic disc swelling. The mechanism behind this phenomenon is poorly understood, but it may be related to a hypertension-related increase in intracranial pressure, and hence is considered true papilloedema[12].

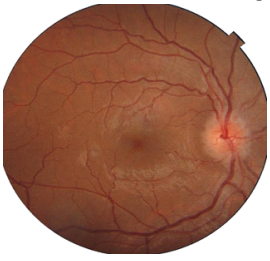

Figure 4 : Papilloedema.

In NA-AION, optic disc swelling is due to axonal ischemia and capillary leakage in the optic nerve head[13] while 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 nerve[14]. Two cases each of VKH (Figure 5), neuroretinitis and diabetic papillopathy were noted in this study, which correlate well with previous study[15].

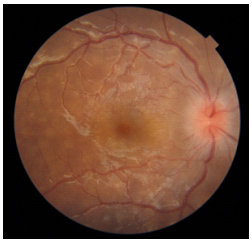

Figure 5: VKH.

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.

In conclusion, NA-AION, Optic neuritis and papilloedema were common causes of optic disc swelling in our study.

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