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A STUDY ON OPTIC ATROPHY AS A CAUSE OF BLINDNESS IN PATIENTS ATTENDING REGIONAL EYE HOSPITAL, KURNOOL FOR BLIND CERTIFICATE

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ABSTRACT

Background : To study optic atrophy as a cause of blindness in patients attending regional eye hospital,Kurnool for blind certificate.

Methods : A total of 370 patients of all age groups attending to Regional Eye Hospital, Kurnool for blind certificate during the period June 2015 to June 2016 were examined. Examination included visual acuity testing using Snellen chart, refraction,colour vision and contrast vision,slitlamp biomicroscopy, intra ocular pressure measurement using Goldmann Applanation Tonometer, fundus examination with indirect ophthalmoscope, visual field testing using Humphrey field analyser. Fundus picture was taken using Zeiss fundus camera. Patients with optic nerve involvement were exclusively included in the study.

Results : Of these 370 patients, 55 patients had optic atrophy. Of these 55 patients, 18 had primary optic atrophy, 10 had secondary optic atrophy, 27 had consecutive optic atrophy. Among these 27 patients with consecutive optic atrophy, 18 had associated retinitis pigmentosa, 9 had associated choroiditis.

Conclusion : optic atrophy is one of the causes of blindness that developed either due to idiopathic cause or secondarily due to post papilloedema or papillitis. It may also be associated with retinitis pigmentosa or choroiditis.

KEYWORDS : blindness, primary optic atrophy, secondary optic atrophy, consecutive optic atrophy.

INTRODUCTION

Optic atrophy is the end result of various lesions of the visual pathways from ganglion cell layer to the lateral geniculate body[1]. Since the optic nerve is the conduit for information from the retina to the brain, a damaged optic nerve will result in vision loss. Subtle damage might not affect visual acuity but may lead to a loss of contrast or color vision. Severe damage may lead from legal blindness to no light perception. Damage to a part of the optic nerve results in loss of vision in the corresponding visual field. Clinically, optic atrophy is diagnosed from the well known triad of pallor of the optic disc, diminution in the visual acuity and visual field defects. Depending upon the histology, etiology and ophthalmoscopic picture, different classifications of optic atrophy have been in vogue[1].

MATERIALS AND METHODS

The present study was conducted on 370 patients with blindness attending to regional eye hospital, kurnool for blind certificate. Besides history regarding loss of vision, a complete ophthalmological examination was carried out. The ophthalmologic examination included measuring distance and near visual acuity, both presenting and best corrected after refraction, for each eye separately.Objective refraction was performed with a streak retinoscope, followed by subjective acceptance with which the best-corrected acuity was measured and recorded. Colour vision was tested using ishihara chart. External eye examination was done under slitlamp biomicroscope where relative afferent pupillary defect was observed in some cases. Intra ocular pressure was measured using Goldmann applanation tonometry. Fundus examination with indirect ophthalmoscopy was done after full dilatation of pupil. Fundus pictures were taken using Zeiss fundus camera. Automated visual fields were done with the Humphrey visual field analyzer using the central 24-2 threshold strategy in those participants suspicious of having optic nerve pathology. Those with optic nerve pathology were subjected to OCT examination to examine the peripapillary retinal nerve fibre layer. The atrophy was classified according to the ophthalmoscopic picture as under[1]:

1.Primary optic atrophy : pallor of the disc is present in the entire disc or temporal pallor extending up to the disc margin, the border of the disc is well defined ; normal calibre or slight constriction of the bigger vessels and disappearance of the vessels of small calibre. Physiological cup was slightly deeper than normal and lamina cribrosa were seen more clearly.

2. Secondary Optic Atrophy: fundus showed pallor of the disc with evidence of present or preceding exudation, including obstruction of the physiological cup, irregularity and distortion of the neuro-retinal outlines, veiling of the lamina cribrosa with fibrous or glial tissues which may extend along the retinal vessels. Such a picture may be due to papilloedema or papillitis.

3. Consecutive Optic Atrophy:the disc is waxy with associated inflammatory and degenerative changes in the chorio-retinal tissue.

RESULTS :

Table 1 : Distribution of cases regarding age

Age	Primary optic atrophy	Secondary optic atrophy	Consecutive optic atrophy	Total
0-10	1	0	5	6(10.9%)
11-20	4	1	8	13(23.6%)
21-30	7	4	7	18(32.7%)
31-40	4	2	4	10(18.1%)
41-50	1	1	2	4(7.2%)
>50	1	2	1	4(7.2%)
Total	18(32.72%)	10(18.18%)	27(49.09%)	55(100%)

Table 2: distribution of cases regarding sex

Sex	Primary optic atrophy	Secondary optic atrophy	Consecutive optic atrophy	Total
Males	11	7	18	36(65.4%)
Females	7	3	9	19(34.5%)
Total	18(32.72%)	10(18.18%)	27(49.09%)	55(100%)

Table 3: distribution of cases regarding laterality of eye involved

Laterality	Primary optic atrophy	Secondary optic atrophy	Consecutive optic atrophy	Total
RE	2	2	3	7(12.72%)
LE	3	2	4	9(16.36%)
BE	13	6	20	39(70.90%)
Total	18(32.72%)	10(18.18%)	27(49.09%)	55(100%)

Table 4 : Causes of optic atrophy

Cause of optic atrophy	No of cases	Percentage
Glaucomatous optic atrophy	12	21.81%
Trauma	5	9.09%
Retinitis pigmentosa	18	32.72%
Choroiditis	9	16.36%
Papilloedema	4	7.27%
Others	7	12.72%
Total	55	100%

DISCUSSION

Optic atrophy is the end result of conditions that produce degeneration of axons peripheral to the lateral geniculate body. It is a descriptive term that does not imply a specific etiology or mechanism of injury. Diagnosis is based on the ophthalmoscopic appearance of a pale optic disc with defective visual function. Loss of visual acuity, visual field defects, or both may occur. A reduction in the vascularity of the optic nerve head occurs, so that ophthalmoscopically the disc becomes pale or white rather than its normal pink color.

In our study out of 370 patients, 55(14.8%) patients had optic atrophy. Of these 55 patients, 18(32.72%) had primary optic atrophy, 10(18.18%) had secondary optic atrophy, 27(49.09%) had consecutive optic atrophy.

Of these 55 patients, 36(65.4%) were males and 19(34.5%) were females indicating males were more affected than females. In a study done in Nigeria 52.5% male and 47.5% female was found[2].

Among these 55 patients, RE involvement was seen in 7(12.72%) patients, LE was involved in 9(16.36%) patients, and bilateral involvement is seen in 39(70.90%) patients.

Among 18(32.72%) patients with primary optic atrophy,7 (38.8%) patients were between age group 21-30. 11(61.1%) were males and 7(38.8%) were females. Among these 18 patients ,5(27.7%) patients had history of trauma which lead to development of traumatic optic neuropathy causing blindness.This traumatic optic neuropathy manifested unilaterally. These 18 patients were categorized under primary optic atrophy depending on the fundus picture.

Among 10(18.18%) patients with secondary optic atrophy, 4(40%) patients were between the age group 21-30. Among these 10 patients, 7(70%) were males and 3(30%) were females.

Among 27(49.09%) patients with consecutive optic atrophy,8(29.6%) patients were between age group 11-20. 18 (66.6%) were males and 9(33.3%) were females. Among these 27 patients, 18(66.6%) patients had associated retinitis pigmentosa , 9(33.3%) patients had associated choroiditis.

In our study, 12 (21.81%) patients had glaucomatous optic atrophy. Glaucoma was cause in 58% cases in a study conducted by KabindraBajracharya et al [5].

In our study, 5 (9.09%) patients had history of trauma. Chaddah MR et al [1] found trauma comprised 7% of optic atrophy and Oluleye T.S et al [3] found 8%. But in the study done in Singapore it was responsible for 16.2%[4].

In our study, 18 (32.72%) patients had associated retinitis pigmentosa, 9 (16.36%) patients had associated choroiditis. Oluleye T.S et al found 3% association with Rp[3].

In our study, 4 (7.27%) patients had history of papilloedema. Chronic papilloedema was causative factor in 4% cases in a study conducted by KabindraBajracharya et al [5].

In our study,others constitute 7 (12.72%) cases.

CONCLUSION

Patients with optic atrophy in our study typically had historical or examination findings that led to an etiologic diagnosis. Optic nerve has some reserve (axons) before vision loss is appreciated. Early detection is key since we cannot replace dead axons.

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