

A clinical study of optic atrophy

M. Nirmala^{1*}, G. S. Ramesh Kumar², Kola Vijaya Sekhar³, P.D.S.Keerthi⁴

¹ Assistant professor, Department of Ophthalmology, Government General Hospital, Guntur, AP, India

² Professor and HOD, Department of Ophthalmology, Government General Hospital, Guntur, AP, India

³ Professor, Department of Ophthalmology, Government General Hospital, Guntur, AP, India

⁴ Postgraduate of Ophthalmology, Guntur Medical College, Government General Hospital, Guntur, AP

Received: 01-06-2021 / Revised: 24-06-2021 / Accepted: 19-08-2021

Abstract

Methods and materials: 50 patients of optic atrophy attended to ophthalmology outpatient department from November 2019 to May 2021 were enquired about history of present illness, ingestion of toxic substances, Tobacco, alcohol, and examined for visual acuity, slit-lamp examination, ophthalmoscopic examination, perimetry, IOP measurement. Medical check was carried out in each case. TLC, DLC, ESR, Hb%, Mantoux test, serological test for syphilis, complete urine and CSF examination, CT brain, nasal sinuses, chest screening were done. **Results:** In this study, bilateral optic atrophy was found in 87% of the cases, and unilateral optic atrophy was found in 13%. Male and the female ratio was found to be 2:1. **Conclusion:** Prevalence of optic atrophy was found to be more in the first five decades. The commonest optic atrophy in this study is the primary optic atrophy. The next common type of optic atrophy is consecutive atrophy.

Keywords: Optic atrophy, primary optic atrophy, consecutive optic atrophy.

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The subject of Optic Atrophy is the one that afflicts a high proportion in the world of the blind, where therapy is almost helpless in the majority of these conditions. Though the treatment is limited, the only effective cure is to treat the causative factor giving rise to the atrophy. From this perspective, the present study is based on the varied etiological factors giving rise to optic atrophies.

Optic Atrophy is the end result of various lesions of the visual pathways from the ganglion cell layer to the lateral geniculate body. Clinically, optic atrophy is diagnosed from the well-known triad of the 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. In Western countries, besides the specific infections, demyelinating diseases are held responsible for most of the cases of optic atrophy of unknown etiology. It has been generally felt that demyelinating diseases are not common in tropical and sub-tropical countries like India and Africa. Hence in most of the cases of optic atrophy in this country, the etiology remains unknown in spite of the battery of investigations employed.

Clinically, optic atrophy manifests as changes in the color and the structure of the disc associated with variable degrees of visual dysfunction. Optic atrophy is actually a misnomer; in the strict histologic definition, atrophy refers to the involution of a structure resulting from prolonged disuse.

The reactions of the optic nerve to injury and disease differ in many respects from other sensory nerves owing to its peculiar anatomical and physiological features.

Aims and objectives

Aim

To study the different types of optic atrophies in patients attending the ophthalmic outpatient department, Government General Hospital, Guntur from the period of November 2019 to May 2021.

Objective

The objective is to study the incidence and etiology of optic atrophy.

Methods and materials

A cross-sectional study was conducted in 50 cases of optic atrophy attending to Government General Hospital, Guntur. For the period from November 2019 to May 2021.

Besides the detailed history of present complaints, any intake of drugs and ingestion of toxic substances, Tobacco and alcohol with particular reference to neurological complaints, history of trauma, the study included ophthalmological check-up consisting of external examinations of the eyes, recording of visual acuity, refraction, color vision, contrast, ophthalmoscopic examination, confrontation, perimetry and slit-lamp examination, intraocular pressure measurement by applanation Tonometry. Disc evaluation by both direct ophthalmoscopy and slit-lamp biomicroscopy using +78D and +90D, fundus photography by Zeiss visucam, medical check-up including general physical neurological respiratory and cardio-vascular check-up were carried out in each case. Clinical investigations comprised of total and differential leukocyte count, erythrocyte sedimentation rate, hemoglobin estimation, Mantoux test, serological test for syphilis, and complete urine and stools examination. In addition, complete cerebrospinal fluid examination wherever required, MRI with gadolinium contrast, skiagrams of the skull and nasal sinuses, and chest screening were done when indicated.

*Correspondence

Dr. M. Nirmala

Assistant professor, Department of Ophthalmology, Government General Hospital, Guntur, AP India

E-mail: dr.nirmala.mande@gmail.com

Observations**Table 1: Sex distribution**

Out of 50 cases of optic atrophy, 34 were males 16 were females. Table 1: showing the sex distribution in the study

Sex	No of cases	Percentage
Males	34	68%
Females	16	32%

Table 2: Unilateral Vs. Bilateral

The disease was bilateral in 87% of patients, whereas unilateral in 13% of the patients. Table 2: showing the laterality in the study

Laterality	No. of cases	Percentages
Unilateral	6	13%
Bilateral	44	87%

Table 3: Age specific prevalence of optic atrophy

In both the sexes, the incidence of the disease was more in the first five decades of life.

Age in years	No. Of Cases	Percentage
<10	1	2%
11-20	6	12%
21-30	9	18%
31-40	9	18%
41-50	14	27%
51-60	6	13%
>60	5	10%

Table 4: Types of optic atrophy

The disease manifested as primary optic atrophy in 23 patients. 14 cases had consecutive optic atrophy, 7 cases are glaucomatous, 3 cases are due to trauma, 1 case are due to intracranial space-occupying lesion, 3 are post neuritic. The results are tabulated below.

Types of optic atrophy	No Of Cases	Percentage
Primary Optic Atrophy	23	46%
Consecutive Optic Atrophy	14	28%
Glaucomatous Optic Atrophy	7	14%
Traumatic Optic Atrophy	3	6%
Optic Atrophy Due to Intracranial Space occupying Lesion	2	4%
Post Neuritic Optic Atrophy	1	2%

Discussion

This study was undertaken in the Department of Ophthalmology, Government General Hospital, Guntur, during the period of November 2019 to May 2021. 50 cases of optic atrophy were evaluated. Optic atrophy is one of the causes of irreversible blindness.

While many complicated eye diseases can be treated in hospitals, public awareness of vision care issues remains low. Effective eye health education may influence individuals to consider screening and eye care. This may lead to early detection of glaucoma, may prevent blindness, and counseling and prevention of retinitis pigmentosa.

Prevalence of optic atrophy was found to be more in the first five decades in this study. This is in concordance with published data in the international journal of clinical practice.

In this study, bilateral optic atrophy was found in 87% of the cases, and unilateral optic atrophy was found in 13%. This is comparable to the above study, which shows 80% bilaterality.

In our study male and female ratio was found to be 2:1, and this is in correlation with the above study. According to H.D Daston et al., in their study 'A Study of Optic Atrophy', the causes of optic atrophy were as follows:

1. Optic atrophy following injury
2. Optic atrophy following inflammation
3. Optic atrophy following glaucoma
4. Optic atrophy following intracranial tumor
5. Optic atrophy following ingestion of toxins

In the above study, they found that Glaucomatous optic atrophy was the commonest by vascular, toxic and syphilitic.

Conclusion

This study was undertaken in the Department of Ophthalmology, Government General Hospital, Guntur, during the period of November 2019 to May 2021. 50 cases of optic atrophy were studied for disc changes.

- Age: Highest occurrence was seen in 41 to 50 years age group, followed by 20 to 40 years of age group. Optic atrophy peaks between the 4th and 5th decade.
- Gender: In the present study, males are more affected than females, with a male to female ratio of 2.1:1.
- Laterality: Bilateral cases are more common than unilateral cases.
- In this series of 50 cases of optic atrophy, 23 cases are primary optic atrophy

14 cases are consecutive optic atrophy 3 cases are due to trauma

2 cases are due to intra cranial space-occupying lesion 1 case is post neuritic

The commonest optic atrophy in this period of study is primary optic atrophy and the next common type of optic atrophy is consecutive atrophy.

Acknowledgment

The author is thankful to Department of Ophthalmology for providing all the facilities to carry out this work.

References

1. Cordes, F. E. Optic Atrophy in infancy, childhood and adolescence : A survey of 81 cases. American journal of Ophthalmology, 1952; 35(1):1272.
2. Duke Elder. W.S.(1940): Text Book of ophthalmology, Vol. III, Diseases of the inner eye; Henry Kimpton.(1940).
3. Cooper S.N.(1956). A clinical study of evaluation of Optic Atrophy. Proc All-India Ophthalmic Society. 16, 4 and 11.
4. Francois, J. and Neetans, A. (1956). Vascularization of Optic Pathway. British journal of Ophthalmology, 40, 341-354.
5. Francois. J. and Neetans. A. Vascular supply of optic pathway. British journal of Ophthalmology. 1955; 39(4), 220-232.
6. Helmick. E. Tabetic Optic Atrophy AMA Arch Ophthalmology. 1957; 57(2):282-285.