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A STUDY ON ETIOLOGIES OF CURABLE AND INCURABLE BLINDNESS IN DIFFERENT AGE GROUPS AT A TERTIARY CARE SETUP IN NORTH CHENNAI.

Ophthalmology

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ABSTRACT

OBJECTIVE: To find the various causes of curable and incurable blindness in different age groups of patients attending the ophthalmology outpatient setup of a tertiary setup in North Chennai.

MATERIALS AND METHODS: This study was conducted at Government Stanley Medical College in the Department of Ophthalmology. Patients of all age groups were included in this study with visual acuity less than 3/60.

RESULTS: At the end of our study, we found that Lens related causes constituted the largest proportion of blindness, followed by retina related causes. Additionally, we found out that 37.3% of blindness was due to incurable causes and nearly 63% blind patients can be cured.

CONCLUSION: Since 63% of blindness can be cured, it is the duty of the ophthalmologists to raise awareness about the treatable causes of blindness among the public and help in reducing the load of blind patients in the society.

KEYWORDS

Curable Blindness, Incurable Blindness.

INTRODUCTION:

The definition of Blindness under the National Programme for Control of Blindness (NPCB) is hereby modified in line with WHO Definition :

"Presenting distance visually acuity less then 3/60(20/400) in the better eye and limitation of field of vision to be less than 10 degrees from center of fixation ".

Blindness is one condition which affects the way an individual perceives the world and limits him from performing his duties to the fullest of his ability. Blindness can either be temporary or permanent. Causes of blindness are innumerable. When there is significant damage to any portion of the eye, be it the anterior segment structures or the posterior segment structures or the optic nerve or the occipital cortex, it might result in blindness. There are curable and incurable causes of blindness. Visual impairment in different age groups have different causes.

An estimated 253 million people live with vision impairment: 36 million are blind. Of the 36 million, over 15 million are from India. 75% of these are cases of incurable blindness. A situation like this mandates the need of ophthalmologists' active participation in spreading awareness and treating the blind patients whenever it is possible.

National Programme for Control of Blindness was launched in the year 1976 as a 100% Centrally Sponsored scheme with the goal to reduce the prevalence of blindness from 1.4% to 0.3%. As per Survey in 2001-02, prevalence of blindness is estimated to be 1.1%. Rapid Survey on Avoidable Blindness conducted under NPCB during 2006-07 showed reduction in the prevalence of blindness from 1.1% (2001-02) to 1% (2006-07). Various activities/initiatives undertaken during the Five Year Plans under NPCB are targeted towards achieving the goal of reducing the prevalence of blindness to 0.3% by the year 2020.

According to the NPCB statistics, Main causes of blindness are as follows: - Cataract (62.6%) Refractive Error (19.70%) Corneal Blindness (0.90%), Glaucoma (5.80%), Surgical Complication (1.20%) Posterior Capsular Opacification (0.90%) Posterior Segment Disorder (4.70%), Others (4.19%) Estimated National Prevalence of Childhood Blindness /Low Vision is 0.80 per thousand.

MATERIALS AND METHODS:

This study was conducted in Department of Ophthalmology at Government Stanley Medical College, a tertiary hospital at Chennai from January 2017 to December 2017. 150 eyes were included in this study.

Blindness is defined as a condition of presenting with a visual acuity of less than 3/60 in the better eye. History and information relevant for the study were obtained from the patients and in case of children, their caretakers provided the same. Detailed eye examination was performed for every single patient, who took part in the study. The visual acuity of the patients was checked using Snellen eye chart. A detailed torch light examination was done followed by slit lamp examination. Fundus examination was done and gonioscopy was performed depending on the diagnosis.

INCLUSION CRITERIA:

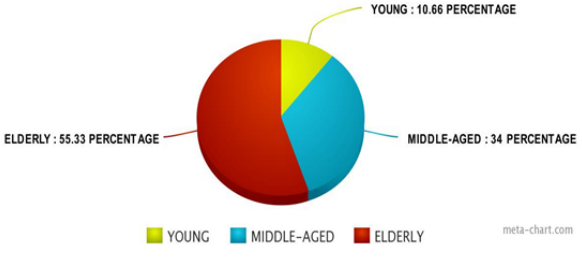
Eyes of patients with a visual acuity of 3/60 or less than that in one or both eyes were included in this study.

EXCLUSION CRITERIA:

Eyes of patients with unaided visual acuity of more than 3/60 were excluded from this study.

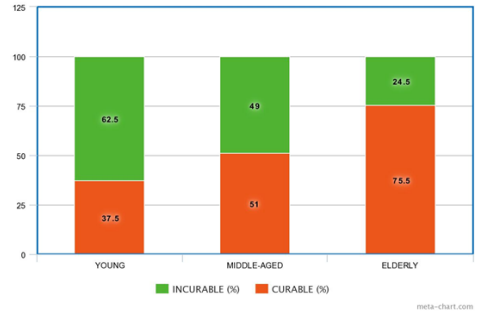
RESULTS:

CHART-1 PIE CHART DEPICTING THE PREVALENCE OF BLINDNESS IN DIFFERENT AGE GROUPS.



In our study, 16 were classified as young, 51 were classified as middle-aged and the rest belonged to the elderly group.

CHART-2 PROPORTION OF TREATABLE AND NON-TREATABLE CAUSES OF BLINDNESS IN EACH AGE GROUP.

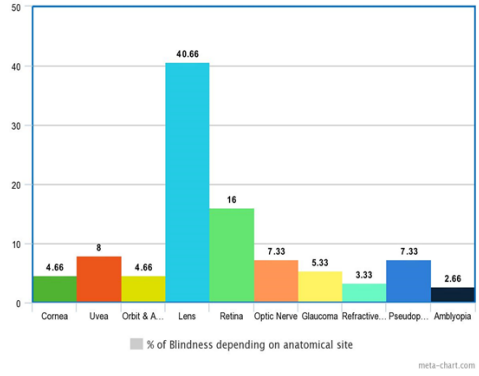


In our study, of the 16 blind eyes in the Group 1, 10 were due to incurable causes and 6 were due to curable causes.

In the Group 2, of the 51 blind eyes, 25 were due to incurable and 26 were due to curable causes.

In the group 3, of the 83 blind eyes, 21 were due to incurable causes while the remaining 62 were due to curable causes.

CHART-3 PERCENTAGE OF BLINDNESS DEPENDING ON THE ANATOMICAL SITE INVOLVED.



This chart depicts the percentage of blindness depending on the anatomical site involved. The major anatomical sites involved are the Lens and the retina.

TABLE-1 NUMBER AND PERCENTAGE OF BLIND EYES IN EACH AGE GROUP DEPENDING ON ETIOLOGY.

CAUSES	YOUNG	MIDDLE-AGED	ELDERLY
CONGENITAL	4	2	0
TRAUMA	5	9	14
INFECTION	0	1	3
INFLAMMATION	0	11	4
NEOPLASM	1	1	0
HEREDITARY	6	9	4
DEGENERATION	0	18	58

CHART-4

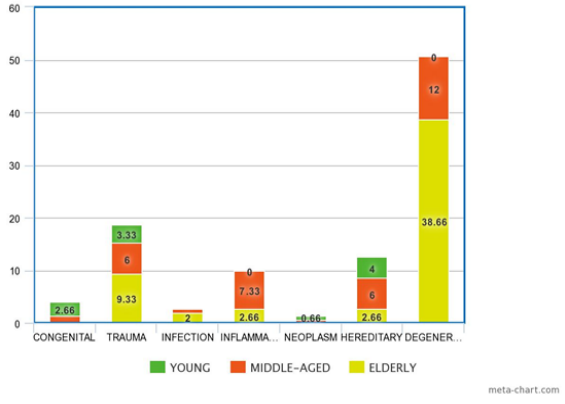


TABLE-2 ENUMERATION OF CAUSES UNDER ECH ETIOLOGY:

TRAUMA & POST SURGICAL	DEGENERATION
Corneal Tear	Non proliferative Diabetic Retinopathy
Enucleation	Hemolytic disease with Wilson Disease
Traumatic Optic Neuropathy	Mixed Retinopathy
Traumatic Cataract	Hypertensive Retinopathy Grade IV
Traumatic Iridodialysis with Iris Prolapse	Pseudobulbar palsy/ Hypertension/ CVA
Traumatic Corneal Opacity	Cataract
Pseudophakic Bullous Keratopathy	Phthisis Bulbi
Pseudophakia with Posterior Capsular Opacification	High myopia with Retinal Detachment
Ciliary Staphyloma with Absolute Glaucoma	Age-related Macular Degeneration

TABLE-3

HEREDITARY	CONGENITAL	INFLAMMATION
Refractive Error	Congenital Cataract	Uveitis
Retinitis Pigmentosa	Coloboma associated Syndrome	Vasculitis
Glaucoma	Optic disc Coloboma	Optic Neuritis
Squint	Anterior Staphyloma	Retrobulbar Neuritis
Amblyopia		Thyroid related Orbitopathy

TABLE-4

INFECTION	NEOPLASM
Panophthalmitis	Retinoblastoma
Orbital Cellulitis with Rhinosporidiosis	Basal Cell Carcinoma

TABLE-5 COMPARISON OF RESULTS OF OUR STUDY WITH NPCB STUDY:

ETIOLOGY	NPCB (%)	OUR STUDY (%)
Cataract	62.6%	40.66%
Refractive Error	19.7%	3.33%
Corneal Causes	0.9%	4.66%
Glaucoma	5.8%	5.33%
Surgical Complication	1.2%	2%
Posterior Capsular Opacification	0.9%	5.33%
Posterior Segment Disorders	4.7%	23.33%
Others	4.19%	15.35%

DISCUSSION:

In our study, 150 eyes were taken into account and they were broadly classified into 3 groups, depending on age.

GROUP 1 - Young (0-20 years)
GROUP 2 - Middle- aged (21-50 years)
GROUP 3 - Elderly (> 51 years)

Out of the 150 eyes, 62.66% of eyes are blind due to curable causes and 37.33% of eyes are blind due to incurable causes.

In the Group 1, 37.5% of patients were affected with curable blindness and 62.5% of blindness was due to incurable causes. The most common cause of blindness in this age group is refractive error with associated amblyopia, followed closely by trauma. These causes of blindness can be reversible causes, provided the attention is given and the treatment sought at the right time.

According to a study conducted in Western Rajasthan in blind children from 0-16 years, the major anatomical site of abnormality causing blindness was the lens followed by whole globe disorders.

In the Group 2, 49% eyes were affected due to incurable blindness and 51% had curable blindness. Degenerative causes contributed to the majority of blindness in this age group, followed by inflammatory causes.

In the Group 3, 75.5% eyes had poor vision due to curable causes while 24.5% eyes had incurable blindness. In this group also, degenerative

causes were the main reason behind blindness followed by traumatic causes. The vision of those patients with a visual acuity of < 3/60 due to cataract was restored following successful cataract extraction with posterior chamber IOL implantation.

According to our study, lens is the anatomical site which is responsible for 40.66% of blindness. Retina and optic nerve constitute about 16% and 7.33% of blindness. Degenerative causes is responsible for 50.66% of blindness, whereas 18.66% of blindness is due to traumatic causes.

According to NPCB, the proportion of blindness due to cataractous lens is 62.6%. In our study, the proportion of blindness due to cataract is 40.66%. This is a very good indicator of improving awareness among the public, especially the elderly, to seek early medical attention when they have defective vision. The initiative of NPCB to reduce the load of blindness due to cataract is successful to an appreciable extent.

Similarly, the incidence of blindness due to refractive error is definitely on the decline. According to our study, refractive error constitutes only about 3.33% of blindness. This is in stark contrast to the NPCB statistics where 19.7% of blindness is due to refractive error. This has been achieved because of the effectiveness of school health screening programme and the awareness among the parents.

However according to our study, blindness due to corneal causes is on the rise in comparison to the NPCB statistics, where corneal blindness constituted only 0.9%. In our study, 4.66% of blindness was due to corneal causes. This can be majorly attributed to the increase in the occurrence of road traffic accidents. If proper surgical care can be provided at the right time, this incidence can be brought down significantly.

According to NPCB study, posterior segment disorders caused only about 4.7% of blindness, whereas in our study, posterior segment disorders caused 23.33% of blindness. Diabetes Mellitus and Systemic Hypertension were the major causes.

The incidence of blindness due to Glaucoma according to NPCB study is 5.8%. in our study, the percentage of blindness due to glaucoma is 5.33%. This indicates that there is no reduction in the percentage of blindness due to glaucoma and hence there is a need to intensify the awareness about glaucoma among the public.

Incidence of PCO causing blindness according to NPCB statistics is 0.9%. According to our study, the incidence of blindness due to PCO is 5.33%. This is due to the increase in the number of cataract surgeries being done nowadays.

In NPCB, other causes of blindness constituted only about 4% of blindness. In our study, 15.35% of blindness were due to other causes. The other causes were infection, inflammation, trauma, neoplasm and degenerative causes which are on the rise.

CONCLUSION:

In our study, the anatomical sites which are most commonly affected and contributing to blindness are the lens, followed by retina and optic nerve. The most common etiology of blindness are Degenerative (50.66%) causes followed by traumatic (18.66%) causes and hereditary (12.66%) causes . As mentioned earlier, this study is more about knowing the curable and incurable causes of blindness. The load of incurable causes of blindness is less compared to the load of curable causes of blindness. This is important because knowing the burden of curable blindness is helpful in intervention. As ophthalmologists, it is our duty to improve the quality of life of the affected by providing adequate treatment and reducing the prevalence of blindness in the community.

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