

Research Article

Characteristics of Cataract and Glaucoma Blindness: Case Study of a Specialist Clinic

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Aim: To consider the characteristics of cataract and glaucoma cases presenting to a private eye clinic. Attributes considered were age, sex, eye involved, and the presenting Visual Acuity (VA).

Methods: The study was conducted in a specialist clinic in the Western part of the country. A retrospective study of all new patients who presented in a private specialist eye clinic with blindness in one or both eyes resulting from cataract or glaucoma, from January 2017 to December 2018 was carried out. Eligibility was visual acuity in one or both eyes of less than 3/60. Eyes that improved to better than 3/60 with pin hole were excluded. The cause of blindness was categorized into 4, a) cataract, b) glaucoma, c) combination of cataract and glaucoma and d) cataract or glaucoma with other blinding eye disease(s).

Results: There were 120 eyes of 82 candidates that were studied. While 81 eyes had cataract, 52 eyes had glaucoma. Cataract and glaucoma coexisted in 13 eyes. Frequency of both was highest in the 61-75 year age group. Male: female was 1:1.3. Light Perception and Hand Movement (HM) were common in eyes with cataract blindness, and No Light Perception (NLP) in eyes with glaucoma blindness. The age, sex and eye involved were not statistically significant though more males had glaucoma and females, more cataract. The VA of NLP was seen only in glaucoma cases ($\chi^2=40.120$, $df=3$, $P<0.0001$). On multivariate analysis however, this became insignificant ($p=0.998$ at 95% CI).

Conclusion: Many patients with cataract and glaucoma presented late to the clinic. Both were associated with older age group. While glaucoma was commoner in males, cataract was more frequent in females. VA of NLP was predominant in glaucoma patients. Eye affected was not significant.

Both categories of patients need education especially at early stages to prevent blindness, which is irreversible in glaucoma cases. Those with cataract need reassurance and encouragement to take up surgeries.

Keywords: Cataract and glaucoma blindness; Characteristics

Introduction

Blindness is presenting visual acuity of worse than 3/60 [1]. About 39 million persons are blind globally with cataract and glaucoma among the leading causes [2].

Cataract is clouding of the crystalline lens and constitutes 51% of global blindness [1,2]. Age is the commonest predisposing factor. The main stay of treatment is cataract extraction which is successful for visual restoration.

About 4.5 million persons are blind from glaucoma, accounting for 12% of global blindness [3]. Glaucoma is the commonest cause of irreversible blindness and characterised by symptoms associated with optic nerve damage. There are different types but the Primary Open Angle Glaucoma (POAG) is prevalent in Nigeria [4] where the present study was conducted.

The incidence of glaucoma, like cataract, also increases with age and tends to progress in persons of African descent [5]. Treatment is either surgical or conservative to preserve vision. In Nigeria,

glaucoma patients tend to present late [6].

The Nigerian National Blindness Survey reported cataract related blindness of 1.8% while glaucoma was responsible for 0.7%, next to cataract [7]. Previous studies had identified cataract and glaucoma as the commonest causes of either blindness alone [8] or visual impairment and blindness [9].

The present study focused on the characteristics of the blindness resulting from these two common causes. The age, sex, eye involved and presenting visual acuity were considered.

Materials and Methods

Setting

The study was conducted in a private specialist clinic situated in Osogbo, South Western Nigeria. The people are mainly of the Yoruba race.

Study population

This comprised of all the patients that presented to the eye clinic within a period of two years from January 2017 to December

2018 with blindness in one or both eyes resulting from cataract or glaucoma or both.

Type of study

A retrospective study involving all new cases of cataract and glaucoma with visual acuity of less than 3/60 in one or both eyes was carried out. Case notes of the patients were reviewed, and records records obtained included age, sex, eye affected, visual acuity, and cause of blindness. All eyes that had improved visual acuity with pin hole test were excluded. Pupils were dilated in all cases of media haziness impairing adequate view of fundus. The cause of blindness was categorised into 4; a) cataract, b) glaucoma, c) combination of cataract and glaucoma and d) cataract or glaucoma with other blinding eye disease(s).

Data analysis

Results obtained were analysed using IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA). Data obtained were presented using frequency distribution tables. Bivariate analysis was applied for categorical variables using chi square. Level of significance was set at $p < 0.05$.

Result

There were 120 eyes of 82 candidates that had blindness from either cataract or glaucoma, or both, or in combination with other causes of blindness that were recruited for the study. Of these, 67.5% (81/120) of the eyes had cataract while 43.3% (52/120) had glaucoma with or without other contributing factors. Pure cataract blindness was recorded in 65 eyes of 48 cases and glaucoma in 39 eyes of 24 cases. (Table 1).

Thirteen eyes had both cataract and glaucoma. Other associated causes of blindness were age related macular degeneration and retinal detachment in one eye each. Overview of the finding is shown in the Table 2 below. Male to female ratio was 1:1.3.

The frequencies of both cataract and glaucoma blindness were

Table 1: Summary of the characteristics of persons and eyes with cataract and glaucoma blindness only.

Age category (years)	Cataract	Glaucoma
≤ 45	3/48(6.3%)	4/24(16.6%)
46 - 60	7/48(14.6%)	1/24(4.2%)
61 - 75	28/48(58.3%)	13/24(54.2%)
> 75	10/48(20.8%)	6/24(25%)
Sex		
Male	13/48(27.1%)	15/24(62.5%)
Female	35/48(72.9%)	9/24(37.5%)
Visual Acuity		
Counting Fingers	17/65(26.2%)	12/41(29.3%)
Hand Movement	24/65(36.9%)	10/41(24.4%)
Light Perception	24/65(36.9%)	3/41(7.3%)
No Light Perception	0/65(0.0%)	16/41(39.0%)
Eye		
Right	30/65(46.2%)	20/39(51.3%)
Left	35/65(53.8%)	19/39(48.7%)

Table 2: Frequency distribution of findings in all eyes.

Variables	Frequency(%) n=120
Age (years)	
≤45	11(9.2)
46-60	17(14.2)
61-75	58(48.3)
>75	34(28.3)
Sex	
Male	52(43.3)
Female	68(56.7)
Visual acuity	
Counting Fingers	34(28.3)
Hand Movement	36(30.0)
Light Perception	31(25.8)
No Light Perception	19(15.8)
Cataract as a cause of blindness	81(67.5)
Glaucoma as a cause of blindness	52(43.3)
Other associated causes of blindness	2(1.7)

Table 3: Cataract as cause of blindness, isolated or with glaucoma.

	Frequency n=120		Total	Statistics
	No	Yes		
Age (years)				$X^2=8.607$
≤45	7(63.6)	4(36.4)	11(100)	Df=3
46-60	2(11.8)	15(88.2)	17(100)	P=0.035
61-75	18(31.0)	40(69.0)	58(100)	
>75	12(35.3)	22(64.7)	34(100)	
Sex				$X^2=4.024$
Female	17(25.0)	51(75.0)	68(100)	Df=1
Male	22(42.3)	30(57.7)	52(100)	P=0.045
Eye affected				$X^2=0.34$
Left eye	20(37.1)	43(68.3)	63(100)	Df=1
Right eye	19(33.3)	38(66.7)	57(100)	P=0.853
Visual Acuity				
Counting fingers	12(35.3)	22(64.7)	34(100)	$X^2=32.765$
Hand Movement	8(22.2)	28(77.8)	36(100)	Df=3
Light Perception	3(9.7)	28(90.3)	31(100)	P<0.001
No light perception	16(84.2)	3(15.8)	19(100)	

highest in the 61-75 years age group, 40/120 (69%) and 22/120 (18.3%) respectively. This was followed by >75 years age group. In the eyes with cataract blindness, only the 'affected eye' was not statistically significant (Table 3).

Light perception and hand movement were the recurring visual acuities in the eyes with cataract (Table 3), while light perception was the highest for glaucomatous eyes.

The age, sex and eye involved were not statistically significant in the glaucoma blindness cases. The visual acuity of No Light

Perception (NLP) was seen only in glaucoma cases $X^2=40.120$, $df=3$ and $P<0.0001$. When other factors (age, sex and affected eye) were taken into consideration however, it became insignificant, $p=0.998$ at 95% CI.

Discussion

In the study, cataract and glaucoma blindness were investigated. There were more cases of blindness resulting from cataract compared to glaucoma. Cataract has been widely documented as the commonest cause of blindness [2-11]. In a study conducted in a clinic in Ghana [12], glaucoma was however found to be more prevalent. The age group mostly affected was the 61-75year group collectively and in individual cases. Age is a known risk factor for both diseases and has been reported in Nigeria [13], Ghana [12], and Malaysia [14].

The total number of females outnumbered the males but this was not statistically significant. Finding is similar to a previous study in a Malaysian study [14]. Considering the diseases individually, there were more males with glaucoma blindness unlike cataract with more females.

The predominant visual acuities in both groups of patients could be attributed to late presentation which has been earlier documented [13]. Late presentation could result from indulgence in all manners of pre-hospital consultation [15], self-medication and ignorance [16]. The insidious onset of glaucoma as evidenced by lack of symptoms is another major contributory factor. Some patients who present to the ophthalmologist for other ailments, in whom glaucoma is incidentally diagnosed, may not keep up with their management of glaucoma since it was not their primary reason for visiting the doctor.

Conclusion

Cataract and glaucoma blindness in the group of patients investigated share similar characteristics *vis-a-viz* age of presentation and eye involved. Cataract was more common in the females unlike glaucoma that was found more prevalent in the males. Both groups of patients presented late. Visual acuity of No Light Perception was unfortunately the predominant visual acuity in glaucoma patients.

Patients with glaucoma need to be thoroughly educated especially at early stages to prevent advancement to blindness which is irreversible. Those with cataract also need reassurance and encouragement to take up surgeries which can restore their vision.

References

1. BLINDNESS AND VISION IMPAIRMENT. WHO BULLETIN. 2018.

2. Pascolini D, Mariotti SPM. Global estimates of visual impairment: 2010. *British Journal Ophthalmology Online*. 2011; 300539.
3. Blindness and vision impairment prevention-Priority eye diseases. *WHO bulletin*. 2019; 2-3.
4. Kyari F, Entekume G, Rabi M, Spry P, Wormald R, Norlan W, et al. A population-based survey of prevalence and types of glaucoma in Nigeria: Results of the Nigeria National Blindness and Visual Impairment Survey. *BMC Ophthalmology*. 2015; 15: 176.
5. Buhrmann RR, Quigley HA, Baron Y, West SK, Olivia MS, Mmbaga BB. Prevalence of glaucoma in a rural East African population. *Invest Ophthalmol Vis Sci*. 2000; 41: 40-48.
6. Abdull MA, Gilbert C, Evans J. Primary Open Angle Glaucoma in Northern Nigeria: stage at presentation and acceptance of treatment. *BMC Ophthalmol*. 2015; 15: 111.
7. The Nigeria national blindness and visual impairment survey. 2005-2007.
8. Nwosu SNN, Onyekwe LO. Ocular problems of the elderly in Onitsha, Nigeria. *Nigerian Journal of Clinical Practice*. 2002; 5: 123-126.
9. Achigbu EO, Ezeanosike E. Visual impairment and blindness in 5 communities in Imo State, South Eastern Nigeria. *Annals of Medical and Health Sciences Research*. 2017; 7: 106-110.
10. Isawumi MA, Ubah JN, Olomola BV, Afolabi OM. Blindness and Visual Impairment among adults in a Tertiary Institution Eye Clinic in Osogbo, South West Nigeria. *Ann Med Health Sci Research*. 2014; 4: 594-597.
11. Singh N, Eeda SS, Gudapati BK, Reddy S, Kanade P, Shantha GPS, et al. Prevalence and causes of Blindness and Visual Impairment and their associated risk factors in three tribal areas of Andhra Pradesh, India. *PLoS ONE*. 9: e100644.
12. Ansah DO. Prevalence and causes of Visual Impairment among patients in Juaben Hospital Eye clinic, Ghana. *Mathews Journal of Ophthalmology*. 2017.
13. Kyari F, Gilbert C, Peto T. Risk factors for primary open angle glaucoma in Nigeria: Results of the Nigeria national Survey of blindness and Visual Impairment. *Invest Ophthalmol Vis Sci*. 2014; 55: 4299.
14. Chew FLM, Salowi MA, Mustari Z, Husni MA, Hussein E, Adnan TH, et al. Estimates of Visual impairment and its causes from the National Eye Survey in Malaysia. *PLoS ONE*. 2018; 13: e0198799.
15. Fasina O, Ubah JN. Pattern of pre-hospital consultation among ophthalmic patients seen in a tertiary hospital in South Western Nigeria. *Afr J Med Sci*. 2009; 38: 173-177.
16. Jackson DJ, Razai M.S, Falana R, Mongwa M, Mutapanduwa M, Baemisi C, et al. The clinical characteristics of patients with glaucoma presenting to Botswana health facilities: an observational study. *BMJ Open*. 2014; 4: e005965.