

Opportunistic Screening for Glaucoma Amongst Glaucoma Patients' First Degree Relatives who Accompany them to Glaucoma Clinic

Nathaniel G.I and Awoyesuku E.A

Department of Ophthalmology, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria

Corresponding author: Nathaniel G.I,
Email: drnathy2013@gmail.com

Introduction: Screening for glaucoma is an important tool for reducing incidence of blindness and visual impairment. Detection of the condition in its earlier stages by effective screening should result in reduced morbidity and improved quality of life¹. The risk ratio of developing primary open angle glaucoma in persons with positive family history has been estimated to be 9.2 and increased prevalence of glaucoma has been found in persons whose first-degree relatives suffer primary open angle glaucoma^{2,3}. This study aims at identifying people with glaucoma and glaucoma suspects among first degree relatives who accompanied known glaucoma patients to the Glaucoma clinic at University of Port Harcourt Teaching Hospital, Port Harcourt.

Methods: It was a prospective clinic-based study of first-degree relatives of Primary open-angle glaucoma patients. All participating individuals underwent comprehensive eye examination including vision screening, refraction, slit lamp biomicroscopy, applanation tonometry, gonioscopy and dilated fundus examination. Persons with definite or suspected glaucoma underwent threshold standard automated perimetry. A diagnosis of primary open angle glaucoma was based on the following criteria⁹:

- i. Open angle documented on gonioscopy
- ii. An optic nerve head cup/disc ratio >0.6 with typical features of notching of neuroretinal rim, excavation, thinning or sloping of neuroretinal rim in the superior or inferior sector of the optic nerve head in at least one eye.

Visual field defects matching of the nerve head changes on the visual field with pattern standard deviation abnormal at 5% level or less; with cluster of at least three abnormal points in the nasal, paracentral or arcuate region of the visual field with at least one point at <1%. Borderline or abnormal glaucoma hemifield test on automated perimetry alone without matching disc changes were not considered abnormal.

Results: A total of 95 individuals who were first-degree relatives of 41 patients with Primary open angle glaucoma were examined. Fifty-seven of them (60%) were males, and 38 (40%) were females, with a mean age of 37.71± 8.15 years with age range of 14-56 years (30.0-42.5 CI) (Table 1). Eighty-three (87.37%) were offspring while 12 (12.63%) were siblings of glaucoma patients. Eighteen (18.9%) were observed to have definite Primary open angle glaucoma; 7 (7.4%) of them had been previously diagnosed. Another 16 (16.8%) of the relatives were found to be Glaucoma suspects. Twelve (66.7%) of those with glaucoma were males while 6 (33.3%) were females; 13 (72.2%) were offspring while 5 (27.8%) were siblings. Prevalence of primary open angle glaucoma was 13.7% for offspring and 5.3% for siblings.

Discussion: Previous studies⁴⁻⁷ have shown high prevalence of primary open angle glaucoma amongst first degree relatives of Primary open angle glaucoma patients compared to the general population as also shown in this study. In our study, the prevalence of glaucoma was higher amongst offspring (13.7%) compare to siblings (5.2%) as also reported by Vegini et al⁸. However, Wolfs et al² reported a prevalence of 10.4% amongst siblings of patients and only 1.1% of offspring of patients. Other studies^{3,9} also reported higher prevalence amongst siblings than offspring. Family history of glaucoma in a sibling is the greatest risk factor, followed by glaucoma in a parent¹⁰. The Baltimore Eye Survey¹⁰ found that the relative risk of having glaucoma is increased 3.7-fold for individual who have sibling with primary open angle

Table 1: Demographic data of respondents

Variable	Frequency Percentage		
	(n)	(%)	
Age	10 - 19	04	2.21
	20 - 29	13	13.68
	30 - 39	43	45.26
	40 - 49	30	31.58
	50 - 59	05	5.26
Sex	Male	57	60.00
	Female	38	40.00
Educational status			
	Primary	07	7.37
	Secondary	17	17.89
	Tertiary	71	74.74
Relationship to patient			
	Offspring	83	87.37
	Sibling	12	12.63
Previously diagnosed with glaucoma:			
	Yes	07	7.37
	No	88	92.63

Table 2: Demographic data of those found with glaucoma and glaucoma suspect

Variable	Total No.	Glaucoma	Glaucoma suspect
Age	10 - 19	4	0(0)
	20 - 29	13	0(0)
	30 - 39	43	5(27.8%)
	40 - 49	30	13(72.2%)
	50 - 59	5	0(0)
	Total	95	18(100%)
X2 (p-value)		7.11 (0.01)*	6.94(0.03)*
Gender			
	Male	57	12(66.7%)
	Female	38	6(33.3%)
	Total	95	18(100%)
X2 (p-value)		4.0 (0.05)*	0.50 (0.479)
Educational status			
	Primary	7	5(27.8%)
	Secondary	17	5(27.8%)
	Tertiary	71	8(44.4%)
X2 (p-value)		1.50 (0.472)	24.94(0.001)*
Relationship with patient			
	Offspring	83	13(72.2%)
	Sibling	12	5(27.8%)
	Total	95	18(100%)
X2 (p-value)		7.11 (0.01)*	36.0 (0.001)*
OR (p-value) 95%CI		3.85 (0.05)	1.15-6.13

glaucoma compared to individual who have parent with primary open angle glaucoma that have 2.2-fold risk of developing glaucoma.

Conclusion: Prevalence of primary open angle glaucoma amongst first degree relatives of glaucoma patients is higher than the general population. Targeted screening of at-risk group will help in early detection and treatment.

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