

TYPES AND PATTERN OF PRESENTATION OF REFRACTORY GLAUCOMA IN A TERTIARY HOSPITAL IN BANGLADESH

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Abstract

Aim: To determine the types and pattern of presentation of refractory glaucoma.

Methods: The study was conducted in the outpatient department of the Ispahani Islamia Eye Hospital from May 2019 to Dec 2019. All patients included in the study were diagnosed with refractory glaucoma with uncontrolled intraocular pressure on medical treatment. An interviewer administered semi-structured questionnaire was used to obtain necessary sociodemographic data from the patients and the diagnosis was obtained from their case records. Statistical Package Software for Social Science (SPSSV20) was used for data analysis.

Results: A total of 98 patients with refractory glaucoma seen. The age range was 21-80 years with mean age of 49.56 years \pm 14.079. Females were 52(53.1%) while the males were 46(46.9%). The male to female ratio was 1:1.1. Poor vision was the most common occurring symptom occurring in all 98 (100%) patients followed by pain occurring in 21 (21.43%) patients. The most common visual acuity was No Perception of Light (NPL) in 47 patients (48%). Neovascular glaucoma was the most common form of refractory glaucoma occurring in 46 patients (46.9%) followed by absolute angle closure glaucoma which occurred in 25 patients (25.5%) and aphakic and pseudophakic patients which occurred in 9 patients (9.2%) and 6 patients (6.1%) respectively.

Conclusion: Refractory glaucoma in Bangladesh was most commonly due to neovascular glaucoma followed by absolute chronic angle closure glaucoma and pseudophakic/aphakic glaucoma.

Key words: Refractory glaucoma, neovascular glaucoma, angle closure glaucoma

INTRODUCTION

Glaucoma is still one of the leading causes of irreversible blindness worldwide.¹ Bangladesh has a population of over one hundred and

fifty million people.² The standardized blindness prevalence is 1.53%, meaning there are over six hundred and seventy-five thousand adults over 30 years of age who are blind.³ The prevalence of probable and definite glaucoma is 3.1% in adults aged 40 years and older.⁴ It is worthy of note that 5% are blind due to glaucoma.⁴ The uneven distribution of glaucoma surgeons in the country has also led to the increase in glaucoma blindness. Refractory glaucoma is

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the term given to all forms of glaucoma that has failed maximum attainable and tolerable medical treatment and or surgical modality to adequately control the intraocular pressure.⁵ The term includes the following types of glaucoma viz: Neovascular, aphakic, uveitic, congenital, juvenile, traumatic, pseudoexfoliation, post keratoplasty and Primary Open Angle Glaucoma (POAG) that has failed maximum attainable and tolerated medical treatment.⁶ When conventional medical and surgical modalities fail to adequately control IOP, it has become refractory.⁵

Clinical presentation of refractory glaucoma consists of very high intraocular pressure with other features of the underlying disease. There may be associated profound visual loss and intractable ocular pain. Late intervention can result in complete visual loss with intractable pain (painful blind eye) which may have a negative impact on the quality of life of the patient. Ciliary body destruction using various options is one of the numerous options for its management.⁷

MATERIALS AND METHODS

All patients diagnosed with refractory glaucoma at Ispahani Islamia Eye Institute and Hospital, Bangladesh between May, 2019 to Oct. 2019 who met the diagnostic inclusion criteria were recruited into the study. Patients with incomplete data such as VA and IOP readings, patients who are not compliant with drugs and patients with less than 3 months of follow-up were excluded from the study. The study protocol was approved by the ethical review committee of Ispahani Islamia Eye Institute and Hospital. The study adhered to the tenets of Helsinki declaration. An interviewer administered semi-structured questionnaire form containing demographic

data, glaucoma evaluation, refractory glaucoma evaluation was used. Statistical Package Software for Social Science (SPSSV20) was used for data analysis and for the purpose of this study.

Operational Definitions

Glaucoma: A group of diseases which involves a progressive loss of retinal ganglion cells (RGC) and characteristic changes in neuroretinal rim tissue in the optic nerve head (ONH) which are accompanied by visual field (VF) constriction.⁸

Refractory Glaucoma: Uncontrolled intraocular pressure with evidence of optic nerve and /or visual field deterioration despite maximally tolerated antiglaucoma medications (topical and /or systemic), previously failed non-seton surgical treatment, or a combination of surgery and medicines or a high risk of failure of trabeculectomy. All forms of glaucoma that have failed maximum attainable and tolerable medical treatment and or surgical modality to adequately control the intraocular pressure.⁵

POAG: It is a multifactorial optic neuropathy that is chronic, progressive, and irreversible, with a characteristic acquired loss of optic nerve fibers in the presence of open anterior chamber angles, characteristic visual field abnormalities and intraocular pressure that is too high for the continued health of the eye in the absence of other known causes of the disease.⁹

Neovascular Glaucoma (NVG): A severe form of secondary glaucoma characterized by proliferation of fibrovascular tissue in the anterior chamber angle.¹⁰

Aphakic Glaucoma: Glaucoma associated with absence of the crystalline lens. Is a condition that could follow congenital cataract surgery in children without

implantation of an intraocular lens.¹¹ It can also occur in adulthood following couching or can be latrogenic.

Congenital Glaucoma: Is a heterogeneous group of diseases in which glaucoma is existent or becomes evident at birth.¹²

Juvenile Glaucoma: It is childhood glaucoma that becomes apparent in later childhood (>3 years old).¹²

Traumatic Glaucoma: Glaucoma caused by an injury to the eye. This type of glaucoma can occur both immediately after an injury to the eye or years later.¹³

Pseudoexfoliative Glaucoma: Is a systemic condition characterized by the deposition of white dandruff-like material, called exfoliation material, within the anterior segment of the eye, trabecular meshwork, and other organs such as the heart, lungs and kidneys. The deposition of this material can result in raised intraocular pressure (IOP) and glaucoma.¹⁴

Post Keratopathy Glaucoma: An increase in intraocular pressure (IOP) at any time after Penetrating Keratoplasty with significant effect on optic nerve head function.¹⁵

RESULTS

A total of 98 patients with refractory glaucoma seen over the study period were included in the study. The mean age was 58.23 years (SD \pm 18.58). The peak age incidence, 28(28.75%), was in the 51-60 years

age group (Table 1). There were slightly more females with a male to female ratio was 1:1.1. The overwhelming majority of the patients, 93 (94.9%) were married. The most frequently recorded occupation was housewives, 46 (46.9%) while the secondary level of education was the most common, 31 (31.6%).

Poor vision was the most common occurring symptom occurring in all 98 (100%) patients followed by pain occurring in 21 (21.43%) patients (Table 2). The most common recorded visual acuity was No Perception of Light (NPL) in 47 patients (48%) followed by Perception of light in 36 patients (36.7%). Majority of patients whose fundus could be visualized, 67 (70.4%) had a cup-to-disc ratio of 0.9-1.0. The modal intraocular pressure, 49 (50%) was in the 31-40 mmHg range while the majority of the patients, 68 (69.4%) had angle closure on gonioscopy. The visual acuity in the majority of the patients was too poor to conduct any form of visual field assessment.

Neovascular glaucoma was the most common form of refractory glaucoma occurring in 46 patients (46.9%) followed by absolute angle closure glaucoma which occurred in 25 patients (25.5%) and aphakic and pseudophakic patients which occurred in 9 patients (9.2%) and 6 patients (6.1%) respectively (Table 3).

TABLE 1: SOCIODEMOGRAPHIC FACTORS IN PATIENTS WITH REFRACTORY GLAUCOMA IN BANGLADESH

Variable	Frequency (N=98)	Percentage
Age (years)		
21-30	10	10.20
31-40	17	17.35
41-50	22	22.45
51-60	28	28.57
61-70	18	18.38
71-80	3	3.061
Sex		
Male	46	46.9
Female	52	53.1
Marital status		
Single	5	5.1
Married	93	94.9
Occupation		
Housewife	46	46.9
Civil servant	15	15.3
Business	14	14.3
Petty traders	5	5.1
Farmers	8	8.2
Tailor	2	2.0
Students	5	5.1
Unemployed	3	3.1
Level of Education		
Tertiary	13	13.3
Secondary	31	31.6
Primary	28	28.6
No formal education	26	26.5

DISCUSSION

Glaucoma remains one of the leading causes of irreversible blindness worldwide.¹

TABLE 2: CLINICAL FEATURES OF PATIENTS WITH REFRACTORY GLAUCOMA IN BANGLADESH

Variables	Frequency	Percentage
Symptoms		
Poor vision	98	100
Pain	21	21.43
Redness	6	6.12
Tearing	6	6.12
Headache	4	4.08
Photophobia	4	4.08
Foreign body sensation	2	2.04
Burning sensation	2	2.04
Itching	1	1.02
Visual acuity		
NPL	47	48.0
PL	36	36.7
HM	15	15.3
Cup-Disc ratio		
0.7-0.8	-	-
0.9-1.0	69	70.4
Disc not visualized	29	29.6
Presenting IOP (mmHg)		
21-30	16	16.3
31-40	49	50.0
41-50	23	23.5
51-60	8	8.2
61-70	2	2.0
Gonioscopy		
Open angle	22	22.4
Closed angle	68	69.4
Indeterminate	8	8.2

Refractory glaucoma is the term given to all forms of glaucoma that has failed maximum attainable and tolerable medical treatment and or surgical modality to adequately control the intraocular pressure.⁵

Table 3: CAUSES OF REFRACTORY GLAUCOMA IN BANGLADESH

Diagnosis	Frequency (No)	Percentage
Neovascular glaucoma	46	46.9
Absolute CACG	25	25.5
Aphakic glaucoma	9	9.2
Pseudophakic glaucoma	6	6.1
Traumatic glaucoma	4	4.1
Painful blind eye	3	3.1
Absolute POAG	2	2.0
Secondary OAG	2	2.0
Uveitic glaucoma	1	1.0

The peak age incidence was in the 51-60 years age group. This is similar to other studies on glaucoma that also had a peak age incidence in the 6th decade of life.¹⁶⁻¹⁸ This is because the prevalence of glaucoma tends to increase with age. It is therefore not surprising that the overwhelming majority of the patients were married and the most frequent occupation was housewives. Considering the most frequent occupation, it is understandable that over half of all the patients did not attain more than primary level of education.

The most frequent presenting symptom was poor vision which occurred in all the patients in this group of patients with refractory glaucoma. This is expected because these are patients who have had glaucoma for a long time and have tried most available treatment options without success in controlling the intraocular pressure, resulting in optic nerve damage and visual loss. Pain was the next most common symptom due to high intraocular pressures usually in inflamed eyes. All the patients in the study population

were already blind due to the persistently high intraocular pressures and complications of the primary pathology and even of previous surgery. All the patients in whom the fundus could be visualized had end stage glaucoma reflecting the advanced nature of the disease. Furthermore, visual field could not be reliably accessed in almost all of them, even by confrontation testing, but it was evident that advanced visual field loss had occurred in all of them. IOP ranged from 26mmHg to 70mmHg by applanation tonometry, but the peak IOP was in the 31-40mmHg group where 50% of the patients belonged. However, it must be noted that these measured IOPs was with ongoing treatment and would be much higher if the treatment was withdrawn. With such sustained damaging intraocular pressures, it is understandable why the cup-to-disc ratios, visual fields and visual acuity were all so bad. About 70% of the patients had angle closure on gonioscopy. It is certain that in some of the patients in whom the gonioscopy could not be done, the angles may also have been closed. The overwhelming majority of these patients had synechial angle closure.

The most common cause of refractory glaucoma in this study was neovascular glaucoma. Here, the angle of the anterior chamber of the affected eyes is occluded by a fibrovascular membrane. Following contraction of this membrane, the angle becomes closed and the IOP becomes markedly elevated and unresponsive to conventional treatment. Absolute chronic angle closure glaucoma was the second most common cause followed by refractory glaucoma following complications of cataract surgeries, both pseudophakic and aphakic. Such eyes were frequently disorganized, and contained evidence of fibrovascular membrane proliferation.

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