

Glaucoma Burden in a Public Sector Hospital

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Purpose: To determine the demographic pattern and type of glaucoma presenting to our hospital and the modalities of medical and operative treatment performed

Materials and Methods: Case records of all patients registered at glaucoma clinic from 1st May 2002 to 30th April 2003 were reviewed. Data was collected on a form and entered in SPSS. Multiple variables were collected and analyzed.

Results: A total of 80,767 patients were seen in the hospital with different eye problems. The number of patients referred to the glaucoma division was analyzed and 447 patients were confirmed with the diagnosis of glaucoma (0.55%). Their demography showed 287 (64.2%) patients were male and 160(35.8%) were female. Age distribution showed 383 (85.7%) patients were 40 years or older. Primary glaucoma was seen in 345 (77.2%) patients, out of which 186 (41.6%) had primary open angle glaucoma (POAG) and 137 (30.67%) had chronic angle closure glaucoma (CACG). Secondary glaucomas were seen in 102 (22.8%) patients.

Conclusion: Primary open angle glaucoma was still the most prevalent type of glaucoma seen in our clinic but chronic angle closure glaucoma also involved a significant number of patients. Most patients presented very late when their central vision was compromised or their glaucoma was detected at an early stage due to eye examination carried out due to some other ocular complaint. Intensive medical and surgical treatment was shown to control the disease in most of the patients.

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The glaucoma constitutes a group of disorders with diverse pathogenesis associated with an elevated intraocular pressure in majority of the cases with characteristics pattern of optic neuropathy and loss of visual field.

It is one of the leading causes of blindness worldwide. Although the number of people affected by the glaucoma varies in different countries, it is estimated that approximately 66.8 million people are affected worldwide, out of which 6.6 million are blind¹.

In western world the most prevalent form is Primary Open Angle Glaucoma (POAG). In USA it is estimated that 2.47 million people are affected by POAG, 130,450 of whom have become bilaterally blind².

The disease prevalence and morbidity may differ according to the race is well established. There are many studies suggesting that black American are more likely to become blind as a result of POAG than their white counterparts^{3,4}.

Since Mongolian Study conducted by Foster et al⁵, it is estimated that Chronic Angle Closure Glaucoma (CACG) is as common as POAG in South East Asian population, with prevalence of CACG being calculated at 0.8%. The survey conducted by Baasanhu and coworkers⁶ also showed that Glaucoma was responsible for 35% of blindness in Mongolia.

A recent survey in Pakistan about the causes of blindness was carried out by Pakistan Institute of Community Ophthalmology Peshawar, in collaboration with International Centre for Eye Health, London School of Hygiene and Tropical Medicine⁷. In their preliminary report released in June 2005, they have cited Glaucoma as the third major cause of blindness (7%) in people age 30 years and above without deliberating upon the type of glaucoma.

Unfortunately no epidemiological study has been done in this country to find the exact type of glaucoma most prevalent in our society. But going by published studies from Singapore⁸, Thailand⁹, and India¹⁰, prevalence of CACG should be as higher as that of POAG in this part of the world.

There are certain special features attributed to the CACG in Asian population. The women were more often affected than men. A great number of patients with CACG were bilaterally or unilaterally blind compared with those patients having POAG. CACG

was also found more aggressive and visually destructive disease^{6,8}.

The objectives of our study were to determine the number of patients seen in the tertiary care glaucoma clinic, to differentiate the glaucoma patients into various subtypes of the disease, to evaluate the visual status of these patients at their initial presentation, to find the different modalities of treatment to control the disease process, and also to determine that how much glaucoma subjects constitute the total number of patients seen during that particular period in the entire eye hospital.

MATERIAL AND METHODS

This retrospective study was carried out at Isra Postgraduate Institute of Ophthalmology, Al - Ibrahim Eye Hospital, Malir, Karachi. Case records of patients registered at glaucoma clinic for the time period 1st May 2002 to 30th April 2003 were reviewed. All patient's records had their best corrected visual acuity (BCVA) charted in both eyes with biomicroscopic findings of anterior segment, Goldman applanation tonometry readings and gonioscopic findings. Majority of the patients had optic disc drawings present in their notes with some of the patients having optic disc photographs. At that particular time hospital did not have Humphrey's perimeter available so some of the fields were done on Topcon perimeter with unsatisfactory results.

A total number of 447 patients were diagnosed with glaucoma and seen in the clinic during the defined period. All the data was collected on a proforma and entered in SPSS 10.0. Multiple variables were collected and analyzed.

RESULTS

During the study period a total of 80,767 patients were seen in the hospital with different eye problems. The number of patients referred to the glaucoma division was analyzed and 447 patients were confirmed with the diagnosis of glaucoma (0.55%).

Patient's age ranged from 1 year to 90 years with the average age at 54.91 years and median age at 56 years. 383 patients (85.7%) were 40 years or above. Distribution of various age groups is shown in (Fig. 1). Gender distribution showed male predominance with 287 (64.2%) male patients and 160 (35.8%) female patients (Fig. 2).

Patient general health status revealed 29 patients with history of diabetes mellitus, 36 patients having raised blood pressure and 3 patients suffering with ischemic heart disease.

Primary glaucoma was the commonest type seen in 345 patients (77.2%). POAG was diagnosed in 186 patients (41.6%) while CACG was seen in 137 patients (30.7%). 16 patients (3.6%) presented with acute attack of PACG and 6 patients (1.3%) had congenital glaucoma (Fig. 3).

Secondary glaucomas were seen in 102 patients (22.8%) with secondary open angle glaucoma due to pseudo exfoliation syndrome present in 42 patients (9.4%), neovascular glaucoma was present in 19 patients (4.3%) and phacomorphic glaucoma was seen in 16 patients (3.6%). Phacolytic glaucoma, steroid induced glaucoma, pseudophakic and aphakic glaucoma, all were seen in 5 patients (1.1%) each, with malignant glaucoma presenting in 4 patients (0.9%) and angle recession glaucoma diagnosed in one patient (0.2%) (Fig. 4).

Both eyes were involved in 319 patients (71.4%) while 128 patients (28.6%) had only one eye affected.

Patients visual status at presentation showed, 202 patients (45.2%) had best corrected visual acuity (BCVA) between range of 6/6 to 6/18 on Snellen's chart, 154 (34.5%) had vision of <6/18 to 6/60, 9 patients (2%) had vision of <6/60 to 3/60, 76 patients (17%) had < 3/60 vision and 6 patients (1.3%) visual status was not available (Fig. 5).

Intra ocular pressure (IOP) at presentation was between 10–20 mmHg in 78 patients (17.5%), between 21–30 mmHg in 142 patients (31.8%), between 31 to 40 mmHg in 122 patients (27.3%) and >40mmHg in 105 patients (23.5%) (Fig. 6).

Group of patients showing IOP range of 10 - 20 mmHg were already using various pressure lowering drugs with good control and were referred to us for further management. Rest of glaucoma diagnosed cases, though some of them were using anti glaucoma medication were still not properly controlled.

In anterior segment findings, 176 patients (39.4%) had clear media with no lens changes. 34 patients (7.6%) were pseudophakic, 5 patients (1.1%) were aphakic. Of remaining 232 patients (51.9%), 163 patients (70.3%) had early lens changes of cortical or nuclear type, while 69 patients (29.7%) had more than +1 cortical or nuclear lens opacities. No other ocular

pathology was recorded in these patients accounting for decreased vision.

Fundus records of patients revealed that 46 patients (10.3%) had cup disc ratio (CDR) of 0.3, 92 patients (20.6%) had CDR of 0.4-0.6 and 271 patients (60.6%) had CDR > 0.7. In 38 patients (8.5%) CDR was not recorded due to some media opacity.

Regarding management of glaucoma subjects, 222 patients (49.7%) were successfully managed with various IOP lowering drugs, the topical beta blocker being the commonest drug used. 158 patients (35.4%) were exposed to surgery with 132 patients (29.5%) having trabeculectomy and 22 patients (4.9%) having combined trabeculectomy with cataract extraction and intra ocular lens implant. 4 patients (0.9%) required Cyclo-destructive procedure. 67 patients (15%) had various types of laser procedures with 55 patients (12.3%) had laser peripheral iridectomy (LPI), 7 patients (1.6%) received laser peripheral Iridoplasty (LPIr), 3 patients (0.7%) had Argon laser trabeculoplasty (ALT) and 2 patients received (0.5%) Pan retinal photocoagulation (PRP) (Fig. 7).

DISCUSSION

According to the national survey on blindness and visual impairment conducted by Pakistan Institute of Community Ophthalmology (PICO) Peshawar Pakistan, the overall prevalence of blindness in Pakistan is estimated at 1.05% to 1.09 % affecting 1.49 million to 1.54 million people⁷. Glaucoma is the 3rd major cause, accounting for 7% of all projected blindness in the country⁷. Unfortunately no epidemiological study has been carried out to establish the commonest type of glaucoma prevalent in the country. There are some hospital studies performed to identify the types of glaucoma. Rizvi¹¹ looked at 103 subjects with primary type of glaucoma attending a local hospital in one year period. He found CACG involving 57 patients (55.3%) compared to POAG in 46 patients (44.7%), concluding that CACG was more common than POAG. Babar et al¹² in a two years study found that, glaucoma accounted for 5.2% of all admissions in their hospital. In their study the numbers of male patients were more than females. The mean age at the time of presentation was 40 years. The most common type of glaucoma was of primary type (63.9%) with CACG constituting 28.9% and POAG involving 22.4% of patients. The number of patients with secondary glaucomas was 36.1%. They concluded that the primary glaucoma was the most common type

of glaucoma presenting in the hospital setup and closed angle type being more common than the open angle variety.

In our series of 447 patients primary glaucoma was the commonest seen in our clinic with POAG involving 41.6% patients while CACG presenting in 30.7% patients. A hospital based study like ours does not truly indicate the exact prevalence of type of glaucoma but surely it does suggest that CACG is not uncommon in this part of the world. None of our patients were diagnosed with normotensive glaucoma (NTG). We found it very interesting as recent survey conducted in Punjab by Inayat et al¹⁴ revealed 70.6% of their glaucoma subjects diagnosed with NTG. However there are numerous flaws in that study as none of the patients diagnosed with NTG had any 24 hours IOP phasing and no central corneal thickness (CCT) measurements were taken and there was no mention of these patients using any systemic beta blockers. In the similar context Akram et al¹⁵ reevaluated the previously diagnosed patients of NTG attending eye clinic between Aug 2001 - Aug 2004. Most of these patients were found either with intracranial vascular pathology or intracranial space occupying lesions. In another study by Baig et al¹⁶ 3 patients with diagnosis of NTG using anti glaucoma therapy for long time were reevaluated. One of these patients was found having pituitary tumor, 1 patient had aneurysm of anterior cerebral artery compressing

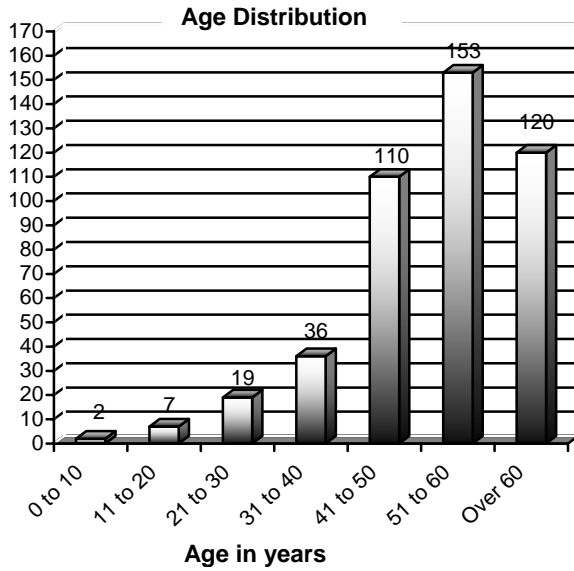


Fig. 1: Age Distribution.

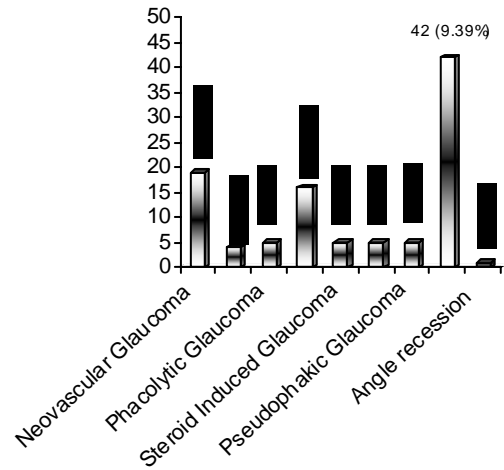


Fig. 4: Secondary Glaucoma Distribution.

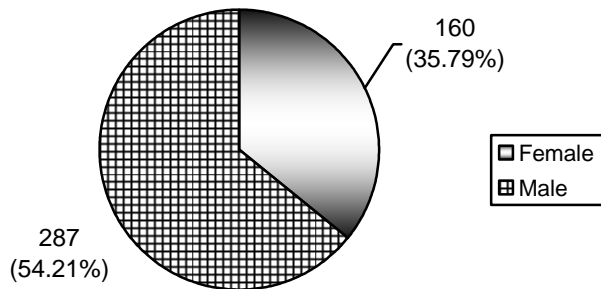


Fig. 2: Gender Distribution.

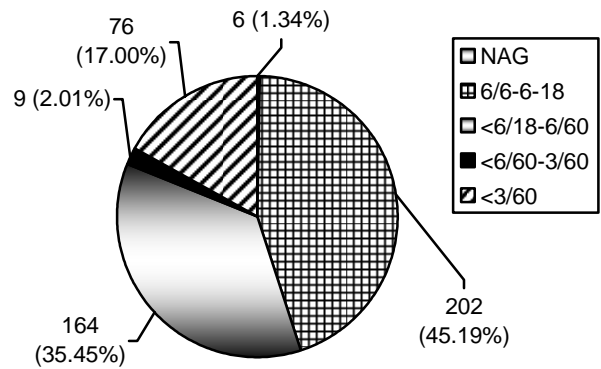


Fig. 53: Visual Acuity at presentation.

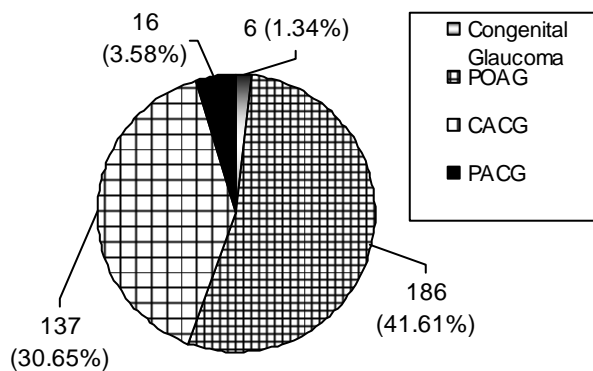


Fig. 3: Distribution of Primary Glaucoma.

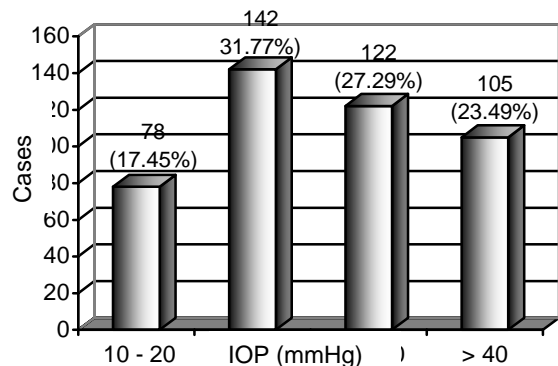


Fig. 6: Intra ocular pressure at presentation.

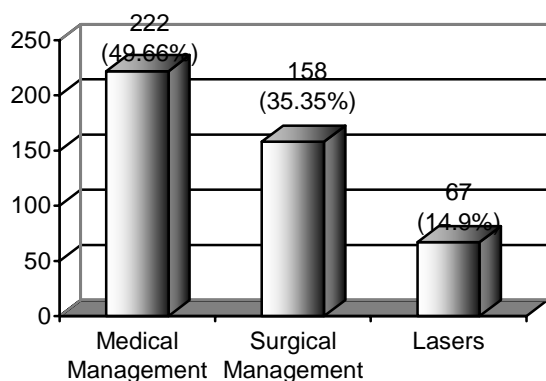


Fig. 7: Glaucoma Management

on the left optic nerve and 3rd patient had infarction in his right temporal lobe region involving optic tract. Although NTG is a definite clinical entity but it remains poorly diagnosed in our country and we think it is not common in down south in Pakistan.

There are certain important aspects in our study, 17% of all glaucoma patients were legally blind, at the time of presentation, 2% patients had severely impaired vision while 34.5% patients had moderately impaired vision according to WHO classification¹³.

In reference to the severity of the disease 50.8% patients had IOP of more than 30 mmHg while 60.6% patients had significant cupping with cup disc ratio of more than 0.7.

Regarding management, 50% of our patient's required surgical intervention mostly having drainage procedure. It was our impression that most patients presented either very late when their central vision was compromised or detected at an early stage due to some other ocular complains. Early detection in our patients was mostly due to excellent setup of our primary screening program in our eye hospital where every patient has their eye pressure and posterior segment thoroughly examined.

Our study has certain weaknesses. It is hospital based, retrospective in nature, therefore it does not represent truly the type of glaucoma prevalent in our society. For this purpose a proper epidemiological survey is required as carried out in other communities^{5,6,8-10}. We also found 46 patients (10.3%) with CDR of 0.3 who were treated because of raised IOP and labeled as POAG. We assume this group of patients was having Ocular Hypertension (OH) rather than POAG. If we adjust this group of patients from POAG then prevalence of POAG stands at 31.3%

showing no difference of prevalence with CACG at 30.7%.

Our impression is that CACG is almost as important as POAG as cause of blindness in our country. In contrast to POAG, CACG can be prevented by bilateral laser iridectomies in individuals with occludable angles, a simple one time intervention. This makes cost of preventing CACG much less than the chronic treatment of POAG.

We think that the only way to prevent glaucoma on larger scale in our population is to run proper screening programs in the various communities. Certain measures that we can take in hospital setup are.

- Educate patients, as common perception is that decreased vision in the old age is always due to formation of cataract.
- Effectively check IOP of every patient over 35 years of age irrespective of her/his eye problem with close observation of those with family history of glaucoma.
- Encourage people with family history of glaucoma to get their eyes examined on regular basis.
- Patients using steroids in different forms should be closely monitored for IOP change and optic disc damage.
- Establish out-reach clinics especially in backward areas to remove cataracts before patients developing secondary glaucomas.

CONCLUSION

In our study the number of confirmed glaucoma patients constituted 0.55% of the total number of patients with different eye problems attending in one year period. Primary glaucoma was the commonest type with POAG and CACG diagnosed in majority of the patients. 17% of all glaucoma patients were legally blind at the time of presentation while 36.5% had visual acuity of less than 6/18. 50% of patients presented with IOP of more than 30 mmHg and 60% patients had severe disease with cup disc ratio of more than 0.7. Surgical intervention was required in almost half of the patients as medical therapy failed to control their disease.

We advise that all suspected patients with increased IOP or optic disc changes should be referred to the glaucoma units/ glaucoma specialists, as high index of suspicion with proper eye examination is the only tool against this preventable blinding eye disease.

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