

Causes of Blindness in Patients with Open Angle Glaucoma, an Alarming Situation

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Purpose: To determine the causes of blindness in patients with open angle glaucoma.

Material and Methods: It was a retrospective cohort study in which 500 eyes with legal blindness were investigated. In all these patients detailed history was taken followed by examination including best corrected visual acuity, tonometry, gonioscopy and perimetry, central corneal thickness and where indicated other investigations like OCT, HRT and MRI were done.

Results: The causes of blindness in patients with open angle glaucoma were late presentations (26%), misdiagnosis (13.60%), poor compliance (19.20%), unable to afford medications (8.4%), refusal of surgery (10.60%) and failure of medications (22.40%).

Conclusion: Open angle glaucoma is a serious problem which can lead to blindness due to many reasons. Therefore patient must be well educated about the course and progression of disease.

Glaucoma is defined as an optic neuropathy in which there is visual field loss along with optic disc cupping and may or may not be associated with raised intraocular pressure (IOP). Open angle glaucoma is an asymptomatic disease until central vision is affected and is the leading cause of irreversible blindness worldwide. It is an old age disease and the prevalence of blindness increases as the population ages. According to WHO statistics glaucoma after cataract is the second most common cause of blindness worldwide (15%) and majority of them reside in Asia^{1,2}. However, glaucoma is dangerous than cataract as the blindness it causes is permanent whereas that due to cataract is reversible. In spite of new methods of diagnosis, medical education and management, the blindness due to open angle glaucoma is alarming. It has been estimated that 73 million people are affected by glaucoma worldwide and 6.7 million are thought to be blind due to this disease. It is estimated that by 2020 about 80 million people will be affected by glaucoma³.

Although there has been progress in both medical and surgical strategies for glaucoma treatment,

blindness from open angle glaucoma still occurs despite therapy⁴. On one hand in developed countries where cases of blindness due to glaucoma continue to appear, on the other hand in developing countries like Pakistan late presentation, misdiagnosis, compliance problem, financial restraints and refusal of treatment are the main obstacles. Since it is an old age disease, glaucoma is causing a major threat to vision in developing countries as the population ages. Blindness caused by glaucoma is more prevalent in rural than urban areas due to the difficulties of access to health care institutions which lead to late diagnosis and treatment^{5,6}. The number of ophthalmologists available in developing countries per patient are very few and are estimated as one per 200,000 patients in Asia, showing increased workload on ophthalmologist⁷. Open angle glaucoma is not curable, but can be treated and the primary aim of treatment is to prevent progressive loss of vision and blindness in patient's life. Another factor which further complicates the problem is poor adherence to glaucoma therapy. Studies have shown that about 50% of patients with glaucoma do not comply with their medication over

5% of the times⁸.

The purpose of this study was to document the causes that lead to blindness due to open angle glaucoma in developing country like Pakistan.

MATERIAL AND METHODS

It was retrospective cohort study conducted in the Department of Ophthalmology Khyber Teaching Hospital, Peshawar from September 2008 to December 2011. Patients with diagnosed open angle glaucoma with blindness (visual acuity worse than 3/60) and cup to disc ratio more than 0.8 were enrolled in the study after taking well informed consent. Patients with history of trauma, corneal opacity, cataract and patients with other retinal pathologies were excluded from the study to avoid biased in the study results. Detailed history was taken from the patient including inquiry about use of ocular medications or ocular surgery followed by a comprehensive ocular examination including best corrected visual acuity, pupillary examination, tonometry, gonioscopy, central corneal thickness, visual fields, color vision and funduscopy. Other investigations including MRI scan, HRT and OCT were advised where required. Once the diagnosis of open angle glaucoma was made, all data including information about previous consultation, compliance, drug types and misdiagnosis were recorded in proforma.

RESULTS

A total of 500 eyes of 338 patients with open angle glaucoma were included in the study. 272 eyes (54.4%) were of female patients and 228 eyes (45.6%) were of male patients (Chart 1). Out of 338 patients 122 (36.09%) patients were having bilateral involvement. 368 (73.60%) eyes were known glaucomatous whereas 132 (26.40%) were newly diagnosed cases of open angle glaucoma with advanced damage. Out of 500 eyes 174 (34.8%) were having no perception of light whereas the remaining 326 were legally blind. Mean age was 59.57 ± 16.2 years, but advanced glaucomatous damage was found in patients with advancing age. Out of these 500 eyes 130 eyes (26%) were blind due to late presentation, as they consulted ophthalmologist for the first time. In 112 eyes (22.4%) the cause of blindness was failure of medication despite of good compliance. 96 (19.20%) eyes were legally blind due to poor compliance of the patient for prescribed drugs. 67 eyes (13.60%) were blind due to missed diagnosis, as these patients had consulted

ophthalmologists but diagnosis of glaucoma had not been made. 53 eyes (10.6%) were advised surgery but they refused to go for surgery. In 42 eyes (8.4%) were diagnosed as glaucomatous and medications or surgery had been prescribed but due to non-affordability they were unable to use medications or go for surgery (Chart 2).

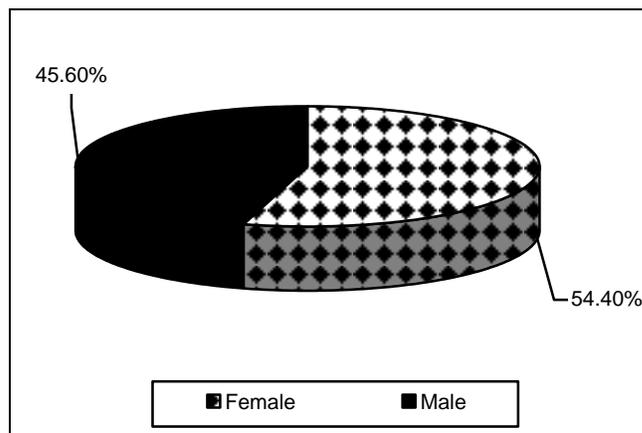


Chart 1: Male / Female Percentage

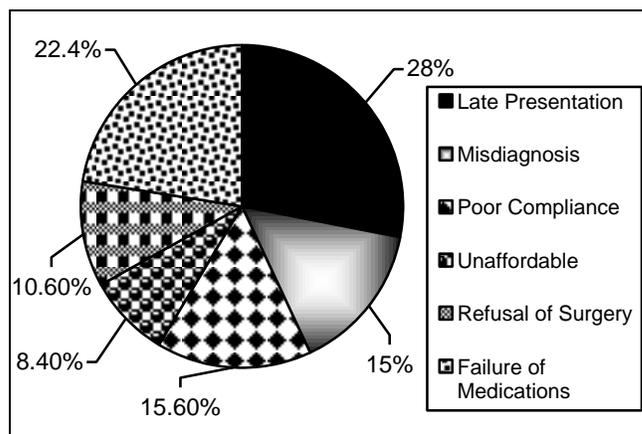


Chart II.

DISCUSSION

As blindness from open angle glaucoma is irreversible, it is better to develop strategies to prevent blindness due to glaucoma which is treatable.

In our study late presentation or consultation was found in 130 eyes (26%) which was the leading cause of blindness. By the time these patients presented there was advanced optic nerve damage and visual field loss. Most of these patients were confusing their visual loss to be due to cataract rather than glaucoma because of poor health education or they were using alternative or traditional medicine. Another reason for

late presentation is poor socioeconomic condition in developing countries. In a study done by Akhtar F et al, also reported that late presentation is a cause of blindness in 30% of cases which is close to our results⁹. Uncertain effectiveness of some medications to stop or prevent visual loss was the second common cause of blindness in our study, responsible for 22.40% of eyes which is alarming. It is because either the medications prescribed are ineffective or the type of glaucoma was resistant to the advised medication or the target IOP was not achieved. It may be due to uncertain affectivity of some topical preparations as described in the study done by Thomas R and his colleagues¹⁰. Another challenge in glaucoma patients is to ensure drug compliance, as in our study 96 (19.20%) eyes were blind due to poor compliance, whereas in a study done by Olthoff CM et al found the non-adherence in glaucoma patients to be 27.3%¹¹. There is a strong link between drug adherence and basic health literacy in the developing world¹². The reason for poor compliance is that patients were not well educated about the course and nature of the disease, importance of medications in prevention of visual loss, its continuation and regular follow-ups with tonometry and visual fields. 75 (15%) eyes visited an ophthalmologist but diagnosis of glaucoma were missed and decrease visual acuity was attributed to some other reason either because of increased work load on ophthalmologist or due to lack of specialized glaucoma training in our country. In Barbados Eye Study same observations were made that many patients after visiting ophthalmologist, the diagnosis of glaucoma was missed¹³. In 8.40% of patients medications were prescribed but due to poor socioeconomic condition either they could not afford medication or have used medications for short period of time and then stopped its use. In a study from Scotland, UK, demonstrated that regions which were more deprived economically had more advanced visual damage due to glaucoma¹⁴. In another study done by Dandona R et al reported that in 12.8% of patients over the age of 50 years became blind due to poor socioeconomic status¹⁵. 53 (10.60%) eyes were advised surgical intervention but they refused to undergo surgical procedure, which resulted in progressive visual field loss. The main concerns for refusal of surgery were fear from surgery and fear of becoming blind almost similar to the observation made by Adekoya BJ and his colleagues where when surgery was advised 31.2% of patients refused to undergo surgical procedure, so they were offered medical treatment¹⁶.

CONCLUSION

Glaucoma blindness is a serious problem. Late presentation, proper diagnosis, compliance, refusal of surgery and cost ratio can be managed with proper counseling, health education and tracing of health professionals but the main obstacle is failure of medications due to poor quality of some drugs which needs proper addressal.

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