Brief Communication

Glaucoma in Asia- An epidemiological perspective

Ajai Agrawal [1], Anupam Singh [2], Sanjeev Kumar Mittal [3]
[1]Additional Professor, Department of Ophthalmology, All India Institute of Medical Sciences(AIIMS), Rishikesh, India
[2]Associate Professor, Department of Ophthalmology, All India Institute of Medical Sciences (AIIMS), Rishikesh, India
[3]Professor, Department of Ophthalmology, All India Institute of Medical Sciences (AIIMS), Rishikesh, India

Abstract

Glaucoma is the third most common cause of global visual impairment. Bilateral blindness from glaucoma is projected to affect greater than 11 million individuals worldwide by the year 2020, with a disproportionately large number of the affected individuals being of Asian descent. The disease pattern, its response to treatment, and ground realities differ among various Asian countries. Over the past decade, there have been tremendous efforts for combating cataract blindness, but unfortunately few efforts in Asian countries have been made to establish comprehensive eye care programs in the community that include management of glaucoma. There is a need for education about the disease amongst the general public and continuing medical education and training of practicing ophthalmologists in addition to improvement of infrastructure to combat blindness due to glaucoma.

Key words: Primary angle closure glaucoma, Comprehensive eye examination, Continuing medical education.

Introduction

Glaucoma is the third most common cause of visual impairment worldwide, after cataract and uncorrected refractive errors (Resnikoff et al. 2008). It is the leading cause of irreversible visual loss, largely due to primary open-angle glaucoma (POAG). Visual impairment from glaucoma is more in the least developed regions, and affects adults more than children and women more than men (Resnikoff et al. 2008). By the year 2020, it is estimated that there will be 79.6 million people in the world with open-angle glaucoma (OAG) and angle-closure glaucoma (ACG). The majority (74%) of these individuals will have OAG. Of the group with ACG, 70% will be women and 87% will be of Asian descent. Bilateral blindness from glaucoma is projected to affect greater than 11 million individuals worldwide by the year 2020. Globally, glaucoma is a significant cause of vision loss that disproportionately affects women and Asians (Quigley & Broman, 2006).

Corresponding author
Dr Ajai Agrawal, Additional Professor, Department of Ophthalmology, All India Institute of Medical Sciences (AIIMS), Rishikesh, India.
Phone: 0091-8607593922
E-mail: ajaiagrawal@rediffmail.com ; agrawalajai@gmail.com

Prevalence of glaucoma in Asia

As per current estimates, almost 58.5 million people will have OAG worldwide by the year 2020. Half (47%) of these people will reside in Asia. The mean prevalence is estimated to be 1.96%. Women are expected to comprise >55% of those with OAG because of their increased

life span as compared to men (Quigley & Broman, 2006). Asians have a lower risk of OAG compared to individuals of African descent, and show a prevalence similar to those of European descent. The prevalence of POAG in a Chinese population in the Liwan District was 2.1%, similar to the prevalence seen in Chinese Singaporeans (He et al.,2006).

It is estimated that by the year 2020, there will be 21 million people worldwide affected by ACG with a mean prevalence of 0.69% and 87% of them will reside in Asia. Due to the greater longevity of women and the higher prevalence of ACG in women, women are expected to comprise 70% of individuals with ACG (Quigley & Broman, 2006). In Asian populations, the prevalence of PACS has been reported to be 1.4–10.1%, while that of PAC has ranged from 1.4 to 3.1%. Although PACG is approximately three times more common in Asian populations compared to European-derived populations (He et al.,2006), this prevalence varies by region within Asia. Chinese and Mongolian populations tend to be affected more, while variable prevalence is seen in Southeast Asia and India.

In a Southern Indian population, for individuals 40 years of age or older, the prevalence of PACG was 1.08%, while the prevalence of occludable angles without ACG was 2.21% (Dandona et al., 2000). Most eyes had chronic ACG and 42% of individuals with PACG had blindness in one or both eyes. The most common glaucoma seen in the out-patient department of a hospital in south-east Nepal was PACG (Sarkar et al., 2010). In a population-based study in Nepal, the prevalence of glaucoma was found to be 0.938 % and that of PACG was 0.125 % (Sah et al., 2007).

In a population of Chinese, 50 years of age and older in the Liwan district, the prevalence of PAC was 2.4%; however, it was three times higher in women (3.3%) than men (1.1%) and increased with age. The prevalence of PACG in this population was 1.5%, with women again being affected significantly more than men (1.6% vs. 1.3%, respectively) (He et al.,2006). In a population in northern Mongolia, the prevalence of PACG was 1.4%, while the prevalence of gonioscopically occludable angles was 6.4% (Foster et al., 1996).

The reasons for the higher prevalence of ACG in Asians are thought to be secondary to anatomical characteristics such as shorter axial lengths in Asians; however, all studies have not confirmed such racial anatomic differences (He et al.,2006). The increased prevalence of ACG in Asians may be due to possible physiological differences or multiple risk factors (Friedman et al.,2003) Because PACG appears to be more visually damaging, the risk of blindness associated with PACG is higher than for POAG (Foster & Johnson, 2001).

Clinical implications and the way forward

Knowledge of the prevalence of glaucoma and blindness due to it, coupled with awareness about the disease in the general population and effective tools to detect the disease despite limited resources are some of the important issues with respect to glaucoma as a public eye health problem. One of the important issues that have been highlighted with respect to combating glaucoma is the lack of trained Ophthalmologists. There are an estimated 20,000 Ophthalmologists in India, as per data available from the All India Ophthalmological Society, for a population of 1.34 billion people. Currently, most of the Ophthalmologists in India, as in the rest of the developing world, are located mainly in the urban areas (Thomas, 2012). There are about 150 Ophthalmologists in Nepal for a population of more than 29 million people (Badhu, 2012). The key to tackling glaucoma blindness will lie in training of not only Ophthalmologists but also health care workers who can refer high risk patients for

glaucoma to an eye care centre where adequate facilities for treatment exist.

Over the past decade, there have been tremendous efforts for combating cataract blindness, but unfortunately few efforts in Asian countries have been made to establish comprehensive eye care programs in the community that include management of glaucoma and other causes of blindness. Population-based screening, for eye diseases, is popular among government and non-governmental organizations. The publicity and numbers of people examined in such screening camps is a positive aspect and is useful in generating eye health awareness. However, most countries in Asia do not have the requisite infrastructure to categorize and follow up patients who test positive on various screening tests. In this scenario, the best approach to managing glaucoma in Asian countries may be case detection (Thomas, 2012). Every new patient who visits an Ophthalmologist should undergo a comprehensive eye examination which in addition to visual acuity testing and refraction should include slit lamp biomicroscopy, tonometry (preferably by applanation technique), gonioscopy, and a dilated fundus examination. It is imperative, that in order to achieve any degree of success glaucoma care must be integrated with the delivery of comprehensive eye care.

Conclusion

Glaucoma is now increasingly being recognized as a major cause of ocular morbidity that requires urgent attention. The disease pattern, its response to treatment, and ground realities differ among various Asian countries. There is a need for education about the disease amongst the general public so that they can seek care when needed. There is also an urgent need for continuing medical education and training of practicing Ophthalmologists. In the long term, these improvements need to be coupled with improvements of infrastructure. The challenges that lie ahead in improving the detection and treatment of glaucoma in Asia are daunting but not insurmountable.

References

Badhu BP. (2012). The burden of glaucoma in Nepal. Nepal J Ophthalmol; 4(7):1-2.

Dandona L, Dandona R, Mandal P et al. (2000). Angle-closure glaucoma in an urban population in Southern India. Ophthalmology; 107:1710–1716.

Foster PJ, Baasanhu J, Alsbirk PH et al. (1996). Glaucoma in Mongolia. A population-based survey in Hovsgol province, northern Mongolia. Arch Ophthalmol; 114:1235–1241.

Foster PJ, Johnson GJ. (2001). Glaucoma in China: how big is the problem? Br J Ophthalmol; 85:1277–82.

Friedman DS, Gazzard G, Foster P et al. (2003). Ultrasonographic biomicroscopy, Scheimpflug photography, and novel provocative tests in contralateral eyes of Chinese patients initially seen with acute angle closure. Arch Ophthalmol; 121:633–642.

He M, Foster PJ, Ge J et al. (2006). Prevalence and clinical characteristics of glaucoma in adult Chinese: a population based study in Liwan District, Guangzhou. Invest Ophthalmol Vis Sci; 47:2782–2788.

He M, Foster PJ, Johnson GJ et al. (2006). Angle-closure in East Asian and European people. Different diseases? Eye; 20:3–12.

Resnikoff S, Pascolini D, Mariotti SP, Pokharel GP (2008). Global magnitude of visual impairment caused by uncorrected refractive errors in 2004. Bull World Health Organ.; 86:63–70.

Sah RP, Badhu BP, Pokharel PK, Thakur SKD, Das H, Panda A (2007). Prevalence of glaucoma in Sunsari District of Eastern Nepal. Kathmandu Univ Med J; 5:343-8.

Sarkar S, Mardin C, Hennig A (2010). Profile of the glaucomas and interventions in a large eye care center in south-east Nepal. Nepal J Ophthalmol; 2:3-9.

Thomas R. (2012) Glaucoma in developing countries. Indian J Ophthalmol;60(5):446-450.

Quigley HA, Broman AT (2006). The number of people with glaucoma worldwide in 2010 and 2020. Br J Ophthalmol; 90:262–267.

Source of Conflict of Interest : None, financial support: none