Original Article

Three Years Clinical Audit of Patients Presenting in Cornea Clinic at a Tertiary Care

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Pak J Ophthalmol 2011, Vol. 27 No. 4

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Submission of paper
June' 2011

Acceptance for publication
November' 2011

Purpose: To determine the mode of presentation and aetiology of patients presenting in cornea clinic at a tertiary care teaching hospital in Karachi.

Material and Methods: This hospital based retrospective case study was conducted in Al-Ibrahim Eye Hospital Karachi from 1st January 2008 to 1st January 2011.

Results: A total of 2213 new patients (1347 males and 866 females) presented in cornea clinic. The average age at presentation was 59.5 years. The most common disease was Microbial Keratitis followed by Spheroidal degeneration in 230 (10.39%) and Keratoconusin 178 (8.01%) patients.

Conclusion: Corneal diseases are common in the population studied with Microbial Keratitis as the most common condition. Health-promotion strategies have to be developed and implemented to raise awareness about the causes and prevention of corneal blindness.

The transparent cornea is exposed to the external environment so it is more prone to injury, inflammation or infection. Any insult which disrupts the natural anatomy and physiology of the cornea results in corneal scarring or opacity. As cornea is a highly specialized structure, any inflammation or injury is likely to cause some permanent damage.

According to the WHO global data on the causes of blindness, corneal blindness is the 4thmajor cause of blindness worldwide. It affects 1.9 million people (5.1%) globally[1].

The prevalence and causes of corneal blindness vary from one region of the world to another. In the low income countries, corneal scarring due to vitamin A deficiency, measles infection, ophthalmianeo-natorum, and the effects of harmful traditional eye remedies are the major causes of corneal scarring[2].

Pakistan is a developing country. The national blindness and visual impairment survey reports the prevalence of blindness as 0.9%. Corneal scarring (11.8%) is the leading cause of blindness in Pakistan after cataract[3].

This clinical audit was performed to determine the mode of presentation and aetiology of patients presenting in cornea clinic at a tertiary care hospital in Karachi.

No community-based studies have been done to determine the prevalence and causes of corneal diseases in Pakistan. As a preliminary to community based study to identify the relative importance of known causes of corneal blindness as seen in Karachi Pakistan, the aetiology of cases seen in hospital was determined.

MATERIAL AND METHODS

A retrospective review of patients attending the cornea clinic of Al-Ibrahim Eye Hospital / ISRA Postgraduate Institute of Ophthalmology, Karachi,

Pakistan between January 2008 and January 2011was carried out. Information sought included age at presentation, sex and diagnosis of corneal disease. Statistical analyses was done, using proportions and percentages to summarize the data.

RESULTS

There were 2213 new patients (1347 males and 866 females) registered in the cornea clinic of Al-Ibrahim Eye Hospital (AIEH) during January 2008 till January 2011. The mean age at presentation was 59.5 years. The most common disease seen was Microbial Keratitis, followed by Spheroidal degeneration in 230 (10.4%) and Keratoconusin 178 (8%) patients. Two hundred and seventy eight patients were offered corneal grafting however only 69 keratoplasties were performed during these 3 years. For the purpose of description, the diseases are classified into various categories as shown in (Table 1).

DISCUSSION

Corneal blindness is a common cause of blindness. According to WHO, it is the fourth major cause of blindness in the world. Its epidemiology is complicated and diverse, and covers a wide range of infectious, inflammatory and degenerative eye diseases. The prevalence of corneal blindness also varies from country to country and even from one population to another, depending upon the availability and general standards of eye care[4].

The prevalence of blindness in Pakistan is 0.9%. Corneal blindness is the leading cause of blindness nationally after cataract and is responsible for 11.8%of the total blindness in Pakistan.

Our study showed a male preponderance, 60.86% as compared to 39.13% females. This trend is found in various developing countries where men have more chances of accident or trauma due to greater outdoor activity and they have comparatively easier access to health care due to various economic and social factors[5, 6].

In our study, Microbial Keratitis was found to be the most common presentation at cornea clinic. It is one of the most common causes of ocular morbidity in the developing world. Gonzales et al found that the annual incidence of corneal ulceration in Madurai District in South India was 113 per 100,000 people.[7] Over the counter sale and indiscriminate use of steroids and antibiotics is an important risk factor for Microbial Keratitis. It also leads to corneal super-infection, which is an important factor for the high prevalence of corneal blindness in developing countries[8].

Corneal opacities were another major cause of blindness in our study. Most corneal opacities were secondary to microbial keratitis in our hospital, which serve a predominantly rural and agricultural population. Gara and Rao in India found that corneal infections are responsible for a large proportion of corneal scar and that corneal scar was the most common indication (28.1%) for corneal transplant-tation, of which keratitis accounted for 50.5%[9].

Management of corneal abrasions at primary care levels within 48 hours has been demonstrated to be the best way to prevent corneal ulcers in low- and middle-income countries[10]. Communities need to be made aware about the principles of prevention of ocular infections. The ophthalmic technicians and lady health workers can help in the primary prevention of the disease. Educational strategies can reduce avoidable risk such as trauma, but treatment protocols are required to manage established disease[11].

Fuch's endothelial dystrophy (1.3%) was the most prevalent corneal dystrophy in our study. Another study that looked at the prevalence of corneal dystrophies in various races in USA indicated that endothelial dystrophies in Asian subjects account for 2% of the total dystrophies[12]. Geographical differences are present in the prevalence of corneal dystrophies worldwide. A report from Iceland indicated that macular corneal dystrophy accounts for one third of corneal transplants[13]. Another report from the Czech republic posited that posterior polymorphous corneal dystrophy was one of the most prevalent corneal dystrophies[14].

The prevalence of Keratoconus in our clinic was 8.1%. Another hospital based study in Singapore found out bilateral Keratoconus in 56%[15]. A similar trend is found in USA where 59% patient had Keratoconus where as in India, the prevalence was 2.3%[16,17].

Among the corneal degenerations, Spheroidal degeneration was the most prevalent with 10.39%. It is higher when compared to a South African population[18]. This may be due to the fact that our hospitals serve a predominately rural population, which mostly stay outdoors.

Table 1: Classification of diseases and their frequency in cornea clinic at AIEH, Jan 2008-Jan 2011.

	Diseases	Patients n (%)
Infectious	Viral Keratitis	310 (14.01)
	Bacterial Keratitis	275 (12.43)
	Fungal keratitis	94 (4.25)
	Acanthamoeba keratitis	20 (0.90)
	Trachoma	8 (0.36)
Nutritional	Xerophthalmia	6 (0.27)
Auto immune	Mooren's ulcer	8 (0.36)
	Peripheral ulcerative keratitis	4 (0.18)
	Steven Johnson's syndrome	7 (0.32)
Degeration	Crocodile Shagreen	141 (6.37)
	Spheroidal degeneration	230 (10.39)
	Band keratopathy	74 (3.34)
	Salzman Nodular	7 (0.32)
Dystrophy	Fuch's endothelial dystrophy	29 (1.31)
	Lattice	7 (0.32)
	CHED	4 (0.18)
	Macular	14 (0.63)
	Granular	7 (0.32)
	Gelatinous	1 (0.05)
	Cogan's microcystic	8 (0.36)
	Infectious crystalline	2 (0.09)
	Reis Buckler	2 (0.09)
Ectasia	Keratoconus	178 (8.04)
	Keratoglobus	1 (0.05)
	Pellucid marginal degeneration	1 (0.05)
Opacity	Post traumatic	86 (3.89)
	Post microbial keratitis	157 (7.09)
	Vascularised	44 (1.99)
	Exposure keratitis	7 (0.32)
	Failed PKP	18 (0.81)
Bullous keratopathy	Acute hydrops	32 (1.45)
	Postoperative	95 (4.29)
	Aphakic	23 (1.04)
	Trauma	79 (3.57)
	Descematocoele	44 (1.99)
Miscellaneous	VKC	58 (2.62)
	Phylectunosis	24 (1.08)
	Dry eyes	46 (2.08)
	Chemical burns	43 (1.94)
Total		2213 (100)

The most common cause of bullous keratopathy was post surgical. This finding is similar to the study in Japan where pseudophakia or aphakia were the leading causes of bullous keratopathy[19].

Five cases of bilateral blindness were found in our study. Sixty nine penetrating keratoplasties were performed at our hospital although we offered this treatment to 278 patients. The indication and outcome of penetrating keratoplasty at our hospital has been published elsewhere[20]. The reason why most patients refused surgical option was high cost and persistent follow ups required post operatively.

Our study has the following limitations. It was a retrospective one, with relatively small number of patients. The patients belonged to a heterogeneous group and were not standardized. The findings of our study cannot be extrapolated to the general population of Pakistan.

Due to the difficulty of treating corneal blindness once it has occurred, public health prevention programmes are the most cost-effective means of decreasing the global burden of corneal blindness[21]. There is a need for community based study on the aetiology of corneal blindness and programme for prevention of the major causes.

CONCLUSION

Corneal blindness can result from a wide variety of causes, depending upon the community and strata of the population. Corneal diseases are common in the population studied with Microbial Keratitis as the most common condition. Health-promotion strategies have to be developed and implemented to raise awareness about the causes and prevention of corneal blindness in developing countries like Pakistan.

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