CAUSES OF BLINDNESS AMONG PATIENTS IN SOUTH JORDAN

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ABSTRACT

Objectives: To identify the major causes of blindness in southern part of Jordan among patients presenting to the ophthalmology clinics, and to classify these causes according to certain age groups.

Methods: This study was conducted at Prince Ali and Prince Zaid Hospitals during three years period between May 2001 and April 2004. Using the World Health Organization criteria for definition of blindness.

Results: The major cause of blindness was found to be cataract. It was seen in 49.8% of all blind patients. Other causes included glaucoma, and diabetic retinopathy, which were seen in 15.7% and 13.6% of the patients respectively. Glaucoma was the leading cause of blindness in the young age group, while cataract was the most common cause of blindness in middle and old age groups.

Conclusion: Our study showed that cataract, glaucoma, and diabetic retinopathy were the major causes of loss of vision. The late presentation of cataract patients, poor compliance of glaucoma patients and the lack of knowledge and ignorance of diabetic patients worsen the problem. Therefore, we advise to adopt a national ophthalmic educational program in order to decrease the incidence of blindness.

Key words: Blindness, Cataract, Glaucoma, Diabetic retinopathy.

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Introduction

The World Health Organization defines blindness as a visual acuity of less than 3/60 in the better eye with the best correction [(1)]. Blindness is a large public health, social, and economic problem in both developed, and developing countries. There are several studies on the prevalence and causes of blindness from different communities [(2-8)]. The prevalence of blindness in developing countries is 10-40 times higher than in developed countries, with the majority of blind people residing in the developing nations of Africa, Asia, and Latin America [(2)]. Some 90% of the blindness in the world occurs in developing countries [(9)]. The global magnitude of blindness is estimated at 50 million people, and is expected to increase to 75 million by the year 2020, unless significant efforts are made to prevent this [(10)]. The magnitude of vision loss has been steadily increasing worldwide for a number of reasons; increasing life expectancy and population growth in the developing world are the most important contributors to this trend [(10)]. Almost 80% of global blindness is avoidable [(10)]. It is important to deal correctly with preventable and curable causes of blindness in order to decrease the prevalence of blindness.

In this study, we identified the causes of blindness in two major military hospitals in southern Jordan and classified them according to certain age groups.

Methods

This hospital-based study was conducted prospectively during three years period. It was carried out at Prince Ali (Karak) and Prince Zaid (Tafila) hospitals which are two major military hospitals located in southern part of Jordan during the period between May 2001 and April 2004. A complete history including age, sex, ocular and medical history, compliance to

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ocular medications, commitment to regular follow up visits, previous eye surgeries, and family history was taken from all patients. Ophthalmologic examination included Snellen's visual acuity testing, anterior segment examination via slit lamp, intraocular pressure measurement via Goldmann's applanation tonometer, refraction under cycloplegia followed by post cycloplegic testing, and posterior segment examination after mydriasis via indirect ophthalmoscope. The patient was considered blind if his/her best-corrected visual acuity was less than 3/60 (or counting fingers at three meters) in the better eye according to World Health Organization definition of blindness. Patients were divided into three groups according to their age in order to identify the causes of blindness in each group: Below 30 years, 30-60 years, and above 60 years.

Results

A total of 287 blind patients were examined. The major cause of blindness in all patients was cataract. It was seen in 49.8% of our patients. It was followed by glaucoma in 15.7% and diabetic retinopathy in 13.6% (Table I). Multi-factorial blindness was seen in 23(8.0%) patients. The mean age of our patients was 52.6 years, with females being more than males in a ratio of 1.2: 1 (157 females and 130 males).

The most common cause of blindness in the younger age group (below 30 years) was glaucoma (28.3%) followed by cataract and corneal opacities (26.4% and 13.2% respectively), while cataract was the leading cause of blindness in both middle (57.3%) and old (53.4%) age groups (30-60, and above 60 years), followed by diabetic retinopathy (13.6% and 16.8% respectively) and glaucoma (13.6% and 12.2% respectively), as shown in Table II.

Discussion

Blindness is the functional end stage of many eye disorders. The occurrence and course of these disorders differs markedly throughout the world, and this is reflected by the differences in the prevalence of blindness and visual impairment [(11)]. International comparison of these data may help to provide insight into the risk factors associated with the blinding eye disorders and facilitates evaluation of therapeutic modalities and prevention programs.

The leading cause of blindness in this study was cataract (49% of the patients) followed by glaucoma (15%) and diabetic retinopathy (13%). A study done at King Hussein Medical Center in Amman showed cataract, diabetic retinopathy, and glaucoma to be the leading three causes of blindness [(12)]. Like in other developing countries, cataract constitutes the main cause of blindness and it is more prevalent in the rural population than in the urban population [(3)]. Thylefors *et al* [(1)] found the main causes of blindness in the eastern Mediterranean countries to be: cataract 45.2%, trachoma 25.7%, glaucoma 5.7%, and others 23.4%. The main causes of blindness in a number of countries are shown in table 3 for comparison. Keeffe *et al* [(13)] reported that the transition from where cataract predominates as a major cause of vision loss to one where age related retinal disease accounts for most vision loss results from both high cataract surgery rates in the developing countries but also the aging of the population. We think that the relative low incidence of blindness caused by cataract in western countries is attributed to easy access to surgery, early surgery, with fewer complications. In our community, especially in the rural areas, cataract patients are used to present late due to the false belief that cataract should only be extracted when it becomes mature. This false belief should be discouraged in order to decrease the incidence of blindness attributed to cataract.

Glaucoma was the second commonest cause of blindness being evident in 15% of our patients. It was the most common cause of blindness in patients younger than thirty years. Many patients with glaucoma present late as they are not aware of having it [(13)]. Some patients were not committed to their regular follow up visits, while some others were not compliant to their ocular medications due to poor understanding of the disease process or from the unavailability of expensive eye drops. We think that a screening program for patients at high risk of developing glaucoma is important in preventing blindness from this irreversible blinding disorder. Diabetic retinopathy contributed 13.59% of the causes of blindness and was the second commonest cause in middle and old age. Blindness caused by diabetes mellitus is considered to be preventable and curable if promptly dealt with. Patients with diabetes should be referred to the ophthalmologist as soon as they are discovered for regular follow up and to detect and manage any abnormality before developing advanced diabetic retinopathy. A substantial number of patients don't believe in the benefits of laser treatment, and others find it difficult to travel long way to receive laser treatment if it is not available in their region. This lack of knowledge and ignorance of the diabetic patients constitute a major cause of loss of vision, which can be reduced by educating the patients about the complications of diabetes and the benefits of laser treatment.

Thirteen patients in our study were blind due to corneal opacities; seven patients secondary to corneal dystrophies, three trachoma, two-post infection, and the last patient had a history of trauma in a mine explosion. Trachoma is uncommon in Jordan, Lebanon, and Syria but is still highly prevalent in the rural communities of Iraq, Saudi Arabia, United Arab Emirates, Qatar, and Oman [(2)], and remains the second leading cause of blindness in Africa [(14)].

Refractive errors were seen in eleven patients; seven patients had keratoconus, and four had high myopia. Blindness caused by keratoconus is curable with penetrating keratoplasty. National program for donation

of organs after death including the cornea had already been started in our country.

About 1.7% of the causes of blindness was due to age related macular degeneration with the majority being over 60 years. This is less prevalent than in western countries [5,6,9]. There are three factors that may contribute to the low prevalence of macular degeneration [2]. First, the lifespan of individuals living in eastern Mediterranean countries is less than that of those living in western countries. Second, early onset of cataract may prevent light related damage of the macula. And third, the retinal pigment epithelium of dark skinned individuals may protect against macular damage. Other rare causes of blindness found in our study were optic atrophy, Stargardt's macular dystrophy, uveitis, retinopathy of prematurity, cortical blindness, and retinal detachment (see Table I).

The main causes of blindness in patients less than thirty years of age were glaucoma, cataract, corneal opacities, refractive errors, and diabetic retinopathy. There are several studies on blindness in children [4-7], with retinal degeneration, congenital cataract, congenital glaucoma, and corneal scars being the most common etiologies. Blindness in childhood has far reaching implications for the affected child and family, and throughout life it profoundly influences educational, employment, personal, and social aspects. Thus, the control of childhood blindness has been identified as a priority by the World Health Organization's global initiative for the elimination of avoidable blindness by the year 2020 [15].

Understanding the causes of blindness, especially the preventable and the curative causes, is important in decreasing the prevalence of blindness. This requires early referral of candidate patients from general practitioners to the ophthalmologist, and adopting a national ophthalmic educational program about the causes and prevention of blindness.

Table I. Causes of blindness in all patients

Cause	Number of patients	Percentage of Patients (%)
Cataract	143	49.83
Glaucoma	45	15.68
Diabetic retinopathy	39	13.59
Combined	23	8.01
Corneal opacities	13	4.53
Refractive errors	11	3.83
ARMD*	5	1.74
Optic atrophy	3	1.05
Others**	5	1.74
Total	287	100

*Age related macular degeneration.

**Includes Stargardt's macular dystrophy, uveitis, retinopathy of prematurity, cortical blindness, and retinal detachment

Table II. Causes of blindness according to age group

Cause	Number of patients (according to age group)		
	<30 years	30-60 years	>60 years
Cataract	14	59	70
Glaucoma	15	14	16
Diabetic retinopathy	3	14	22
Combined	6	7	10
Corneal opacities	7	3	3
Refractive errors	5	4	2
ARMD†	0	1	4
Optic atrophy	1	0	2
Others	2	1	2
Total	53	103	131

†Age related macular degeneration

Table III. Main causes of blindness in selected countries (All ages)

Country [Ref]	Main causes of blindness (%)		
	First	Second	Third
Lebanon [3]	Cataract 41.3	Refractive error 12.6	Corneal opacities 7.5
Japan [4]	Glaucoma	Cataract	R. P. degeneration◈
Ireland [5]	Macular degeneration 16	Glaucoma 16	Cataract 11
Netherlands [6]‡	ARMD†	Glaucoma	Cataract
Scotland [6]‡	ARMD†	Glaucoma	Cataract
Oman [8]	Cataract 30.5	Trachoma 23.7	Glaucoma 11.5
Hong Kong [15]⁂	Cataract 51.7	Macular degeneration27.1	High myopia 10.3
South India [16]●	Cataract 64.4	Refractive errors 23.3	ARMD† 2.9
Malaysia [17]	Cataract 39.1	Retinal diseases 24.5	Refractive errors 4.1
Turkmenistan [18]●	Cataract 54	Glaucoma 25	___
Tonga [19]	Cataract 68.4	Corneal opacities 15.8	Phthisical eye 10.5
Zaire [20]	Cataract 54	Glaucoma 30	Uveitis 6
South Africa [21]	Cataract 55	Trachoma 10	Glaucoma 6
Kenya [22]	Cataract 38	Trachoma 18.7	Glaucoma 8.6
Australia [23]☼	AMD†	Cataract	Glaucoma

‡ Adults only ◈Retinal pigment degeneration †Age related macular degeneration
Age of the population study (years): ⁂ 60+, ●50+, ☼ 40+

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