

Causes of Visual Impairment and Blindness among Elderly Patients attending Ophthalmology Clinic at King Hussein Medical Center

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ABSTRACT

Objectives: To investigate the causes of visual impairment and blindness among elderly patients attending ophthalmology clinic at King Hussein Medical Center.

Methods: A prospective study that was conducted at King Hussein Medical Center of the Royal Medical Services during the period between January 2010 and January 2012. Inclusion criteria were patients older than 60 years of age attending ophthalmology clinic for any complaint with best corrected visual acuity of less than 6/18 in the better eye. Patients were classified into two groups: first group for patients with visual impairment defined by best corrected visual acuity of less than 6/18 and better than 3/60 in the better eye, and second group for blind patients with best corrected visual acuity of less than 3/60 in the better eye. Ophthalmologic examination included best corrected visual acuity, anterior segment examination via slit lamp, intraocular pressure assessment by applanation tonometry and posterior segment examination via +78 lens. Causes of visual impairment and blindness were investigated for all patients.

Results: One thousand and two hundred and forty patients were enrolled in the study. Nine hundreds and eighty nine patients (79.8%) had visual impairment and 251 patients (20.2%) were blind. The most common cause of visual impairment was cataract followed by diabetic retinopathy, glaucoma and age related macular degeneration. For patients with blindness, cataract was the commonest cause followed by age related macular degeneration. Other causes included corneal and myopic degenerations, optic nerve disease and retinal and vascular pathologies.

Conclusions: The most common causes of visual impairment and blindness in elderly patients attending ophthalmology clinic at King Hussein Medical Center are treatable with good potential of visual recovery.

Key words: Cataract, Blindness, Diabetic retinopathy

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Introduction

Visual function has important role in the quality of life especially for older individuals.⁽¹⁻²⁾ Elderly patients have increased risk of developing chronic illnesses that may affect their life style

and necessitate physical and health care. Their condition may dramatically worsen if they develop visual impairment and blindness.⁽³⁾ In Western countries, visual impairment and blindness are common in elderly population with

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clinically significant increase in the prevalence of visual impairment with advancing age.⁽⁴⁻⁶⁾ Most of the cases are attributed to age related macular degeneration.⁽⁷⁻⁸⁾ In our area, we have less life expectancy than in the Western community; therefore the causes of visual impairment differ. It is important to know the cause of blindness as some of the illnesses are treatable such as cataract and some of them if treated at early stage blindness can be prevented such as glaucoma and diabetic retinopathy. Other causes can be simple and treated by glasses such as presbyopia. Age-related macular degeneration remains the main cause of irreversible loss of vision in the elderly in the Western countries.⁽⁹⁾ With recent advances in treatment options, blindness can be prevented in some cases. The aim of our study was to investigate the causes of visual impairment and blindness among elderly patients in Jordan. Amman city was taken as an example where 40% of Jordanian population lives. In addition, King Hussein Medical Center is considered as a tertiary referral center for patients from different cities in Jordan.

Methods

A prospective study that was conducted at King Hussein Medical Center of the Royal Medical Services during the period between January 2010 and January 2012. Approval of the ethical committee was taken. Inclusion criteria were patients older than 60 years of age attending ophthalmology clinic for any complaint with best corrected visual acuity of less than 6/18 in the better eye. Patients were classified into two groups: first group included patients with visual impairment defined by best corrected visual acuity of less than 6/18 and better than 3/60 in the better eye, and second group included blind patients with best corrected visual acuity of less than 3/60 in the better eye (according to World Health Organization of visual impairment and blindness).⁽¹⁰⁾

Ophthalmologic examination included best corrected visual acuity by Snellen's chart, anterior segment examination via slit lamp biomicroscopy, intraocular pressure assessment by Goldmann's applanation tonometry and posterior segment examination slit lamp biomicroscopy using +78 non-contact lens. Causes of visual impairment and blindness were

investigated for all patients. The main cause of visual impairment or blindness was considered to be the cause of visual loss. If the main cause of visual loss was not clear then mixed diagnoses were considered. Descriptive statistical methods (frequency, percentage) were used to describe the study variables.

Results

One thousand and two hundred and forty patients were enrolled in the study. Male to female ratio was 1.1:1. Age range was 60.3 years to 89.7 years. Nine hundreds and eighty nine patients (79.8%) had visual impairment and 251 patients (20.2%) were blind according to WHO criteria of visual impairment and blindness. Cataract was the main cause of visual impairment and blindness (51.7% and 9.8% respectively, Table I). Table II shows number of patients with visual impairment and blindness according to age, gender and their illness. The second cause of visual impairment was diabetic retinopathy followed by glaucoma and age related macular degeneration (Table III) whereas the later was the second cause of blindness (Table IV). Other causes included corneal and myopic degenerations, optic nerve disease and retinal and vascular pathologies.

Discussion

Our study was a hospital based study that was conducted at King Hussein Medical Center which is a tertiary referral center and receives patients from all over Jordan. This makes the results of our study almost similar to a population based one rather than a hospital based one. However, we still expect to find some differences for incidence of visual impairment and blindness in patients attending a clinic from those in the general population. The presence of medical illness was not considered an exclusion criterion in our study. For example, diabetes mellitus was considered a major cause of blindness either by causing cataract or diabetic retinopathy. The main cause of visual impairment or blindness was considered to be the cause of visual loss. If the main cause of visual loss was not clear then mixed diagnoses were considered. Other causes secondary to medical illness included vascular insults related to hypertension and hyperlipidemia.

Table I: Distribution of patients according to pathology

Pathology	Patients with visual impairment		Patients with blindness	
	Number	%	Number	%
Cataract	641	51.7	121	9.8
Diabetic retinopathy	87	7	22	1.8
Glaucoma	84	6.8	20	1.6
ARMD*	71	5.7	69	5.6
Others**	43	3.5	9	0.7
Mixed pathology	63	5.1	10	0.8
Total	989	79.8	251	20.2

* Age related macular degeneration ** included corneal and myopic degenerations, optic nerve disease and retinal and vascular pathologies

Table II: Number of visually impaired or blind patients according to age, gender and illness

Disease Category	60-69 years				70-79 years				Above 80 years				Total				
	VI*	B**	T‡	%	VI	B	T	%	VI	B	T	%	VI	B	T	%	
Males	Cataract	232	43	275	22.2	92	20	112	9.0	12	1	13	1.0	336	64	400	32.3
	DR †	32	8	40	3.2	14	4	18	1.5	2	0	2	0.2	48	12	60	4.8
	Glaucoma	31	6	37	3.0	13	3	16	1.3	2	1	3	0.2	46	10	56	4.5
	ARMD ‡‡	17	21	38	3.1	15	10	25	2.0	7	6	13	1.0	39	37	76	6.1
	Others	16	3	19	1.5	6	2	8	0.6	1	0	1	0.1	23	5	28	2.3
	Mixed	20	3	23	1.9	8	2	10	0.8	4	0	4	0.3	32	5	37	3.0
	Total	348	84	432	34.8	148	41	189	15.2	28	8	36	2.9	524	133	657	53.0
Females	Cataract	208	42	250	20.2	74	13	87	7.0	23	2	25	2.0	305	57	362	29.2
	DR	24	7	31	2.5	8	3	11	0.9	7	0	7	0.6	39	10	49	4.0
	Glaucoma	27	6	33	2.7	9	3	12	1.0	2	1	3	0.2	38	10	48	3.9
	ARMD	22	22	44	3.5	7	6	13	1.0	3	4	7	0.6	32	32	64	5.2
	Others	14	2	16	1.3	5	2	7	0.6	1	0	1	0.1	20	4	24	1.9
	Mixed	22	2	24	1.9	7	3	10	0.8	2	0	2	0.2	31	5	36	2.9
	Total	317	81	398	32.1	110	30	140	11.3	38	7	45	3.6	465	118	583	47.0
Total	665	165	830	66.9	258	71	329	26.5	66	15	81	6.5	989	251	1240	100	

* Visual impairment † Blindness ‡ Total † Diabetic retinopathy ‡‡ Age related macular degeneration

Table III: Distribution of visual impairment causes

Disease category	Number of patients	%
Cataract	641	64.8
Diabetic retinopathy	87	8.8
Glaucoma	84	8.5
Age related macular degeneration	71	7.2
Others	43	4.3
Mixed	63	6.4
Total	989	100

Table IV: Distribution of blindness causes

Disease category	Number of patients	%
Cataract	121	48.2
Diabetic retinopathy	22	8.8
Glaucoma	20	8
Age related macular degeneration	69	27.5
Others	9	3.6
Mixed	10	4
Total	251	100

Causes of visual impairment and blindness differ between age groups. For young patients common causes include refractive errors and related disorders such as amblyopia and retinal problems, diabetic retinopathy, optic nerve disease and hereditary problems such as retinitis pigmentosa.⁽¹¹⁾ In elderly patients, cataract and age related macular degenerations are the leading cause of blindness worldwide with the later being common in Western countries.⁽¹²⁾ Elderly patients

have more risk to develop chronic medical illnesses and may require special medical care. With visual impairment, they may be rendered handicapped resulting in physical and social trauma and functional impairment.⁽¹³⁾ It is important to investigate the cause of visual impairment as many conditions could be treatable if detected at an early stage. In our series, cataract was the leading cause of visual impairment representing 51.7% of total patients

(Table I). It was followed by age related macular degeneration, glaucoma, and diabetic retinopathy occurring in 7%, 6.8% and 5.7% respectively. Mixed pathology occurred in 5.1%. Other causes of visual impairment occurred in 43 cases (3.5%) that included corneal pathology 17 patients (1.4%), myopic degenerations 14 patients (1.1%), optic nerve disease seven patients (0.6%), vascular pathologies four patients (0.3%) and retinal detachment in one patient (0.1%). Regarding patients with blindness, cataract formed nearly half of patients. Age related macular degeneration was seen in slightly more than quarter of the cases. Diabetic retinopathy and glaucoma occurred in 9% and 8% of blind patients respectively (Table IV). Nine patients (0.7%) had other causes that included optic nerve pathology (3 patients), retinal detachment (3 patients), corneal pathology (2 patients) and myopic degeneration in one patient. The fact that cataract is a treatable disease and vision can be restored explains why it contributes more to visual impairment group than to blindness group whereas age related macular degeneration contributes more to blindness group as there are some types that are refractory to treatment.⁽¹⁴⁾

There are controversies in literature regarding the main cause of visual impairment and blindness in elderly population. This could be partly attributed to the difference in age groups studies as some studies included patients age above 50 years while others included patients above 75 years. Other reason of controversy is the definition of visual impairment and blindness used. Some studies used WHO classification as we did while others used USA classification which defines visual impairment as best acuity of less than 6/12 and better than 6/60 and defines blindness as visual acuity of less than 6/60.⁽⁷⁾

Local hospital based studies like our study done in Southern and Northern Jordan found cataract to be the leading cause of blindness followed by diabetic retinopathy and glaucoma.⁽¹⁵⁻¹⁶⁾ A study done in Saudi Arabia showed that refractive error is the leading cause of visual impairment followed by the triad of cataract, diabetic retinopathy and glaucoma.⁽¹⁷⁾ Evans *et al.* found age related macular degeneration contributing to 52.9% of visual loss followed by cataract in 35.9%.⁽¹⁸⁾ The Rotterdam study showed that cataract is the leading cause of visual

impairment while age related macular degeneration is the leading cause of blindness.⁽¹⁹⁾ Examples of studies that found cataract contributing more to visual impairment included the Baltimore study,⁽²⁰⁾ Blue Mountains Eye study,⁽²¹⁾ and Rotterdam study.⁽¹⁸⁾ Examples of studies that found age related macular degeneration contributing more to visual impairment included MRC study,⁽⁵⁾ See study,⁽⁷⁾ and Melbourne study.⁽⁸⁾ Regarding blindness, MRC, See and Blue Mountains Eye study found age related macular degeneration to be the commonest cause followed by glaucoma. Beaver Dam,⁽⁶⁾ Melbourne,⁽⁸⁾ and Rotterdam⁽¹⁹⁾ studies supported that cataract are causing less causes of blindness. In our series, cataract is still the leading cause of blindness in our elderly patients though causing less contribution to blindness group than visually impaired group. This can be explained by the fact that many cataract patients in our country present late until they reach the stage of blindness.

In addition, life expectancy in our country is less than in Western countries; hence less age related macular degeneration patients. In early 2007, the United Nations Department of Economic and Social Affairs, Population Division, released World Population Prospects, the 2006 Revision which shows life expectancies in different countries. The life expectancy in Jordan was 72.5 years and was preceded by 88 countries.⁽²²⁾ Age related macular degeneration is considered a disease of Western countries as it risks increases with higher life expectancy.⁽¹²⁾ Table II shows the number of visually impaired and blind patients according to their age, gender and illness. Regarding male patients older than 80 years, age related macular degeneration is a main cause of blindness and visual impairment. In females older than 80 years, age related macular degeneration and diabetic retinopathy comes in the second rank after cataract as causes of blindness and visual impairment (Table II).

In literature, the Rotterdam study showed that persons younger than 75 years, myopic degeneration and optic neuropathy were the most important causes of impaired vision and for persons aged 75 years or older; age related macular degeneration was the major cause of blindness, whereas cataract predominantly caused visual impairment.⁽¹⁹⁾

Conclusion

Cataract is the most common cause of visual impairment and blindness in elderly patients in our hospital. It is a treatable condition with good potential of visual recovery. Other causes include glaucoma, diabetic retinopathy and some types of age related macular degeneration which can be better treated if discovered at an early stage.

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