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ORIGINAL ARTICLE

Epidemiology of cataract surgery in Noor Ophthalmology Clinic of Birjand in 2015-2016

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Abstract

Introduction: Cataract is a common disease across the world and the most common cause of vision loss and blindness. Several factors contribute to the disease, the most important of which is aging. Other contributors include sex, smoking, sunlight, place of residence, family, job, and systemic disease. This study was aimed to enquire into the epidemiology of cataract cases referred to Noor Ophthalmology Clinic of Birjand from March 2015 to February 2016.

Methods: In this descriptive and cross-sectional study, the patients with cataract admitted to Noor Ophthalmology Clinic in Birjand from March 2015 to February 2016, who were available, were selected. A total of 386 patients were selected. Information was collected by a checklist concerning variables such as age, sex, smoking history, diabetes, location, separate left and right eye, family, job, and cataract diagnosis. Their records were collected, and the obtained data were analyzed by SPSS software (V: 16). The significant level was set at $P<0.05$.

Results: The majority of the 386 cases under study were women (56.5%). The mean age of patients was 67.4±2.9 years. Cataract was more commonly seen in the right eye, diabetes (13.50%), hypertension (21.1%), and urban (31.9%) and rural (68.1%) areas. The prevalent cataract types were respectively nuclear cataract, cortical cataract, and sub-capsular cataract.

Conclusions: As cataract is one of the common eye diseases which is of more prevalence in elderly age group (50-79) and housewives, special attention should be given to these groups of population in order to prevent and control cataract.

Key Words: Cataract; Epidemiology; Surgery

Introduction

Cataracts involve clouding of the eye lens leading to decreased vision. They can affect one or both eyes and often develop slowly. Among the symptoms are faded colors, halos around light, blurry vision, trouble seeing at night, and trouble with bright lights [1]. This can lead to trouble driving, reading, or recognizing faces [2]. Poor vision can also result in increased risks of falling and depression [3]. Cataracts account for half of blindness and 33% of visual impairment across the globe [4, 5].

Cataracts arise most commonly by aging but may also happen from trauma or radiation exposure. They may be present from birth or can occur after eye surgery for other causes [1, 6]. Risk factors consist of diabetes, tobacco smoking, prolonged exposure to sunlight, and alcohol consumption. Either yellow-brown pigment or

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clumps of protein can be deposited in the lens so that the transmission of light to the retina at the back of the eye may be reduced. Furthermore, diagnosis is through eye examination [1].

To prevent, one should wear sunglasses and avoid smoking. The symptoms may be improved in no time using eyeglasses. If this is not helpful, the only effective treatment will involve surgery so that the cloudy lens can be removed and replaced by an artificial lens. Surgery is needed only where the cataracts are causing problems [1]. Life quality can generally enhance upon surgery [7]. However, cataract surgery is not in easy reach in several countries, which is especially true for women, residents in rural areas, and the illiterate [6, 8].

Cataracts account for nearly 20 million cases of blindness on the global scale [6]. They are the cause of around 5% of blindness in the United States and approximately 60% of blindness in different parts of South America and Africa [8]. Blindness from cataracts takes place in about 10 to 40 per 100,000 children living in the developing countries and 1 to 4 per 100,000 children from the developed countries [9]. Age plays a role in incidence of cataracts. Roughly half of the people in the United States will suffer from cataracts by the age of 80 [1].

Age-related cataracts are the cause to 51% of global blindness, nearly 20 million people [10]. Worldwide, cataracts result in moderate to severe disability in 53.8 million (2004), of whom 52.2 million reside in low and middle income countries [11].

In several countries, surgical services are not sufficient, and cataracts are the main cause of blindness [10]. Even where surgical services are at hand, low vision associated with cataracts may still be frequent because of long waits for, and barriers to, operation, such as expenses, lack of information, and problems with transportation.

Age-related lens changes in the United States have been reported as 42% between the ages 52 and 64 [12], 60% between the ages 65 and 74 [13], and 91% between the ages 75 and 85 [12]. Cataracts affect approximately 22 million American citizens aged 40 and older. By age 80, over half of all Americans suffer from cataracts. Direct medical costs arising from cataract treatment are estimated to be annually around $6.8 billion [14].

Given that the population is aging in Iran and as aging is a major cataract risk factor, it is important to have sufficient information about cataract prevalence in areas with more sunlight, UV rays, and trauma. Birjand is in the desert and has considerable sunlight and UV rays that can cause cataracts. On the other hand, most of the people live in villages and their occupation is agriculture, which increases risks of trauma and exposure to sunlight.

This study was aimed to determine the prevalence of cataract cases in the region and to examine the epidemiological evidence of cataract patients referring to Noor Ophthalmology Clinic of Birjand from March 2015 to February 2016.

Methods

This descriptive and cross-sectional study was performed on 386 patients in Birjand district. From March 2015 to February 2016, we interviewed 386 patients in the ophthalmology department of Noor clinic in Birjand. All the patients were referred for cataract surgery and attended the ophthalmology clinic for scheduled preoperative examination.

An eye examination and a detailed questionnaire provided data on cataract and possible risk factors. Ophthalmic examination included refraction, best corrected visual acuity, intraocular pressure measurement, slit lamp assessment after pupil dilatation with one drop of tropicamide (1%), and fundus examination. The questionnaire was completed by trained interviewers and covered demographic, socioeconomic, somatometric and lifestyle variables as well as information on medical history and use of medication. Written informed consent was obtained from study participants. Data were analyzed in SPSS, version 16. Descriptive statistics were reported in frequency and percentage.

Results

The majority of the 386 participants were women (56.50%). The mean age of patients was 67.4±2.9 years. The disease was more commonly seen in the right eye, diabetes (13.50%), hypertension (21.1%), urban (44.50%) and rural (56.5%) and the most common clinical referrals decreased visual acuity was counting fingers. The most prevalent types of cataract consisted respectively of nuclear cataract, cortical cataract, and sub-capsular cataract. Of these, 328 cases (84.9%) had age-related cataract (aging), making it the most common cause of cataract.

In our study, the most common age of onset of cataract was 70 (43.50 %) years. The most common type of cataract was nuclear cataract with 158 cases (40.93 %), followed by sub-capsular with 137 cases (35.50 %), and cortical cataract with 91 (23.57 %) cases, respectively.

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In our study, the underlying diseases were diabetes (52 cases; 13.5 %), and hypertension (85 cases; 22.1 %). In our study, 197 (51%) of the right eye and 189 (49%) of the left eye had cataract diseases. The study showed that jobs with the most prevalent cataract cases in men were in agriculture and building workers, while the most prevalent in women was housekeeping.

Table1: Distribution of demographic characteristics

Variables	Groups	Frequency	Percent
Gender	Male	168	43.5
	Female	218	56.5
Age	<50	41	10.6
	50-59	51	13.3
	60-69	126	32.6
	70-85	168	43.5
Residency	Urban	172	44.5
	Rural	214	56.5

Table 2: Distribution of type of cataract

Type	Frequency	Percent
Nuclear cataract	108	40.93
Sub capsular cataract	137	35.5
Cortical cataract	91	23.57

Table 2: Distribution of Occupation

Type	Frequency	Percent
Industrialist/ Farmer	139	36.01
Employee	42	10.88
Executive/Military/Artist	19	4.9
Housewife	186	48.2

Discussion

This study aims to provide a picture of the characteristics of age, sex, occupation, type of cataract, and a systemic disease accompanied by cataract.

The most common type of cataracts were nuclear cataract with 158 cases (40.93%), followed by sub-capsular cataract with 137 (35.50 %) cases, and cortical cataract with 91 (23.75%) cases.

In the study by Postor and Valeroin (2007), persons who were exposed to sunlight at work had double the risk of developing cataract, especially nuclear and posterior sub-capsular cataract types [15]. In addition, compared with no exposure, exposure to sunlight at the beach for half an hour or more on the average was associated with over three-fold increase in the risk of all types of cataract. This association was statistically significant for nuclear cataract [15].

They found strong associations between several factors and nuclear cataract mostly. Regarding cortical and PSC cataracts, associations were positive. In some cases, however, the associations were non-significant as a result of the smaller sample sizes and the wider confidence intervals [15-17].

In our study, most of the participants were rural people and were exposed to sunlight. In fact, 214 (55.5 %) patients were rural and 172 (44.50 %) were urban, a finding which is consistent with results of Leske et al's study (2002)[18].

In our study, 197 (51%) cases of the right eye and 189 (49%) of the left eye had cataract disease. In this area, there is no similar study.

A case–control research conducted in Australia (Neale et al. 2003) and the NHS study (Moeller et al. 2004) have also found a positive relationship between nuclear cataract and sunlight exposure (19, 20). However, other case–control studies e.g., the Italian-American Cataract Study Group 1991 [21] and Age-Related Eye Disease Study Research Group (2001)[22] found a positive association between cortical cataract and sunlight exposure. In European populations, few epidemiological studies have been performed.

In our study, the number of cataract patients was higher in women, i.e., 56.50% women versus 43.50% men. Several studies conducted in different countries show a higher prevalence in women that is consistent with findings of our study

There is evidence from studies suggesting a slight excess risk of cataract for women [16, 22-24]. In these studies, the excess risk for women was indicative only for cortical cataract. Another case–control study (Harding et al. 1993) has reported a statistically non-significant excess risk of cataract for women [20], while two case–control studies (Leske et al. 1991; The Italian-American Cataract Study Group 1991)[21] and a cross-sectional study (Delcourt et al. 2000)[24] have reported a significant excess risk only of cortical cataract for women [23-25]. However, the AREDS's case–control study (Age-Related Eye Disease Study Research Group 2001) found a higher prevalence only of nuclear opacities in women [21]. The Blue Mountains Eye Study (Kanthan et al. 2009) found no significant association between female reproductive factors, exogenous oestrogen exposure, and the incidence of cataract, making the conclusion that the female excess gender difference in the incidence of cataract, found in many other

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studies, is possibly caused by the effect of unknown confounders [26].

In our study, together with a gradual increased age, there was increase in the number of patients such that in the seventh decade, the patients had the highest rate of the disease. In sum, 41 cases (10.6%) were under 50 years, 51 cases (13.3%) were between 50 to 60 years, 126 cases (32.6%) were in their 60s, and 168 cases (43.50%) were above 70 years of age.

As it was expected (Delcourt et al., 2000)[24], Age-Related Eye Disease Study Research Group 2001 [22], Moeller et al. 2004 [19], Jonas et al. 2009 [17], Vrensen 2009 [27], cataract and age hold a strong positive relationship, the risk of which is more marked for nuclear than cortical cataract. As for cataract, age is known to be, by far, the main risk factor (Vrensen, 2009)[27]. Age-related cataracts are to a great extent caused by lifelong accumulation of oxidative insults. This can eventually lead to nuclear and cortical cataracts in spite of the defense mechanisms of the lens (Vrensen, 2009)[27].

In our study, the underlying diseases were diabetes in 52 (13.5 %) cases and hypertension in 85 (22.1%) cases. In a study by Miglior and colleagues [28], both diabetes and hypertension accelerated cataract.

Diabetes has been reported in previous studies to associate with higher prevalence of cataract [16, 22, 24]. The majority of studies have reported high risks of cortical and PSC cataracts in individuals with diabetes and no risk for nuclear cataract (Leske et al. 1991; Miglior et al. 1994; Klein et al. 1998; Delcourt et al. 2000; Nirmalan et al. 2004; Tan et al. 2008 a,b)[24, 28-32]. Impaired fasting glucose and increased glycatedhaemoglobin level (Klein et al. 1998)[30](Tan et al. 2008 a,b) were respectively associated with increased risks of nuclear and cortical cataracts.

In this study, we did not find any association between diabetes and nuclear cataract, but only an indicative higher risk of cortical cataract. As the information about medical history in the current study was only obtained through self-reports from the participants, diabetes incidence could be underestimated, hence affecting the significance of the association between them.

Conclusions

As cataract is one of the common eye diseases which is of more prevalence in elderly age group (50-79) and housewives, special attention should be given to these groups of population in order to prevent and control cataract.

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Conflict of Interest

The Authors have no conflict of interest to declare for this study

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