ORIGINAL ARTICLE

Prevalence of Different Types of age Related Cataract: a hospital based study

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ABSTRACT

Aim: To find prevalence of three types of age related cataracts (cortical, nuclear, posterior subcapsular) and any association of specific type with certain age and sex.
Methods: A cross sectional study was done at Ghurki Hospital in Ophthalmology Department. Both male and female patients of ages from 40 to 70 years and above were included in this study. Examination included visual acuity, distant direct ophthalmoscopy and slit lamp examination with dilated pupil.The level of lens fiber opacification was classified as cortical, nuclear and posterior subcapsular. The prevalence of different types of cataract was calculated and association with age and sex was assessed.
Results: Prevalence of all types of cataracts increased with age. Nuclear cataract was present in most of the patients (71%). Out of these 62% was in females and 38% was in males. In age groups 60-70 years 40.4% were female and 28.8% were male.Out of total posterior subcapsular cataract 60.5% were female and 39.5% were males. Frequencies of cortical cataract in female were 65.8% and 34.2% were male. Most of the females were in ages between 40-59 years.
Conclusion: Males with ages between 40-59 years had less prevalence of all the three types of cataracts and it was higher in males with ages between 60-70 years Females have more prevalence in both the age groups but is more in ages between 60-70years.
Keywords: Cataract, slit lamp, visual acuity, cortical, nuclear, posterior subcapsular

INTRODUCTION

The age related eye diseases are on the rise because life expectancy has increased[1]. Globally, cataract is the main cause of blindness and in coming decades the number of blindness due to cataract is expected to increase dramatically.90% of worldwide cataracts are in developing countries[2,3]. This is probably due to less availability of cataract surgery in developing countries, and less data availability, by which interventions could be done to retard the development of cataract. Progressive ageing in European countries has been linked to increase prevalence of cataract. In Denmark the proportion of population with ages 70 and more is going to double in 2050 and so the number of cataract surgeries will increase correspondingly[4]. This increase demand of cataract surgeries may not be easy to handle in future unless preventive actions are taken, so it is necessary to study the associated risk factors[5]. To plan out preventive strategies, knowledge on etiology of different types of cataracts is required.

According to Framingham Eye Study (FES), the age related eye changes were present in 42% of people with ages from 52 to 64 years. In persons with ages 75-85, this percentage increased to 91%. Age related eye changes included milder earlier changes like vacuoles, spokes to moresevere later changes like cortical opacities, nuclear sclerosis and posterior subcapsular opacities. Frequency of these 3 types of cataract opacities have been reported to increase from 4 to 50% when the age group changed from 52-64 to 75-85[6].

The objective of present study was to find out frequency of three types of age related cataracts (cortical, nuclear, posterior subcapsular) and any association of specific type with certain age and sex.

METHODOLOGY

A cross sectional study was conducted at Ghurki Hospital in Ophthalmology department. Duration of the study was from 2009 to 2010.Both male and female patients of ages from 40 to 70 years and above were included in this study. All patients were divided into two groups (1 and 2). Group 1 Comprised of ages from 40-59 years. This group was further subdivided into two categories of ages; one from ages 40-49 years and other from 50-59 years. Group 2 comprised of ages 60 years and above. This was also subdivided into two subgroups: one from ages 60-69yrs and other from 70 years and above. All patients were examined in out patient department.

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Examination included visual acuity, distant direct ophthalmoscopy and slit lamp examination with dilated pupil. Slit lamp examination with dilated pupil determined the level of lens fibreopacification which was classified as cortical, nuclear and posterior subcapsular. Data was statistically analyzed and prevalence of different types of cataract was calculated and association with age and sex was assessed.

RESULTS

Total of 194 patients were examined. The age group examined among male and female patients were from 40 to more than 70 years.

Cortical cataract was present in 50% of the patients, posterior subcapsular was present in 57.7% and 71% had Nuclear cataract. In some cases more than one type of cataract was present.

Out of these 50% of cortical cataract 65.8% were female and 34.2% were male. Most of the females were in ages between 40-59 years. Males had cortical cataract mainly in ages 60-70 years (Table 1 & graph 1).

Out of 57.7% of total posterior subcapsular cataract 60.5% were female and 39.5% were males. 8.9% females of ages 40-49 years had posterior subcapsular cataract and 19.6% had in ages 50-59 years, 25% in ages 60-69 years and only 7% had posterior subcapsular cataract in ages 70 and above. Males had 3.6% frequency of posterior subcapsular cataract ages 40-49, 5.5% in ages 50-59 years, 23.2% in ages 60-69 and 7.2% in ages 70 and above. Males had this cataract type more in ages from 60 to 70 years (30.4%) and less in ages between 40-59 years (9.1%). In females between ages 40-59% it was present in 28.5%.

Nuclear cataract was maximally present in this study (71%). Out of these 62% were females and 38% were males.In females nuclear cataract was 5.7% in ages 40-49, 15.9% in ages 50-59, 28.9% in ages 60-69 years and 11.5% in ages 70 and above. Males had maximum (18.8%) nuclear cataract in ages 60-69 years. In age groups 40-59 years 21.6% were female and 9.8% were male, in age groups 60-70 years 40.4% were female and 28.8% were male (Table 1).

Graph 1 shows that males with ages between 40-59 years had less prevalence of all the three types of cataracts and it was higher in males with ages between 60-70 years Females have more prevalence in both the age groups but is more in ages between 60-70 years.

Graph 1: Prevalence in different age groups of male and females in different types of cataracts. Group 1 includes patients with ages 40-59years. f is for females and m is for males. Group 2 includes patients with ages 60-70 years.

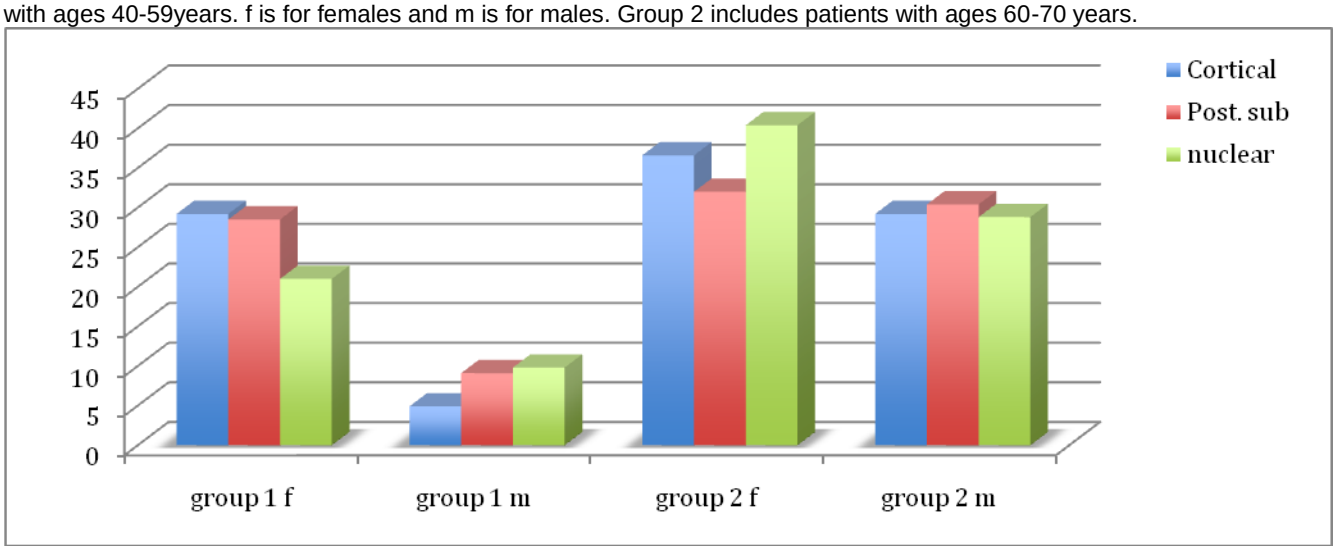

Table 1: Prevalence of different types of cataracts

Groups	Ages	Females			Males		
		Cortical	Posterior Subcapsular	Nuclear	Cortical	Posterior subcapsular	Nuclear
Group 1 (40-59 yrs)	40-49	12.2	8.9	5.7	0	3.6	2.8
	50-59	17	19.6	15.9	4.9	5.5	7
Group 2 (60-70 yrs)	60-69	24.4	25	28.9	14.6	23.2	18.8
	70+	12.2	7	11.5	14.6	7.2	10

DISCUSSION

Age related cataracts result mainly by lifelong accumulation of oxidative insults. The injurious effects of oxidative stress cause rupture of fibre membranes in outer part of cortex at very early age. The repair occurs by process of internalization and breakdown of membranes by lysosomes. As age proceeds (40-50 yrs) local opacities appear in deeper parts of cortex. These opacities lie near cortical nuclear barrier. The progression is delayed by sealing of these injuries by non-leaky membranes. Despite all these defensive mechanisms it proceeds in later life to nuclear and cortical cataracts. Use of antioxidants, balanced diet, modifying life style like avoid smoking, alcohol drinking, exposure to UV light can help to delay cataract onset[7,8].

In present study prevalence of age related cataract in males was more after 60 yrs, which is still lesser than females of same age group. In age group 60–70 yrs the difference in prevalence between male and female was less. The sex related prevalence of cataract was studied in one of the Spanish study, and it was seen that men over 60 years of age had higher prevalence (69.5%) than women of same age (65.5%)[9]. Several studies have also suggested an increased risk of cataract in women, and 10-20% more risk of cortical cataract in women[10].

Geographical differences have also been reported. Prevalence rates related to age and sex are higher in Punjab plains of India[11]. African origin people have more incidence of cortical cataract than European origin. Throughout African continent cataract is main cause of blindness[12]. Higher incidence of nuclear cataract has been reported in tropical and subtropical areas. It was associated with increase exposure to UV light. No significant difference was found in males and females[13]. In present study prevalence was high for nuclear cataract.

In a case control study there was significant association between cortical cataract and female gender. But this relation of female gender and cataract is not very clear[14]. In one of the studies women were reported to have higher age related prevalence for cortical and nuclear cataract in African and European population.Probably it was due to hormonal changes at menopause, which increased risk of opacification in lens. It has also been reported that use of estrogen therapy decreases risk of nuclear sclerosis[15]. Kanthan (2010) in his population based study found no significant association to exogenous estrogen exposure[16].

Poor diet, low socioeconomic life style and increasing age have been associated with nuclear cataract. Epidemiological surveys have shown higher risk of cataract development in people of areas with higher ambient temperature. This leads to increase hardening of lens leading to cataract development.

Higher incidence of cataract was reported in North and South India in older age group. It was 58% and 53% in North and South India respectively. In these areas Nuclear cataract was the common type. Posterior subcapsular was lesser common but was more than Western countries. Women were reported to have more prevalence[17].

REFERENCES

1. Laitinen, Laatikainen L, Ha □rka □nen T, Koskinen S, Reunanen A, AromaaA,"Prevalence of major eye diseases and causes of visual impairment in the adult Finnish population: a nationwide population-based survey," ActaOphthalmo- logica 2010; 88 (4): 463–471
2. Abraham AG, Condon NG, West Gower E: The new epidemiology of cataract. Oph- thalmolClin North Am .2006;19:415–425.
3. Pascolini D, MariottiSP.Globalestimates of visual impairment 2010.Br J Ophthalmol.2012 ;96(5):614-8.
4. ProkofyevaE,WegenerandA, Zrenner E. Cataract prevalence and prevention in Europe: a literature review. ActaOphthalmologica 2012: 1-11
5. Kessel L: Can we meet the future demands for cataract surgery? ActaOphthalmol2011;89: e289– e290.
6. Sperduto RD, Seigel D. Senile lens and senile macular changes in a population- based sample. Am J Ophthalmol 1980; 90:86-91.
7. Vrensen GF. Early cortical lens opacities: a short overview. ActaOphthalmol 2009; 87: 602–610.
8. Beebe DC, Holekamp NM, Shui YB. Oxi- dative damage and the prevention of age-related cataracts. Ophthalmic Res 2010; 44:155–165.
9. Esteban JJ, Leiva JA, Caracena N, Bermejo J, Puron ME, Vizcaino VJ. Prevalence and risk factors of lens opacities in the elderly in Cuenca, Spain. Eur J Ophthalmol 2007; 17: 29.
10. CecilsDelcourt, Jean-Paul Cristol, Fr6deric Tessier, Claude L. Leger, Francoise Michel, Laure Papoz, and the POLA Study Group Risk Factors for Cortical, Nuclear, and Posterior Subcapsular Cataracts The POLA Study American Journal of Epidemiology 2000;151(5): 497-504.
11. Chatterjee A, Milton RC, Thyle S: Prevalence and etiology of cataract in Punjab. Br J Ophthalmol 1982; 66:35
12. Leske MC, Chylack LT, Wu SY, et al: The Lens Opacities Case-Control Study. Arch Ophthalmol 1991; 109:244.
13. Sasaki H, Jonasson F, Shui YB, Kojima M, Ono M, Katoh N, Cheng HM, Takahashi N, Sasaki K. High prevalence of nuclear cataract in the population of tropical and subtropical areas.DevOphthalmol.2002 ;35:60-9.
14. Theodoropoulou S, Theodossiadis P, Samoli E, Vergados I, Lagiou P, Tzonou A. The epidemiology of cataract: a study in Greece. ActaOphthalmol 2011; 89: e167–173.
15. Cumming RG, Mitchell P. Hormone replacement therapy, repro- ductive factors, and cataract. The Blue Mountains Eye Study. *Am J Epidemiol.*1997;145:242–249.
16. Kanthan GL, Wang JJ, Burlutsky G, Rochtchina E,. Exoge- nous oestrogen exposure, female reproductive factors and the long-term incidence of cataract: the Blue Mountains Eye Study. ActaOphthalmol 2010; 88: 773–778.
17. Vashist P, Talwar B, Gogoi M, Maraini G, Camparini M, Ravindran D, Murthy G, Fitzpatrick K, John N, Chakravarth U, Ravilla T, Fletcher A. Prevalence of Cataract in an Older Population in India. The India Study of Age-related Eye Disease. Ophthalmology. 2011;118(2-19): 272–278.