

Original Research

Analysis of etiopathogenesis of presenile cataracts in a known population: An observational study

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ABSTRACT:

Background: The present study was conducted for assessing the etio-pathogenesis of presenile cataracts in a known population. **Materials & methods:** 200 consecutive patients diagnosed with cataract and posted for cataract extraction were included in the study. Complete demographic and clinical details of all the subjects were obtained. Cataract was graded according to the Lens Opacities Classification System III. Axial length of the eye was measured using intraocular lens master. **Results:** Mean age of the patients was 41.3 years. Majority of the patients were of idiopathic cause (44 percent). Diabetes and trauma were the risk factors in 28 percent and 12 percent of the patients respectively. High myopia and thyroid disorder were the cause in 11 percent and 5 percent of the patients respectively. Posterior capsular cataract was the most common type encountered in 55 percent of the subjects while mature cataract was seen in 22 percent of the subjects. **Conclusion:** Majority of the cases of presenile cataract was idiopathic. Diabetes and trauma were the most common risk factors.

Key words: Cataract, Presenile

Received: 17 November, 2021

Accepted: 19 December, 2021

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This article may be cited as: Gupta E, Chauhan SS, Gulati V, Parmar P. Analysis of etiopathogenesis of presenile cataracts in a known population: An observational study. Int J Res Health Allied Sci 2022; 8(1):100-102.

INTRODUCTION

Cataract is defined as opacity within the clear lens inside the eye that reduces the amount of incoming light and results in deterioration of vision. Natural lens is a crystalline substance and a precise structure of water and protein to create a clear passage for light. Cataract is often described as being similar to looking through a waterfall or waxed paper. Blindness causes human suffering is economically devastating, and many early deaths. According to WHO, one-third of the world's 45 million blind and half of the world's 1.5 million blind children live in South-East Asia region. The blind persons are often leading a miserable life and are disenfranchised.¹⁻³ Currently available treatment is surgical extraction of the cataractous lens. Reports say that all cataract surgeries in India are not sight-restoring. Blindness due to cataract is terrific challenge for ophthalmologists on public health stance. It imposes great economic burden on people and surfeit to be handled by surgery alone. Alternatively, the

preventive ophthalmology offers another approach to tackle the problem to identify factors, which might modify or simply delay the onset and progression of cataract by a period of 10 years, the number of cataract surgeries would drastically decrease by 45% or more.⁴⁻⁶ Presenile cataract is defined as the opacification of lens and/or its capsule before the age of 40 years when all other known causes of cataract have been ruled out. This will definitely add on to the already existing burden of age-related cataract in India and worldwide. Some of the landmark studies have clearly established several factors contributing to both age related as well as presenile cataract formation.⁶⁻⁸ Hence; the present study was conducted for assessing the etio-pathogenesis of presenile cataracts in a known population.

MATERIALS & METHODS

200 consecutive patients diagnosed with cataract and posted for cataract extraction were included in the study. Complete demographic and clinical details of

all the subjects were obtained. Slit-lamp examination was done to classify and grade the cataract, dilated fundus examination was done in all cases, and B-mode ultrasound scan was done in indicated cases. Cataract was graded according to the Lens Opacities Classification System III. Axial length of the eye was measured using intraocular lens master. All the results were recorded in Microsoft excel sheet and was analysed by SPSS software.

RESULTS

Mean age of the patients was 41.3 years. Majority of the patients were of idiopathic cause (44 percent).

Table 1: Risk factors

Risk factors	Number of patients	Percentage
Idiopathic	88	44
Diabetes mellitus	56	28
Trauma	24	12
High myopia	22	11
Thyroid disorder	10	5

Table 2: Morphological types

Morphological types of cataract	Number of patients	Percentage
Posterior capsular cataract	110	55
Mature cataract	44	22
Nuclear sclerosis	18	9
Combined cataract	16	8
Cortical cataract	12	6

DISCUSSION

Cataract, caused by degenerative changes in the lens, is a major cause of blindness globally, and often occurs after 50 years of age. The Lens Opacification Classification System III (LOCS), the most commonly used grading system for evaluating cataract, grades cataract by nuclear color and opacity, cortical opacity, and posterior subcapsular opacity. Presenile cataract refers to onset before the age of 50 years. According to a previous study, posterior subcapsular cataract related with atopy is the most common type of cataract in presenile age. However, early diagnosis of other types of cataract including nucleosclerosis in presenile age is important to make a clinical decision of cataract surgery and prevent progression of cataract. Unlike senile nuclear cataract, the risk factors of presenile nuclear cataract is well not known.⁶⁻⁹ Hence; the present study was conducted for assessing the etio-pathogenesis of presenile cataracts in a known population.

Mean age of the patients was 41.3 years. Majority of the patients were of idiopathic cause (44 percent). Diabetes and trauma were the risk factors in 28 percent and 12 percent of the patients respectively. High myopia and thyroid disorder were the cause in 11 percent and 5 percent of the patients respectively. Yu HJ et al investigated the clinical characteristics of presenile cataract and compare that to ten years ago. A total number of 2439 cataract surgeries were

Diabetes and trauma were the risk factors in 28 percent and 12 percent of the patients respectively. High myopia and thyroid disorder were the cause in 11 percent and 5 percent of the patients respectively. Posterior capsular cataract was the most common type encountered in 55 percent of the subjects while mature cataract was seen in 22 percent of the subjects. Nuclear sclerosis and combined cataract were seen in 9 percent and 8 percent of the subjects. Cortical cataract was seen in 6 percent of the subjects.

performed, and 302 (12.38%) eyes were having presenile cataract. Mean age was 47.55 ± 5.64 years old, and mean axial length was 26.00 ± 2.89 mm. Among 302 presenile cataract eyes, the leading cause was high myopia (defined as mean axial length ≥ 26 mm, 47.02%), followed by diabetes mellitus (26.82%). In types of lens opacity analysis, 67.55% of the patients were nuclear sclerosis dominant. Compared to the previous study 10 years ago, the leading cause of presenile cataract changed from idiopathy to high myopia, whereas the lens opacity types changed from posterior subcapsular opacity dominant to nuclear sclerosis dominant. High myopia has become the most important clinical characteristic associated with presenile cataract in a myopia epidemic area, and the most common type of lens opacity was nuclear sclerosis.¹⁰

In the present study, Posterior capsular cataract was the most common type encountered in 55 percent of the subjects while mature cataract was seen in 22 percent of the subjects. Nuclear sclerosis and combined cataract were seen in 9 percent and 8 percent of the subjects. Cortical cataract was seen in 6 percent of the subjects. Malnutrition during pregnancy or in early infancy has been associated with non-familial zonular cataract. Maternal infections like rubella, toxoplasmosis, and cytomegalo-inclusion etc., are also associated with congenital cataracts. Endocrine disturbance, abuses of alcohol or drugs (thalidomide, corticosteroids etc.)

as well as exposure of radiation during pregnancy increases the risk of cataracts in their infants. Intrauterine hypoxia in the last trimester of pregnancy, Lowe's syndrome, myotonia dystrophica, congenital ichthyosis etc., are infantile factors to cause cataract in infants. The Osaka variant of galactokinase with an A198V substitution was shown to be associated with bilateral cataract in adults. Women have a higher incidence and risk for most types of cataracts than men, probably due to lack of estrogen in post-menopausal years. An experimental study suggested the protective effects of estradiol or estrone treatment against cataractous eyes up to 25%, in the MNU-treated, ovariectomized rats.¹¹⁻¹⁶

CONCLUSION

Majority of the cases of presenile cataract was idiopathic. Diabetes and trauma were the most common risk factors.

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