
ORIGINAL ARTICLE**A Study of Morphological Classification of Cataract in Rural Health Camp in Maharashtra***Shrikant Deshpande¹, Israni N.² and Kanehere M.³**Professor of Ophthalmology, Terna Medical College, Nerul, Navi Mumbai¹, Ophthalmology Fellow, Narayana Nethralaya, Bangalore² and Ophthalmology Fellow L.V. Prasad Eye Institute, Visakhapatnam³ India.***Abstract:****Background and Introduction:**

This study was conducted to evaluate the morphology of cataract and relation to age in patients presenting to a health camp held at kashele, a village located in Maharashtra.

Aims and objectives:

The aim and objective of this study was to study the morphology of age related cataract in patients presenting to a rural eye camp in Maharashtra.

Materials and Methods:

The study was a cross-sectional study conducted on a rural population of Kashele village in Raigad district of Maharashtra. All 560 patients who visited ophthalmology OPD in the health camp conducted at Kashele were screened for cataract. One hundred fifty patients who had cataract were selected for the study. Comprehensive eye checkup was done in these patients at a medical college. The grading of the lens was conducted using the Lens Opacification Classification System (LOCS) III with the help of standard set of photographs of LOCS grading mounted next to the slit lamp.

Results and Conclusion:

A total of 201 eyes (67%) out of 300 had nuclear sclerosis cataract of different grades. One hundred forty-nine eyes (49.66%) out of 300 had cortical cataract. Fifty-nine eyes (19.66%) out of 300 had posterior sub capsular cataract. A total of 13 eyes (4.33%) out of 300 had mature cataract or a total cataract. Highest proportion of patients was in the age group of 45-50 (24%).

Keywords: Cataract, Rural Health, Morphology**Introduction:**

Senile cataract is the leading cause of treatable blindness worldwide, with an estimated number of 17.7 million persons affected¹. In India, the prevalence of cataract varies from 30% to 72% among the population aged 40 years and above in different parts of the country and it was estimated that 75% of all blind eyes were due to affected lens². It has been reported that senile cataract develops at a younger age in India as compared to developed countries³. If the progression of cataract could be delayed by 10 years, the number of cases requiring surgery would decrease by 45%⁴. In rural India, various health camps organized by the government and NGOs play an important role in detection and subsequent treatment of cataract⁵. Early detection and treatment of cataract may help in reducing the duration of visual disability caused by cataract and also improve the surgical outcome⁶.

Timely detection of cataract depends upon the reaching the information about the screening camps to rural patients by various information campaigns and publicity of the camps⁷. We studied the morphology of cataract and relation to age in patients attending to a health camp held at Kashele, a village located in Maharashtra.

Materials and Methods:

The study was a cross-sectional study conducted on a rural population of Kashele village in Raigad district of Maharashtra state. A total of 576 families reside in this village. The Kashele village has a population of 2875 out of which 1457 are males while 1418 are females as

per Population Census 2011⁸. All 560 patients who visited ophthalmology OPD in the health camp conducted at Kashele were screened for cataract with torchlight. One hundred fifty patients who had cataract either in one or both eyes were selected for the study.

Inclusion criteria of cases were: Patients in the age group of 45 to 80 with either unilateral or bilateral cataract, and with visual acuity of 6/9 or less in the involved eye. Patients below 45 years were not included in the study as the aim of study was to study age related cataracts.

The exclusion criteria were traumatic cataract, secondary cataract, complicated cataract, and ocular diseases like corneal opacity, uveitis, glaucoma, macular and retinal diseases that can cause diminution of vision independently. A written informed consent as well as a verbal consent was taken from patients. The purpose of research was also discussed with the community leader and other personnel associated with the study. Comprehensive eye examination was then performed in all patients. Grading of cataract was done in the following manner: Pupil was dilated with 1% Tropicamide with 5% Phenylephrine. The grading of the lens was conducted using the Lens Opacification Classification System (LOCS) III with the help of standard set of photographs of LOCS grading mounted next to the slit lamp⁹.

Visual acuity of the patients was measured using standard optotype Snellen's chart. After a thorough anterior segment examination we graded cataract as nuclear sclerosis, cortical cataract, anterior subcapsular and posterior subcapsular cataract on the basis of anatomical involvement. Stereoscopic examination of the vitreous, retina, and optic nerve was performed by slit lamp with a 90-D lens. We examined the retinal periphery with an indirect ophthalmoscope and a 20-D lens.

Statistical analysis was done using ANOVA and post-hoc tukey t test.

Observation and Results:

Demographic features:

Highest proportion of patients was in the age group of 45-50 (24%). The patients were almost evenly distributed in age groups 45-50(37/150), 51-55 (27/150), 56-60(23/150), 61-65(29/150), 66-70(18/150), above 70(16/150) (Table 1).

Visual acuity:

Forty-eight out of 150 patients in this study had vision of 6/18 or more. Still, these patients opted to visit the camp and get cataract extraction.

Nuclear sclerosis:

A total of 201 eyes (67%) out of 300 eyes had nuclear sclerosis cataract of different grades. Ninety-eight patients (65.33%) had nuclear sclerosis (cataract) of different grades in the left eyes. One hundred and three patients (68.66%) had nuclear sclerosis (cataract) of different grades in the right eyes. One hundred & fifty - two eyes (75.6%) had grade 2 nuclear sclerosis. Eleven percent had grade 3 nuclear sclerosis. Only 3.4% eyes had hard (grade 4) cataract. The proportion of eyes with grade 2 nuclear sclerosis was higher (75.6%) as compared other grades of nuclear sclerosis. This was found to be statistically significant with $p < 0.05$ with ANOVA. (Table 2)

Cortical cataract:

A total of 149 eyes (49.66%) out of 300 eyes had cortical cataract. 32 patients (21.33%) had cortical cataract in their left eyes whereas 27 patients (18%) had cortical cataract in their right eyes. The proportion of patients with cortical 1 cataract was significantly higher than other grades. This difference was found to be statistically significant with $p < 0.005$ with ANOVA test. (Table 3)

Posterior subcapsular cataract:

A total of 59 eyes (19.66%) had posterior sub capsular cataract. Eight patients (5.33%) had posterior sub capsular cataract in their left eyes out of 150 patients.

Only 5 patients (3.33%) out of 150 had posterior sub capsular cataract in their right eyes. (Table 4)

Mature cataract:

A total of 13 eyes (4.3%) out of 300 eyes had mature cataract or a total cataract. (Table 5)

Table No 1: Age distribution of patients

Sr. No.	Age group	Number of patients
1	45-50	37(24.67%)
2	51-55	27 (18%)
3	56-60	23 (15.33%)
4	61-65	29 (19.33%)
5	66-70	18 (12%)
6	Above 70	16 (10.67%)

Table No 2: Type of nuclear sclerosis (NS) in different age groups

Grades of Nuclear sclerosis	Age in Years						Total
	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 and above	
Grade 1	7	6	2	2	1	0	18
Grade 2	40	35	27	33	16	1	152
Grade 3	0	1	5	8	5	4	23
Grade 4	0	0	1	2	2	3	8
Total	47	42	35	45	24	8	201

*P=0.0017

Table No 3: Grades of cortical cataract in patients in different age groups

Grades of Cortical cataract	Age in Years						Total Grand Total
	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 and above	
Cortical 1	17	19	22	21	6	1	86
Cortical 2	0	10	12	15	14	7	58
Cortical 3	0	0	0	4	1	0	5
Grand Total	17	29	34	40	21	8	149

*P= 0.001

Table No 4: Grades of Posterior sub capsular cataract in patients in different age groups

Grades of Posterior sub capsular cataract (PSC)	Age in Years						Grand Total
	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 and above	
PSC 1	2	1	2	1	1	0	7
PSC 2	0	1	1	0	3	1	6
PSC 3	0	0	0	0	2	0	2
Central PSC	1	2	2	3	0	0	8
MIN PSC	1	0	1	1	6	1	10
Thick central PSC	0	1	1	5	3	1	11
Thick PSC2	1	0	2	7	1	2	13
Grand Total	5	5	9	17	16	5	57

*p=0.23

Table No 5: Mature Cataract in patients with various age group

Eye	Cataract Type	Age in Years					
		45 - 50	51 - 55	56 - 60	61 - 65	66 - 70	>70
Left Eye	Mature	0	0	0	1	1	6
Right Eye	Mature	0	1	1	1	0	2

Discussion:

This study was carried out to evaluate the morphology of cataract in patients attending a rural health camp in Maharashtra. We found that 67% patients had nuclear cataract where as 49% patients had cortical cataract and only 4.3% patients had mature and total cataract. Among patients with nuclear sclerosis, majority of patients (75.6%) had grade 2 nuclear sclerosis. Bandhu et al in their population based study found the incidence of nuclear sclerosis around 45.5% in patients with cataract, which is less as compared with our study. However, the patients in this study were older as compared to our study¹⁰. Twenty-four percent patients were below 50 years of age. This could be due to early onset of cataract in rural population due to increased

exposure to UV rays while working in the fields¹¹.

Thirty-two percent patients had vision of 6/18 in better eye. Still they opted for cataract extraction. This shows that patients in rural area also are opting for cataract surgery in early stages. Their visual expectations may be more and efforts should be made to give them satisfactory unaided vision by offering them choice of phaco-emulsification.

This could be due to increased awareness about cataract, easy availability, and affordability of cataract surgery. Vigorous awareness, detection and surgery camps conducted by non-governmental organizations (NGOs) and government may have played a role in this. Due to thorough efforts of various camps held by

NGOs and institutes, cataract is diligently picked upon in earlier stages and is treated promptly. Both the factors (young age and immature cataract) will improve the outcome of cataract surgery and will reduce the complication rate⁶.

To the best of our knowledge, this study was first of its kind to study morphology of cataract in camp setting in rural Maharashtra. Seema Dutt Bandhu et al in their study found nuclear sclerosis to be more common than mature cataract. However, their study did not evaluate or classify nuclear sclerosis in various grades¹⁰.

The drawbacks of our study were small sample size and relative proximity to a big city. Studies with a larger sample size and done in interior of Maharashtra will shed further light on this subject.

Conclusion:

This study evaluated the morphology of cataract in patients presenting to rural health camp. The incidence of nuclear cataract was found to be more than other types of cataract in our study. Only 4% patients had mature cataract. Patients with vision of 6/18 also opted for cataract surgery. Twenty-five percent of the patients belonged to 45- 50 age group. All these point towards better visual outcome after cataract surgery. This could be due to vigorous efforts by NGOs and government. Similar efforts throughout India will lead to reduction in blindness due to cataract with better visual outcome.

Sources of Support - Nil

Conflict of Interest - Nil

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