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Indian Journal of Clinical and Experimental Ophthalmology

Journal homepage: www.ijceo.org

Original Research Article

Cataract and systemic comorbidities – A retrospective study

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ARTICLE INFO

Article history:
Received 19-05-2020
Accepted 15-06-2020
Available online 30-03-2021

Keywords:
Cataract
Diabetes mellitus
Chronic kidney disease and ischaemic heart disease
Systemic hypertension

ABSTRACT

Aim: To determine the prevalence of major systemic co-morbidities such as diabetes mellitus, systemic hypertension, chronic kidney disease and ischaemic heart disease among patients undergoing cataract surgery and to determine the demographic details of these co-morbidities among the cohort of cataract patients.

Materials and Methods: A retrospective study of cataract surgery charts of those patients operated between Jan 2017 and Dec 2018 was undertaken. Assessment of age, gender, prevalence of above mentioned systemic comorbidities and their age wise frequency distribution among the cohort of cataract patients was done.

Results: Among 2444 cataract charts analysed, 378 (15.47%) were found to have comorbidities. 88.6% of cataract patients with comorbidities were found to be between 50-75 years of age with a mean age of 63±8.997 years. 58.2% were females and 41.8% were males among the patients with comorbidities. Hypertension and diabetes were the highest contributors occurring in 78.1% of the comorbid patients with a mean age of 63 ± 8.2 years.

Conclusion: An increasing prevalence of non-communicable diseases even in rural population, necessitates a thorough screening before cataract surgery to ensure fitness of the patients for cataract surgery.

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1. Introduction

Cataract is the most common cause of blindness in the world necessitating high volume surgeries across the world.[1] In a country like India, many patients undergoing cataract surgery are often found to have associated co-morbidities like diabetes, hypertension, chronic kidney disease, COPD, bronchial asthma and seizure disorders.[2] Therefore this surgery was often performed on patients with history of previous angina, myocardial infarction etc., due to the above mentioned systemic co-morbidities, which puts them under poor prognosis for both visual outcome and overall well-being post-operatively.[3,4] But there are very few studies which have been done to find the prevalence of co-morbidities among cataract patients in India.

This study has analyzed the prevalence of co-morbidities such as systemic hypertension, diabetes mellitus, CKD and IHD among cataract patients who underwent cataract surgery between January 2017 and December 2018 in PIMS hospital, Pondicherry and their age and sex wise distribution. This study helps us to find the burden of co-morbidities among cataract patients and prospectively will implicate the necessity to screen all cataract patients for their holistic health.

2. Materials and Methods

It is a retrospective study analysing the case records of patients who had undergone cataract surgery in Pondicherry Institute of Medical Sciences (PIMS), Pondicherry. Ethical clearance was obtained from the institutional ethics committee of PIMS. Case records of cataract patients

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https://doi.org/10.18231/j.ijceo.2021.005
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with systemic co-morbidities like diabetes, systemic hypertension, CKD and IHD who underwent cataract surgery in PIMS hospital from January 2017 to December 2018 were included. This study was carried out between December 2019 and January 2020.

The data was collected and tabulated into 5 columns containing proforma number, age, gender, date of surgery and associated comorbidity such as diabetes, systemic hypertension, IHD and CKD which were coded as 1, 2, 3 and 4 respectively in the excel sheet for ease of sorting out and analytical purposes. There were also patients with more than one cormorbidity who were grouped together according to the comordities and analysed accordingly.

378 case records of cataract patients with systemic co-morbidities as mentioned above who underwent cataract surgery in PIMS hospital from January 2017 to December 2018 were analysed. Prevalence, age and gender wise distribution of the systemic co-morbidities were calculated from the above data using SPSS software version 20.0. 95% CI for the prevalence was given. The mean and standard deviation of the continuous variable (age) and the number and percentage of the categorical variable were calculated.

3. Results

Among 2444 cataract charts that were screened, 378 patients were note to have comorbidities which was found to be 15.47% of the total charts analysed. Among the 378 charts, 140 charts belonged to patients who had diabetes mellitus, which contributed 37% of the charts analysed. The break-up of number of patients with diabetes alone and along with other comorbities are given in Table 1.

Among the 378 charts included in this study and analysed in detail, 230 charts were found to have systemic hypertension, which contributed 60.8% of the cataract patients with comorbidities. The break up patients with systemic hypertension alone and with other comorbidities are given in Table 2.

There were also 20 cases of ischaemic heart diseases (IHD) and 18 cases of chronic kidney disease (CKD) among the 378 charts that were analysed contributing to about 5.3% and 4.8% of the comorbid patients who underwent cataract surgery in PIMS between January 2018 and December 2019.

In the age wise distribution of the diseases, mean age of occurrence of comorbidities in patients undergoing cataract surgery was 63.18±8.997 years with the minimum age being 32 years and maximum age being 90 years. 88.6% of cataract patients with comorbidities were found to be between 50-75 years of age. When analysing the individual co-morbidities, the mean age of distribution for diabetes, systemic hypertension, IHD and CKD were 62.29±8.261, 64.03±8.627, 68.35±10.153, 59.67±8.444 years respectively.

When analysing the sex wise distribution of cataract patients with cormobidities, 58.2% were females and 41.8% were males. Hypertension and diabetes were the highest contributors constituting 78.1% of the cataract patients with comorbidities, with a mean age of 63 ± 8.2 years.

4. Discussion

The leading cause of blindness in the world is cataract and therefore cataract extraction is one of the highest number of surgeries being performed worldwide.[1] In India, the prevalence of age related cataract is extremely high necessitating a large number of cataract surgeries.[5,6] India is now the diabetic capital of the world with other co-morbidities trailing not far behind.[7–9] A large proportion of patients (almost 50%) undergoing cataract surgery in India are found to have co-morbidities like diabetes, hypertension, CKD, COPD, bronchial asthma and seizure disorder. Among these diabetes and systemic hypertension are found to be the highest contributors.[2]

In our study, we have found that significant proportion of cataract patients (15%) needing surgery, have systemic comorbidities that first needs to be attended to, for the overall betterment of the patient and optimal surgical outcome. Hypertension and diabetes contributed to a significant proportion among the co-morbid patients accounting for around 78% and have a significant influence perioperatively on patients undergoing cataract surgery. Peri-operative blood sugar control lesser than 200mg/dl is considered ideal for cataract surgery in our institution as we have observed it to cause lesser infections and better visual outcome post-operatively. Good control of systemic hypertension is essential to avoid intra-operative complications like supra-choroidal hemorrhage which are poor prognostic factors for the final visual outcome post cataract surgery. Chronic kidney diseases have a bearing on the post-operative medications being used especially non-steroidal anti-inflammatory drugs (NSAID) and anti-glaucoma medications like carbonic anhydrase inhibitors both of which are better avoided in CKD patients.

In the study conducted by Hamidreza Torabi et al., they concluded that cataract surgery in diabetic patients resulted in increased central macular thickness but decreased choroidal thickness when compared to non-diabetic patients, due to metabolic suppression in the choroid of the diabetic population resulting in decreased subfoveal choroidal thickness and thereby affecting vision adversely.[10] Lucian Szmyd Jr., Bernard Schwartz concluded from their study that there was an increased risk of cataract extraction when patients had associated hypertension and diabetes.[11] Hamedand Lingua found in their study that out of cataract patients developing post-operative strabismus, 8% were associated with pre-existing unsuspected thyroid eye disease which eventually led to the squint post-operatively.[12] Hanhart J et al., concluded from their study

Table 1: Break up of number of patients with diabetes alone and along with other comorbities

Comorbidity	Frequency	Percentage	Cumulative Percentage
DM	77	20.4	20.4
DM + HTN	51	13.5	33.9
DM + HTN + CAD	2	0.5	34.4
DM + HTN + BA	1	0.3	34.7
DM + HTN + CKD	2	0.5	35.2
DM + CAD	3	0.8	36.0
DM + BA	1	0.3	36.2
DM + THYROID	1	0.3	36.5
DM + CKD	2	0.5	37.0
Total	140	Cumulative Percentage = 37%	

Table 2: Break up patients with systemic hypertension alone and with other comorbidities

Comorbidity	Frequency	Percentage	Cumulative Percentage
HTN + DM	51	13.5	9.9
HTN + DM + CAD	2	0.5	14
HTN + DM + BA	1	0.3	14.3
HTN + DM + CKD	2	0.5	14.8
HTN	167	44.2	59.0
HTN + CAD	3	0.8	59.8
HTN + BA	2	0.5	60.3
HTN + THYROID	2	0.5	60.8
Total	230	Cumulative Percentage = 60.8	

that epilepsy was often associated with patients undergoing cataract surgery in which patients taking Anti-epileptic Drugs (AEDs) like carbamazepine and clonazepam had higher incidence of cataract development and they attributed this to the role of AEDs in the development of cataract.[13]

5. Conclusion

With cataract surgery having so many implications with systemic co-morbidities, it is essential to know the prevalence of these among the cohort of cataract patients, especially in our country. This study will help this purpose and can be used in the near future, to further extrapolate the results of this study and find the association of various systemic co-morbidities with cataract surgery.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

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Cite this article: Prashanth J P J, Prasanth HR, Hansdak A, Rajarajeswari R, Srinivasan R. Cataract and systemic comorbidities – A retrospective study. *Indian J Clin Exp Ophthalmol* 2021;7(1):16-19.