

To Find Out if There is any Association between Dyslipidemia and Cataract in Tribal Population

Puspa Kumari¹, Marianus Deepak Lakra², Rajiv Kumar Gupta³

ABSTRACT

Introduction: Cataract is a major cause of impaired vision and blindness. Study aimed to find out if there is any association between dyslipidemia and cataract.

Material and methods: This cross sectional hospital based study was performed in a tertiary care center of Jharkhand between June 2017 to March 2018. Total 223 patients who were diagnosed with senile cataract were included in the study. Detailed history, ophthalmologic and systemic examination was done. Dyslipidemia is defined as: Hypercholesterolemia (total cholesterol > 220 mg/dl), or Hypertriglyceridemia (total triglyceride > 150 mg/dl), or Low density lipoprotein > 130 mg/dl.

Results: Out of total 223 patients 134 were men and 89 were women. 70% patients had dyslipidemia. Prevalence of dyslipidemia was associated significantly (< 0.05) with nuclear and cortical cataract but not significant (> 0.05) for posterior sub capsular cataract.

Conclusion: Dyslipidemia maybe considered having an association with nuclear and cortical cataract directly or indirectly.

Keywords: Lipid Profile, Nuclear Cataract, Cortical Cataract, Posterior Sub Capsular Cataract, Dyslipidemia.

INTRODUCTION

Cataract is complete or partial opacification in human lens or it's capsule.¹ More than 80% of all cataracts are age related and pathophysiology is complex.^{1,2}

Dyslipidemia affects many organs of the body. Dyslipidemia is associated with wide range of eye diseases including glaucoma, hypertensive and diabetic retinopathy, age related macular degeneration, retinal vein occlusion.^{3,4} Lipoproteins are complexes of lipids and proteins that are needed for transport of cholesterol, triglycerides and fat soluble vitamins.⁵ Based on relative density, plasma lipoproteins are divided into 5 classes- chylomicrons, very low density lipoprotein (VLDL), intermediate density lipoprotein (IDL), low density lipoprotein (LDL) and high density lipoprotein (HDL). Each lipoprotein class comprises a family of particles that vary slightly in density, size, and migration during electrophoresis and protein composition.⁵⁻⁷

The current study aimed to assess plasma lipid levels including cholesterol, triglycerides (TG), LDL, VLDL and HDL in patients with cataract. Study aimed to find out if there is any association between dyslipidemia and cataract.

MATERIAL AND METHODS

This cross sectional hospital based study was performed in a tertiary care center of Jharkhand between June 2017 - March

2018.

A total of 223 patients of senile cataract were included in this study. Cataract diagnosis was made by using slit-lamp bio microscopy and retro illumination. Detailed history was obtained from each patient. Complete ophthalmological and systemic examination was done. Patient's height (in m) and weight (in kg) were recorded and body mass index (BMI) was calculated according to the equation:

$$\text{BMI} = \text{Weight (in kg)} / \{\text{Height (in m)}\}^2$$

The fasting blood sample were collected and sent for evaluation of lipid profile to the central laboratory.

Dyslipidemia was defined as any of the following:

- Hypercholesterolemia (total cholesterol concentration \geq 220 mg/dl) or
- Hypertriglyceridemia (triglyceride concentration \geq 150 mg/dl) or
- Low density lipoprotein > 130 mg/dl.

Patients aged less than 45 years old, those with traumatic and congenital cataract were excluded from the study.

Study results were compared under the following headings:

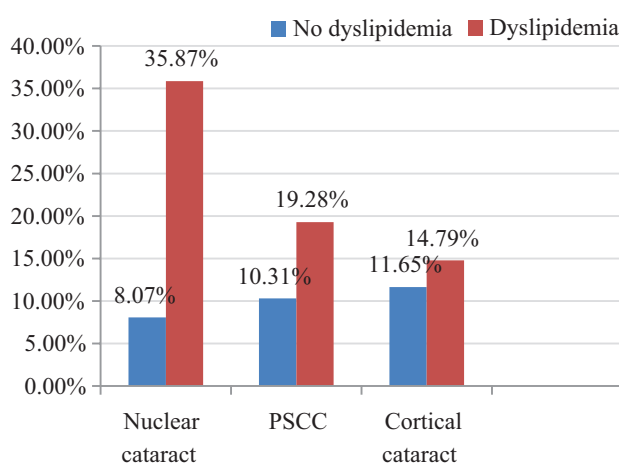


Figure-1:

¹Junior Resident, Department of Ophthalmology, RIO, RIMS, Ranchi, Jharkhand, ²Associate Professor, Department of Ophthalmology, RIO, RIMS, Ranchi, Jharkhand, ³Professor, Department of Ophthalmology, RIO, RIMS, Ranchi, Jharkhand, India

Corresponding author: Puspa Kumari, Qr. No. 2207, Sector 12 D, Bokaro Steel City, Jharkhand, 827012, India

How to cite this article: Puspa Kumari, Marianus Deepak Lakra, Rajiv Kumar Gupta. To find out if there is any association between dyslipidemia and cataract in tribal population. International Journal of Contemporary Medical Research 2019;6(9):111-113.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.9.4>

Parameter				PSCC			Cortical cataract		
	Mean	±SD	P- value	Mean	±SD	P-value	Mean	±SD	P- value
Body mass index (BMI)	26.2	0.43	>0.05	24.6	1.32	>0.05	29.3	0.32	<0.05

Figure-2:

1. Age: Patients older than 45 years old were included.
2. Gender: To have an idea if there is any sex difference concerning dyslipidemia and cataract.
3. BMI (Body mass index): Important to be included in this study because of its direct and indirect relationship with dyslipidemia. Analysis of data was performed using Chi square and T-Tests.

P values less than 0.05 has been taken to be statistically significant. Statistical analysis was performed by using statistical package for social sciences (SPSS; Version 18.0) software.

RESULTS

The study showed that among 223 patients with senile cataract 134 (60%) patients were male and 89 (40%) were female. Male predominance was present in the age group of 45-55 years while the female predominance was present in the age group of 56-65 years. According to the lipid status it was seen that 156 (70%) patients had dyslipidemia. Among 223 patients, 46.63% male and 23.76% female had dyslipidemia. As shown in figure 1. Out of total, 35.87% of patients with dyslipidemia had nuclear cataract, 14.79% with those having dyslipidemia had cortical cataract and 19.28% had posterior sub capsular cataract. This study shows that high BMI is associated with cortical cataract while low BMI is mostly associated with posterior sub capsular cataract. Figure 2

DISCUSSION

More males than females were found to have dyslipidemia this is because of the larger sample of male patients. Age factor is directly related to abnormal lipid profile, elderly have dyslipidemia in comparison with younger people.⁶⁻⁸ In this study, large number of cataract patients included three type of cataracts-nuclear, posterior sub capsular and cortical were found to have dyslipidemia. Nuclear cataract occupied highest percent compared to other types of cataract.

In a study carried in China in 2006(Beijing study) it was seen that by comparing the types of cataract in terms of lipid status there is a significant association with cortical cataract.⁹ This differs from our study concerning nuclear cataract. Dyslipidemia was significantly associated with cortical cataract and this may be explained by the effect of diabetes or may be due to dyslipidemia as a direct or indirect cause.¹⁰ This study report shows prevalence of dyslipidemia was insignificant with posterior sub capsular cataract which is against the finding of Hiller et al¹¹, which stated that a high level of triglyceride was associated with an increased risk of posterior sub capsular cataract.

There was significant association between cortical cataract and high BMI, it was previously proven that patient with high BMI had abnormally high lipid profile especially

dyslipidemia.⁵⁻⁷

According to study performed by Ning Cheung and Tien Y Wong, et al, it was seen that there is important relationship between cataract and obesity and provided valuable results for use of weight loss strategies to reduce the burden of cataract in individuals with obesity.¹²

Another study done by Ghaem Maralani H, et al, to see if the effect of metabolic syndrome and it's components on incidence of different types of cataract change with time, it was seen that low HDL and high glucose were associated with an increased 10 year incidence of cortical and posterior sub capsular cataract respectively.⁴

CONCLUSION

According to this study, dyslipidemia has a direct or indirect relationship with nuclear and cortical cataract and should be considered as an etiology for cataract.

REFERENCES

1. Andrikopoulos GK, Alexopoulos DK, Gartaganis SP. Pseudoexfoliation syndrome and cardiovascular diseases. *World J Cardiol.* 2014;6:847-54.
2. Glacet-Bernard A, Coscas G, Chabanel A, Zourani A, Lelong F, Samama MM. Prognostic Factors for Retinal Vein Occlusion. *Ophthalmology.* 1996;103:551-60.
3. Quiroga L, Lansingh VC, Samudio M, Pena FY, Carter MJ. Characteristics of the corneal endothelium and pseudoexfoliation syndrome in patients with senile cataract. *Clin Exp Ophthalmol.* 2010;38:449-55.
4. Sabanayagam C, Wang JJ, Mitchell P, Tan AG, Tai ES, Aung T, et al. Metabolic syndrome components and age related cataract: the Singapore Malay eye study. *Invest Ophthalmol Vis Sci.* 2011;52:2397-404.
5. Michael A Pesce. Disorder of lipoproteins metabolism". In: Anthony S. Fauci, Dennis L Kasper, Dan L Longo, Eugene Braunwald, Stephen L Hauser, J Larry Jameson, Joseph Loscalzo; Harrison's Principles of Internal Medicine. 17th ed., USA, The McGraw-Hill Companies (2008):1656.
6. Eunice S Wang and Nancy Berliner."Lipid Metabolism". In: Thomas E Androli, Charles CJ Carpenter, Robert C Griggs, Ivor J Benjamin; Cecil Essential of Medicine, 7th edition; Canada, Saunders Elsevier; (2007):474.
7. Virgil F Fairbanks."Introduction to lipid disorders". In: Ernest Butler, Barry S Coller, Marshal A Lichtman; Beutler-Williams hematology, 6th edition, New York, McGraw-Hill Companies, (2000): 1654.
8. Green M. Bright Futures: National guidelines for health supervision of infants, children and adolescents. National Centre for Education in Maternal and Child Health, Arlington, VA (1994).
9. Shuang Wang., et al. Dyslipidemia and eye diseases in the Adult Chinese Population: The Beijing Eye Study. *PLoS One* 7.3(2012):e26871.
10. Jack J Kanski and Brad Bowling. Lens: Acquired

cataract; Clinical Ophthalmology: Systematic approach; 7th edition 9:273-280.

11. Hiller R, Sperduto RD, Reed GF, D'Agostino RB, Wilson PW. Serum lipids and age-related lens opacities: a longitudinal investigation: the Framingham Studies. *Ophthalmology* 2003;110:578-83.
12. Ning Cheung and Tien Y Wong. Obesity and eye diseases. *Survey of Ophthalmology* 52.2 (2007):180-195.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 02-07-2019; **Accepted:** 10-08-2019; **Published:** 07-09-2019