

Evaluation of IOP >21 mm Hg in Patients with Pseudoexfoliation in Hilly Terrains of North India

Amit Chopra¹, Amit Sharma², Rakesh Kumar Gupta²

ABSTRACT

Introduction: Pseudoexfoliation (PEX) is characterized by the deposition of dandruff like fibrillary material in the anterior segment mainly pupillary margins, angles of anterior chamber, anterior lens capsule. PEX is frequently associated with open angle glaucoma, the cause of which mainly is the obstruction of trabecular meshwork by this extracellular dandruff like material. The characteristic appearance of pseudoexfoliation material on the anterior lens capsule has three distinct zones: a central disc with curled edges; a clear zone, probably corresponding to contact with the moving iris; and a peripheral granular zone. Study aimed to Evaluate IOP >21 mm Hg in Patients with Pseudoexfoliation in hilly terrains of North India

Material and methods: This study was conducted in Department of Ophthalmology, MM Medical College and Hospital, Solan from January 2014 to December 2016. Four hundred confirmed cases of pseudoexfoliation were included in the study. Pseudoexfoliation was diagnosed on slit lamp biomicroscopy by the presence of white dandruff like material on the pupillary margin, on the trabecular meshwork, and or on the anterior lens capsule of one or both eyes.

Results: Out of 400 patients with pseudoexfoliation, 241 (60.25%) were males and 159 (39.75%) were females. 313 (78.25%) patients had unilateral and 87 (21.75%) had bilateral involvement with PEX. 118 eyes had intraocular pressure of more than 21 mm Hg in which 60 patients had unilateral and 29 patients had bilateral involvement. It was seen that frequency of eyes with pseudoexfoliation increased with age.

Conclusion: In this study it was observed that significant number of patients with pseudoexfoliation had high IOP and in higher age group both eyes were involved with PEX more frequently. Higher magnification under slit lamp is needed to document the evidence of fibrillary material in the fellow eye in which changes of PEX are less evident or doubtful under low magnification as compared to the primary eye.

Keywords : PEX, High IOP, Glaucoma.

by this extracellular dandruff like material.^{4,5}

In PEX syndrome various ocular manifestations include iris depigmentation, transillumination defects, hyperpigmentation of trabecular meshwork, zonular dehiscence and even iridodonesis, phacodonesis.⁶

The characteristic appearance of pseudoexfoliation material on the anterior lens capsule has three distinct zones: a central disc with curled edges; a clear zone, probably corresponding to contact with the moving iris; and a peripheral granular zone.

The aim of study was to evaluate IOP > 21 mm of Hg in patients with pseudoexfoliation in hilly terrains of North India

MATERIAL AND METHODS

This prospective study was carried out at Department of Ophthalmology, MM Medical College, Solan from 2013 to 2016. A total of 400 patients, 40 years and above were screened for pseudoexfoliation. The ocular examination consisted of visual acuity testing, routine slit lamp examination of anterior segment which included the evidence of dandruff like fibrillary material on the edge of pupil or lens in nonmydriatic state, gonioscopy, applanation tonometry and dilated fundus examination.

Written informed consent was taken before proceeding. The patients were subdivided into two subgroups of IOP < 21 mm of Hg and IOP > 21 mm of Hg. The characteristics of these groups were compared by the chi square test. P value of < 0.05 was taken as significant. Data was entered and analysed by using statistical program for social sciences (SPSS for windows software). The frequency and percentage were recorded.

The sample size is estimated taking into account confidence level of 95%.

Inclusion Criterion

- Patients with pseudoexfoliation changes on pupillary margin.
- Patients with pseudoexfoliation changes on anterior capsule of lens.
- Age more than 40 years.

INTRODUCTION

Pseudoexfoliation (PEX) is characterized by the deposition of dandruff like fibrillary material in the anterior segment mainly pupillary margins, angles of anterior chamber, anterior lens capsule. In PEX syndrome the deposition of this extracellular material the exact chemical nature of which is not known, occurs in various other organ systems like liver, lungs, cardiovascular system as in many cases PEX is associated with systemic hypertension, myocardial infarction, stroke.^{1,2} It was first described by Lindberg in 1917.³ PEX is frequently associated with open angle glaucoma, the cause of which mainly is the obstruction of trabecular meshwork

¹Associate Professor, ²Assistant Professor, Department of Ophthalmology, MMMC&H, Solan

Corresponding author: Dr. Amit Sharma, Assistant Professor, Department of Ophthalmology, MMMC&H, Solan

How to cite this article: Amit Chopra, Amit Sharma, Rakesh Kumar Gupta. Evaluation of IOP >21 mm Hg in patients with pseudoexfoliation in hilly terrains of North India. International Journal of Contemporary Medical Research 2017;4(8):1652-1654.

Exclusion Criterion

- Patients on treatment for high IOP.
- Patients with primary glaucoma.
- Patients with secondary glaucoma due to causes other than pseudoexfoliation.
- Patients with compromised corneas.
- Patients with age less than 40 years.

RESULTS

In this study 400 patients were included. Minimum age of presentation was 47 years. Out of 400 patients with pseudoexfoliation, 241 (60.25%) were males and 159 (39.75%) were females. 313 (78.25%) patients had unilateral and 87 (21.75%) had bilateral involvement. 118 eyes had intraocular pressure of more than 21mm Hg in which 60 patients had unilateral and 29 patients had bilateral high IOP. It was also seen that frequency of eyes with pseudoexfoliation increased with age.

- Table 1 shows the overall characteristics of patients.
- Table 2 shows characteristics of the patients with high IOP and association of IOP with age.
- Table 3 shows the relationship of IOP, PEX with Age.

DISCUSSION

In our study it was noted that significant percentage (22.25%) of the subjects with PEX had high IOP > 21 mm Hg which was consistent with the studies which had shown

the prevalence of high IOP with or without glaucoma to be in between 22% to 30%.⁷⁻⁹

In various studies it was noted that the frequency of PEX increased with increasing age.¹⁰⁻¹² There was no statistically significant difference with regards to gender in high IOP in our study. There were some conflicting reports of gender differences in the prevalence of PEX.^{9,12-15} It was also assessed that bilateral cases of PEX and high IOP were more frequent in higher age groups and it was found to be statistically significant. In a study it had been established in unilateral cases of PEX where no apparent fibrillary material was documented in the fellow eye based on slit lamp biomicroscopy, this extracellular material had been detected by ultrastructural studies on electron microscopy.¹⁶

The increased incidence of glaucoma in eyes with pseudoexfoliation is thought to indicate a causal relationship between the abnormal material and the elevated intraocular pressure. Mechanisms of rise in intraocular pressure in PEX may include local production of pseudoexfoliation material, endothelial cell damage of the trabecular meshwork and

Gender	
Male	241 (60.25%)
Female	159 (39.75%)
Laterality of PEX	
Unilateral	313 (78.25%)
Bilateral	87 (21.75%)
IOP (mm of Hg)	
IOP	No. of Patients
<21mm of Hg	311
>21mm of Hg	89 (22.25%)
Age of presentation (PEX)	
Min- Max	No. of Patients
40-49 years	9
50-59	128
60-69	203
70-80	60

Table-1: Patient characteristics

Gender	IOP<21	IOP>21	P- Value
Male	189	52	
Female	122	37	

Table-2: Gender with IOP >21mm of Hg and <21mm of Hg.

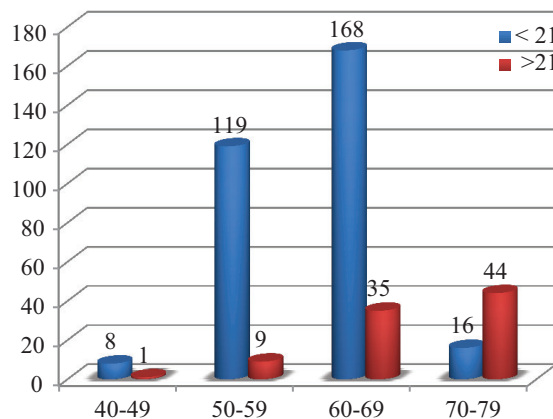


Figure-1: Bar diagram showing characteristics of IOP

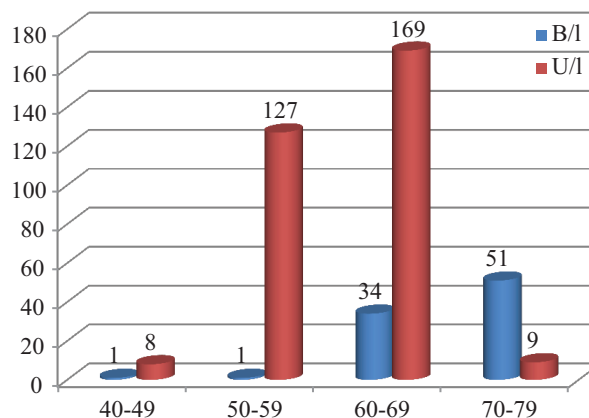


Figure-2: Bar diagram showing laterality of PEX

Age group	Pseudoexfoliation (PEX)		P value	Intraocular Pressure (mm Hg)		P value
	B/L	U/L		< 21	>21	
40-49	1	8	<0.05	8	1	<0.05
50-59	1	127		119	9	
60-69	34	169		168	35	
70-79	51	9		16	44	

Table-3: Characteristics of PEX and IOP with age

pigment originating from elsewhere in the anterior segment

CONCLUSION

In this study it was observed that significant number of patients with pseudoexfoliation had high IOP and in higher age group both eyes were involved with PEX more frequently. Higher magnification under slit lamp is needed to document the evidence of fibrillary material in the fellow eye in which changes of PEX are less evident or doubtful under low magnification as compared to the primary eye.

REFERENCES

1. Mitchell P, Wang JJ, Smith W. Association of pseudoexfoliation syndrome with increased vascular risk. *Am J Ophthalmol.* 1997;124:685-687.
2. Elhawry E, Kamthan G, Dong CQ, Danias J. Pseudoexfoliation Syndrome, a systemic disorder with ocular manifestations. *Hum Genomics.* 2012;6:22-31.
3. Lindberg JG. Kliniska undersökningar över depigmentering av pupillarranden och genomlysbarheten av iris vid fall av aldersstarr samt i normal ögon hos gamla personer. [Clinical studies of depigmentation of the papillary margin and transillumination of the iris in cases of senile cataract and also in normal eyes in the aged] [Thesis]. 1917 Helsinki, Finland: Helsinki University
4. Haydon PR. Pseudoexfoliation syndrome as a cause of chronic glaucoma. *Klin Monatsbl Augenheilkd.* 1986; 189:293-301.
5. Cobb CJ, Blanco GC, Spaeth GL. Exfoliation syndrome angle characteristics: a lack of correlation with amount of disc damage. *Br J Ophthalmol.* 2004;88:1002-3.
6. Schlotzer-Schrehardt U, Naumann GO. Ocular and systemic pseudoexfoliation syndrome. *Am J Ophthalmol.* 2006;141:921-37.
7. Kozart DM, Yanoff M. Intraocular pressure status in 100 consecutive patients with exfoliation syndrome. *Ophthalmology.* 1982;89:214-218.
8. Kozabolis VP, Papatzanaki M, Vlachonikolis IG, Pallikaris IG, Tsambarlakis IG. Epidemiology of pseudoexfoliation in the island of Crete [Greece]. *Acta Ophthalmol Scand.* 1997;75:726-729.
9. Ringvold A, Blika S, Elsas T, Guldahl J, Brevik T, Hesstvedt P, Hoff K, Hoisen H, Kjorsvik S, Rossvold I. The middle-Norway eye-screening study.II. Prevalence of simple and capsular glaucoma. *Acta Ophthalmol [Copenh].* 1991;69:273-280.
10. Cashwell LF, Shields MB. Exfoliation syndrome: Prevalence in a southeastern United States population. *Arch Ophthalmol.* 1988;106:335-36.
11. McCarthy CA, Taylor HR. Pseudoexfoliation syndrome in Australian adults. *Am J Ophthalmol.* 2000;129:629-33.10.
12. Mitchell P, Wang JJ, Hourihan F. The relationship between glaucoma and pseudoexfoliation: The Blue Mountains Eye Study. *Arch Ophthalmol.* 1999;117:1319-1324.
13. Krishnadas R, Nirmala PK, Ramakrishnan R, et al. Pseudoexfoliation in a rural population of southern India: the Aravind Comprehensive Eye Survey. *Am J Ophthalmol.* 2003;135:830-837.

14. Hiller R, Sperduto Rd, Kreuge DE. Pseudoexfoliation, intraocular pressure, and senile lens changes in a population-based survey. *Arch Ophthalmol.* 1982;100:1080-1082.
15. Summanen P, Jonjum AM. Exfoliation syndrome among Saudis. *Acta Ophthalmol.* 1988;184:112-115.
16. Prince AM, Streeten BW, Ritch R, Dark AJ, Sperling M. Preclinical diagnosis of pseudoexfoliation syndrome. *Arch Ophthalmol [Copenh].* 1991;69:273-280.

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

Submitted: 10-07-2017; **Accepted:** 12-08-2017; **Published:** 25-08-2017