

PREVALENCE AND FEATURES OF PSEUDOEXFOLIATION GLAUCOMA IN A REFERENCE OPHTHALMOLOGY HOSPITAL IN MAHARASHTRA – AN OBSERVATIONAL STUDY

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ABSTRACT

Background: Pseudoexfoliation syndrome is not an uncommon ocular ailment and the detection of pseudoexfoliation may be used as a marker to aid in the detection of glaucoma. **Objectives:** are to find the prevalence of pseudoexfoliation syndrome and detection of glaucoma in pseudoexfoliation syndrome cases and their features. **Materials and methods:** This is a Cross-sectional, descriptive study of 3018 patients above the age of 40 years visiting outpatient department of Lion's NAB Eye Hospital, Miraj during a period of two years from February 2008 to February 2010 were examined. Patients underwent thorough routine ophthalmic examination including slit lamp biomicroscopy. Further screening test for glaucoma was done for identified pseudoexfoliation cases. **Results:** Prevalence of pseudoexfoliation syndrome cases was 3.97% (120/3018)). Out of these 120 cases of pseudoexfoliation cases, 43 cases (35.83%) showed presence of glaucoma. The maximum age distribution of pseudoexfoliation was between 61 to 80 years. Pseudoexfoliation of lens was predominantly seen in males. Pseudoexfoliation is mostly bilateral (74.16%). Presence of pseudoexfoliation material on peripheral band of anterior lens surface was noted in 70% cases. Pseudoexfoliation material on the pupillary margin is a constant feature. 30% cases showed pseudoexfoliation material in the trabecular meshwork. **Conclusion:** Glaucoma is quite common in pseudoexfoliation syndrome and all cases off pseudoexfoliation should be evaluated for glaucoma and type of glaucoma or early treatment for best results.

INTRODUCTION

Pseudoexfoliation syndrome is not an uncommon ocular ailment which is characterized by deposition of fine, flaky material on the anterior lens capsule at the pupillary margin, zonules of Zinn; internal limiting membrane of iris, ciliary body, their epithelial surfaces and around the vessels of anterior uveal tissue, extra bulbar tissues like vessels at limbus and palpebral conjunctiva. This 'dandruff-like' white flaky material was first described by Lindberg¹ (Finland) in 1917. This condition, now commonly known as pseudoexfoliation of lens, was later also noted as flakes on anterior surface of the lens by Malling (1923),^[2] in Norway. But it was Vogt (1923-32),^[3] who first published an accurate description of the disease under the name of 'superficial exfoliation of the anterior capsule of the lens' and called the consequential rise in tension - Glaucoma Capsulare. Busacca (1929),^[4]

demonstrated that lens capsule consists of many layers histologically, while Dvorak – Theobald (1954),^[5] coined the term 'pseudoexfoliation' of lens capsule.

The condition is commonly seen in old age and is often found to be associated with raised intraocular pressure and also cataract. When averaged across the globe, it is the most common identifiable cause of secondary open angle glaucoma. It is not unusual to find a considerable number of cases in Indian population, especially while screening patients for cataract. Both Glaucoma Capsulare and chronic simple glaucoma are open-angle glaucomas, but glaucoma capsulare shows increased pigmentation at the angle and is more difficult to control as it responds poorly to treatment. The prognosis also is poor as compared to Chronic simple glaucoma.

This condition has certain risks during cataract surgery, such as zonular dialysis, capsular rupture and vitreous loss. As it is usually associated with

weak zonules of Zinn which may give rise to higher incidence of subluxation of lens and phacodonesis. It also causes disturbance in the blood aqueous barrier. Ophthalmologists in India may wish to focus on the detection of pseudoexfoliation for the fact that pseudo exfoliation may be used as a marker to aid in the detection of glaucoma.^[3]

Thus, considering the clinical importance of pseudo exfoliation, a study was been carried out in this institute "Lions NAB Eye Hospital" Miraj is a tertiary care eye hospital where large number of patients suffering from various eye diseases report everyday for necessary treatment. The present study aimed at screening all cases to detect pseudo exfoliation syndrome. All such cases will now be subjected for further screening to see if any of them is suffering from glaucoma. Once the diagnosis of glaucoma was established, necessary treatment was instituted to control this condition and such patients were instituted to come for regular follow up visits. Findings of the study helped in in finding region specific prevalence of pseudoexfoliation glaucoma and there by guiding the importance early treatment to prevent complications.

MATERIALS AND METHODS

This study of pseudoexfoliation was conducted at Lions NAB eye hospital Miraj with following criteria.

Inclusion Criteria

1. The cases included in the study must have unequivocal features of pseudoexfoliation syndrome in one or both eyes.
2. There will be no age or sex bar including the cases into study.
3. The final inclusion of cases will be on the basis of an established diagnosis of glaucoma with the presence of pseudoexfoliation syndrome.

Exclusion Criteria

1. Doubtful cases of pseudoexfoliation syndrome.
2. Cases who have undergone any surgery for cataract or glaucoma.
3. Doubtful cases of glaucoma even if pseudoexfoliation syndrome is present.

In this study, 3018 patients above the age of 40 years visiting outpatient department of Lion's NAB Eye Hospital, Miraj during a period of two years from February 2008 to February 2010 were examined. A standard questionnaire was prepared to note down the findings of examinations. These patients underwent thorough routine ophthalmic examination including

slit lamp biomicroscopy to establish the diagnosis of pseudoexfoliation syndrome. Those who were identified as having the above disorder were subjected to screening tests to detect glaucoma. These included recording of IOP using Perkin's applanation tonometer, diurnal variation in patients with normal IOP, visual field analysis, gonioscopy, central corneal thickness wherever possible and fundus examination. Those found having glaucoma were kept under survey and were advised to undertake treatment as per the prescribed protocol. Patients having IOP above the normal range, but not showing optic disc pathology of glaucoma and defects in visual field analysis were provisionally labelled as ocular hypertensives and were advised follow up to see if in future they exhibited glaucomatous changes.

RESULTS

In this hospital based, cross-sectional, observational study, a total of 3018 patients visiting the ophthalmic out patient department during a period of one year were screened. Of these 3018 patients, 120 patients were cases of pseudoexfoliation syndrome. This accounts for 3.976% of the study population. Table 1 shows the prevalence of exfoliation syndrome and characters of the study population. Nearly equal number from both sexes were screened with slight male preponderance in attending OPD. The sex ratio of screened population was 1: 1.15.

Table 2 shows the Distribution of the exfoliation syndrome in the study population by various characteristics. The maximum age distribution of pseudoexfoliation syndrome is seen in the age group of >79 yrs (30%), while it was quite low between 40-49 yrs (2.9%). It is evident that the incidence of pseudoexfoliation syndrome progressively increases with increasing age. There is a definite higher prevalence of pseudoexfoliation syndrome in males as evident from the table 2 (68.33%). Pseudoexfoliation syndrome usually manifests bilaterality in majority of cases (74.17%). About 43 cases (35.83%) of pseudoexfoliation cases had glaucoma. The majority of cases of glaucoma in pseudoexfoliation syndrome group belonged to open angle type (76.74%). Table 2 shows the presence of pseudoexfoliation material on papillary margin as the constant feature (100%). The other sites where pseudoexfoliation material was found to be deposited include anterior lens capsule, zonules and angles (trabecular meshwork).

Table 1: Prevalence of exfoliation and gender distribution of exfoliation syndrome in the study population

Parameter	Screened population	Exfoliation syndrome	%
Prevalence	3018	120	3.976
Gender distribution of screened	Male n (%)	Female n (%)	Total
	1615 (53.51)	1403 (46.49)	3018

Table 2: Distribution of the exfoliation syndrome in the study population by various characteristics

Character	n	%
Age distribution of pseudoexfoliation syndrome		

40 – 49 yrs	3	2.5
50 - 59 yrs	21	17.5
60 – 69 yrs	28	23.3
70 – 79 yrs	32	26.6
More than 79 yrs	36	30
Gender		
Male	82	68.33
Female	38	31.67
Laterality		
Unilateral	31	25.83
Bilateral	89	74.17
Glaucoma presence		
Glaucoma presence with pseudoexfoliation syndrome	43	35.83
Angle Configuration of glaucoma (n = 43)		
Open angle	33	76.74
Narrow angle	8	18.61
Closed angle	2	4.65
Distribution of pseudoexfoliation by site		
Pupillary margin	120	100
Anterior capsule	84	70
Zonules	42	35
Angles (Trabecular meshwork)	36	30

DISCUSSION

After screening 3018 adult patients, a total of 120 cases were identified which showed definite characteristics of pseudoexfoliation syndrome. Different aspects of these patients were studied with special reference to presence or absence of glaucoma. Pseudoexfoliation rarely occurs below 50 years of age. The study of literature shows the highest incidence of condition to occur between 60-80 years, average being around 70 years.⁶ Tarkkanen (1962),^[7] Sivareddy (1970),^[8] and Sood (1968)⁹ reported the maximum incidence between 60-70 years. In our study, the highest incidence of 30% was recorded in >79 years age group, and the incidence was 23.30% in the age group of 60-69 years and 26.60% in the age group of 70-79 years. This indicates that pseudoexfoliation is a disease of old age with highest incidence between 60-80 years.

Though Duke- Elder (1969),^[6] stated that there was no appreciable sex preference for the occurrence of pseudoexfoliation, studies in India by Sood (1968),^[9] Siva Reddy (1970),^[8] and P.A. Lamba (1984),^[10] revealed pseudoexfoliation to predominantly occur in males. Luntz (1972),^[11] Mizuno and Muroi (1979),^[12] Moreno Montanes (1990),^[13] and Kozobolis (1999)¹⁴ also reported a male preponderance in pseudoexfoliation.

Gillies,^[15] found 61.15% bilateral cases of pseudoexfoliation. Mizuno and Muroi (1979),^[12] found bilateral pseudoexfoliation in 54.84% cases while Kozobolis (1999),^[14] noted bilateral pseudoexfoliation in 72.8% cases. In this study also, bilateral pseudoexfoliation was more common amounting to 74.16%. Unilateral pseudoexfoliation was found in 25.84% cases. This shows that pseudoexfoliation is usually a bilateral condition.

A significant association between high intraocular pressure and pseudoexfoliation has been reported in literature. Sood,^[9] found a rise in intraocular pressure in 34.5% of pseudoexfoliation while Sivareddy (1970)⁸ found it in 40% cases. Bartholomew (1970)

)¹⁶ noted raised intraocular pressure in 50% cases and M. Stefaniotou (1990),^[17] noted it in 39.5% cases of pseudoexfoliation of lens. Chronic simple glaucoma is a common occurrence in patients with pseudoexfoliation of lens. Duke Elder (1969),^[6] put forth an incidence of 70%.

Pseudoexfoliation material appears as deposits of granular material occurring on the anterior lens capsule, pupil margin, zonules, ciliary body, iris crypts, in the anterior chamber angle and floating freely in aqueous. 18 Flakes at pupillary margin were noted in 82.6% cases by Sood 1968,^[19] Shimuzu 1992,^[20] found pseudoexfoliative material on pupillary margin in 98.3% cases. In this study flakes at pupillary margin were found in all i.e. 100% cases indicating that it is a common site where exfoliative material gets deposited due to rubbing off of exfoliated material from anterior surface of lens capsule due to pupillary movement.

CONCLUSION

In summary and conclusion, out of 3018 patients visiting the OPD in one year 120 pseudoexfoliation syndrome cases were present (3.97%). Out of these 120 cases, 43 cases (35.83%) showed presence of glaucoma. The maximum age distribution of pseudoexfoliation was between 61 to 80 years and is quite less below 50 years of age. The mean age of occurrence of pseudoexfoliation is found to be 64.27 years. Pseudoexfoliation of lens was predominantly seen in males. Pseudoexfoliation is mostly bilateral (74.16%). Presence of pseudoexfoliation material on peripheral band of anterior lens surface was noted in 70% cases. Also pseudoexfoliation material on the pupillary margin is a constant feature and was noted in all cases. 30% cases showed pseudoexfoliation material in the trabecular meshwork. 35% showed the presence of pseudoexfoliation on the zonules resulting in weakness of zonules. Gonioscopically, 76.74% cases showed a widely open angle with exfoliation material in trabecular meshwork.

Glaucoma is quite common in pseudoexfoliation syndrome and all cases of pseudoexfoliation should be evaluated for glaucoma and type of glaucoma or early treatment for best results.

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