ORIGINAL ARTCLE

Frequency of Glaucoma in Patients with Pseudoexfoliation Syndrome

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ABSTRACT

Objective: To calculate the frequency of glaucoma in patients with pseudoexfoliation.
Subjects and methods: Thirty-eight confirmed cases of pseudoexfoliation were included in the study. Tonometry, gonioscopy, ophthalmoscopy and visual field analysis was carried out to determine glaucoma.
Results: Out of thirty-eight patients, seven (18.42%) were found to have glaucomatous changes. Three (7.89%) of them had the glaucomatous damage in both eyes and four (10.53%) in one eye only. The mean age of the subject was 60.7±7.0 years (range 42-75 years).
Conclusion: There is marked increase in frequency/ risk of developing glaucoma in pseudoexfoliation patients.
Keywords: Pseudoexfoliation syndrome, Glaucoma, Frequency

INTRODUCTION

Pseudoexfoliation syndrome is an entity often associated with an aggressive form of open-angle glaucoma. Intraocular pressures are higher and more difficult to control, and laser or surgical therapy is more frequently used in cases of pseudoexfoliation syndrome than in cases of primary open-angle glaucoma[1,2]. Conversion to glaucoma probably occurs because of local production of pseudo-exfoliation syndrome material and passive deposition of extratrabecular pseudoexfoliation syndrome material in the trabecular meshwork[3]. Pseudoexfoliation syndrome is associated with various ocular complications. Elevated intraocular pressure and glaucomatous nerve damage had been demonstrated in patients with pseudoexfoliation syndrome[4]. Cataracts were reported to be more common in patients with pseudoexfoliation syndrome.[5] There are many variations in the results of frequency of pseudoexfoliation syndrome that can be attributed to not only differences in research methods, but also to differences between ethnic populations[6].

Homocysteine levels were higher among patients with pseudoexfoliation syndrome and pseudoexfoliative glaucoma compared with controls[7]. Pseudoexfoliation syndrome was now considered the most common identifiable specific entity that leads to both open-angle glaucoma and angle-closure glaucoma, and has been causatively associated with cataract, lens dislocation, and central retinal vein occlusion[8,9]. A major risk for the development of glaucoma is pseudoexfoliation. It is found in 20-60%of patients in many regions of the world.[10] The diagnosis of pseudoexfoliation is based on the finding of "dandruff-like" material upon the pupillary margin, or "sugar frosting" of the anterior lens capsule[11]. Presentation of an older patient with signs of bilateral pigment dispersion and unilateral glaucoma warrants a careful examination for the development of pseudoexfoliation syndrome.[12] The purpose of this study was to highlight the fact that patients with pseudoexfoliation were at increased risk of developing glaucoma, which leads to blindness and help us in recommending measures for management of pseudoexfoliation patients.

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MATERIAL AND METHODS

This descriptive study was carried out in the Eye Outpatient Department, Combined Military Hospital, Peshawar between 5th May to 4th November 2005. Thirty-eight patients diagnosed as exfoliation syndrome on slit lamp were included. Patients attending the eye OPD were examined at slit lamp for presence of pseudoexfoliation after taking written consent and explaining the procedure. In patients with raised IOP, the pupil was dilated with 1% tropicamide (Mydriacyl, Alcon) after tonometry and the tension was recorded at 1/2 hourly intervals for two to three times, and meanwhile the anterior lens capsule, pupillary margin and other structures of the anterior chamber were examined on slit lamp for any evidence of pseudoexfoliation material. A drop of 2% pilocarpine was instilled in dilated eyes at the end of examination. In those cases with shallow anterior chamber a thorough meticulous search was made for pseudoexfoliation material without dilating the pupil.

All the patients who were subjected to slit lamp examination for any reason, pseudoexfoliation was also looked for. It was tried that maximum cases should be seen on the slit lamp especially those above the age of forty. Pseudoexfoliation glaucoma was diagnosed on the basis pseudoexfoliation material on slit lamp examination, increased intraocular pressure >21 mm of Hg, glaucomatous optic nerve head damage/cupping, gonioscopy findings, with corroborative visual field changes when a reliable visual field was obtained. Frequencies and percentages were calculated for demographic status, glaucoma status and position of glaucoma.

RESULTS

Thirty-eight confirmed cases of pseudoexfoliation were selected from out patient department, Combined Military Hospital, Peshawar. There were 27 males and 11 females with the ratio of 2.4:1. Correctable visual acuity of 38 pseudoexfoliation cases ranged 6/6 to 6/12. Intraocular pressure ranged between 08 to 30mmHg. Increased intraocular pressure was found in (11 out of 38 cases). Cup disc ratio varied from 0.3 to 0.8. The patient's age ranged from 42 to 74 years with a mean value of 61.7±7.0 years (Table 1).

The frequency of glaucoma in 38 cases of pseudoexfoliation was 7 (18.4%). Five of the 27 Males (18.5%) and two of 11 females (18.18%) were affected. All seven patients had arcuate to double arcuate field defects. In seven of thirty-eight cases having pseudoexfoliative glaucoma, three had glaucoma in both eyes and four had in one eye. Of the 7 patients with pseudoexfoliative glaucoma, five cases had open angle and two had occludable angle on gonioscopy. All 38 patients showed increased trabecular pigmentation on gonioscopy (Table 2).

Table 1: Socio-demographic profile of subjects

Variables	**Frequency**	**%age**
Gender		
Male	27	71.1
Female	11	28.9
Age (years)		
40 – 51	2	5.26
52 – 63	20	52.64
64 – 75	16	42.10

Table 2: Distribution of cases by glaucoma status and position of glaucoma (n = 38)

Sex	**Bilateral glaucoma**		**Unilateral glaucoma**		**No glaucoma**	
Male	1	2.63	1	2.63	9	23.68
Female	2	5.26	3	7.89	22	57.89

DISCUSSION

The prevalence rate of pseudoexfoliation syndrome in different populations shows extensive variations from 0% to 38%.[13] In our study out of seven cases of glaucoma 5 patients had open angle and 2 had occludable angle on gonioscopy. These variations arise from racial, genetic, and/or geographical differences. In the present state of knowledge it is possible to say that exfoliation syndrome is age-dependent and a significant proportion of the elderly population was affected. In our small study age range was 42 to 74 years and majority of them were (30 out of 38) older than 58 years. In certain countries such as Greece, Finland, Norway and Iceland available data suggest that 12-30% of the population over the age of 70 years showed evidence of exfoliation material on clinical examination[14,15]. In our study 15.7% (6/38) patients over 70 years showed evidence of pseudoexfoliative deposits on slit lamp examination. A preponderance of maternal transmission of pseudoexfoliation syndrome in families reported had raised the possibility of mitochondrial inheritance[16].

Glaucoma occurs more commonly in eyes with exfoliation syndrome than in those without it. Elevated intraocular pressure with or without glaucomatous damage occurs in approximately 25% of persons with exfoliation syndrome, or about 6 to 10 times the rate in eyes without pseudoexfoliation syndrome. In our study (11 out of 38 cases) 28.94% showed elevated intraocular pressure on examination. In another study carried out by Arvind et al[17] in South India ocular hypertension, that is, high intraocular pressure without glaucomatous optic neuropathy was found in 9.3% of cases with exfoliation syndrome. In our study 5 patients had high intraocular pressure but on fundoscopy their was no glaucomatous optic neuropathy and there were no defects on visual fields analysis. Exfoliate glaucoma has a more serious clinical course and worse prognosis than primary open-angle glaucoma. There was a significantly higher frequency and severity of optic nerve damage at the time of diagnosis, worse visual field damage, and poorer response to medications and more severe clinical course.

Persons with elevated intraocular pressure and exfoliation syndrome were much more likely to develop glaucomatous damage on long-term follow-up than those without exfoliation syndrome. The percentage of patients with exfoliation syndrome who have pseudoexfoliation syndrome, or ocular hypertension on initial examination ranged from 22 to 94% depending on the sampling method[18,19]. In The Blue Mountains Eye Study, a population based study pseudoexfoliative glaucoma was seen in 14.2% of

patients which is similar to our data[20]. In our study percentage of patients with exfoliation syndrome who have pseudoexfoliation syndrome, on examination was (7 out of 38 cases) 18.4%.

In our study out of seven patients who had pseudoexfoliation syndrome, five patients had open angle on gonioscopy. Potential causes of elevated intraocular pressure in our study in eyes with exfoliation syndrome were thought to be trabecular cell dysfunction, blockage of the meshwork by exogenous and endogenous exfoliation material, blockage of the meshwork by liberated iris pigment, trabecular cell dysfunction, and coexisting primary open-angle glaucoma[21]. It is concluded that there is increase in frequency/risk of developing glaucoma in patients with pseudoexfoliation.

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