e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(1); 575-578

Original Research Article

A Clinical-Epidemiological Evaluation of the Prevalence of Pseudoexfoliation Syndrome and its Ocular Manifestations

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Received: 02-11-2023 / Revised: 16-12-2023 / Accepted: 20-01-2024
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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to evaluate prevalence of Pseudoexfoliation Syndrome and its ocular manifestations.

Methods: The present study was conducted in the Department of Ophthalmology, NMCH, Patna, Bihar, India. All cases of cataract getting admitted for cataract surgery were included. A total of 100 cases with PES of Cataract surgeries were included. Duration of study was 12 months

Results: The ages of the 100 patients in this study was between 55 and 85 years. Out of these 18 (18%) were in 55-65 years age group, 58 (58%) patients were in 66-75 years age group and 24 (24%) patients in were in 76-85 years age group. 55 (55%) were male and 45 (45%) were females. 65 cases had <6 mm pupillary dilatation while 35 had >6 mm dilatation. None of the pupils dilated beyond 7mm. 60% patients had poorly dilating pupil followed by retained lens matter. 60% had Post-op visual acuity 6/18- 6/36 followed by 32% 6/6-6/12.

Conclusion: Inadequate pupil dilatation, and zonular weakness are the common difficulties associated with small incision or Phacoemulcification cataract surgery in eyes with pseudoexfoliation syndrome. Careful surgical evaluation and communication with the patient regarding increased surgical risks should be given in patients with Pseudoexfoliation syndrome. Early diagnosis, detailed ocular examination, beforehand preparedness for and management of intraoperative surgical complications and postoperative outcome associated with pseudoexfoliation improves surgical outcomes.

Keywords: pseudoexfoliation syndrome, complications

Introduction

Pseudoexfoliation syndrome (PEX) is a condition characterized by the secretion of a grey-white, fibro granular substance in the anterior segment. The source of this substance is multifocal and is believed to appear secondary to abnormal basal membrane constituents produced by aging epithelial cells. [1] PEX is diagnosed clinically by anterior segment examination, and is defined as the presence of grey-white fibro granular pseudo exfoliation material on the anterior capsule of the lens and edges of the pupil. [2,3] The prevalence of PEX varies by population; however, PEX frequency increases with age and it is believed that an extremely significant relationship exists between age-related cataract us lens changes and PEX. [4]

In eyes with PEX, it has been reported that degenerative changes in the iris stroma and muscle layer may interfere with sufficient pupil dilation. [5] In eyes with pseudo exfoliation, the lens zonules can become detached from the ciliary body and lens by mechanical forces or enzymatic zonulolysis. Clinically, this can lead to iridopha -codonesis and spontaneous lens subluxation or dislocation. [6] These structural changes make cataract surgery more difficult and increase the incidence of intraoperative complications. [7,8]

Pseudoex foliation is diagnosed by the deposition of white, “dandruff-like”, fluffy material, virtually in all the structures of the human eye, but more importantly in the anterior segment: corneal endothelium, anterior capsule, lens zonules, iris, and trabecular meshwork. The material is composed of amyloid, laminin, elastic fibers, collagen, and basement membrane. [9,10] The same material seen

in the ocular district has been found in other parts of the human body such as heart, lung, liver, kidney, cerebral meninges, and blood vessels, [11] indicating that PXF is a multiorgan disease. This may explain why patients with ocular PXF may present a history of systemic hypertension, abdominal aorta aneurysm, angina, cardiovascular disease, and stroke. [12,13] Despite all these, life expectancy does not differ between persons with and without PXF. [14]

The aim of the present study was to evaluate prevalence of Pseudo exfoliation Syndrome and its ocular manifestations.

Materials and Methods

The present study was conducted in the Department of Ophthalmology, NMCH, Patna, Bihar, India. All cases of cataract getting admitted for cataract surgery were included. A total of 100 cases with PES of Cataract surgeries were included. Duration of study was 12 months (Jan 2018 to December 2018)

Inclusion Criteria:

• Both male and female patients are included
• Age between 55 years to 85 yrs
• Patients willing to participate and willing to give informed consent

Exclusion Criteria:

• Age < 55 years or > 85 years

• History of Previous Intraocular surgery, Traumatic Cataract, Congenital Cataract, and Complicated Cataract.

Patients will be selected according to the inclusion and exclusion criteria. After taking informed consent and reassuring patients regarding expertise and confidentiality Detailed history will be taken regarding demographic factors, occupation, previous medical, surgical and ocular history. Examination will done including general physical examination. This cross-sectional descriptive study was carried out on 50 eyes of 50 patients with cataract and PXE who underwent SICS or phacoemulsification surgery in a tertiary care hospital. There preoperative and intratraoperative and postoperative complications with visual outcome were documented and analyzed.
Statistical Analysis was done using appropriate statistical tests.

Results

Table 1: Age and sex distribution

Age groups in years	**N**	**%**
55-65	18	18
66-75	58	58
76-85	24	24
Gender		
Male	55	55
Female	45	45

The ages of the 100 patients in this study was between 55 and 85 years. Out of these 18 (18%) were in 55-65 years age group, 58 (58%) patients were in 66-75 years age group and 24 (24%) patients in were in 76-85 years age group. 55 (55%) were male and 45 (45%) were females.

Table 2: Pupillary dilation

Pupillary dilation	**N**	**%**
<6mm	65	65
>6mm	35	35

65 cases had <6 mm pupillary dilatation while 35 had >6 mm dilatation. None of the pupils dilated beyond 7mm.

Table 3: Intraoperative complications

Intraoperative complications	**N**
Poorly dilating pupil	60
Post capsular rupture	8
Zonular degeneration	4
Votreous loss	2
Post opt hyphaema	6
Decentered iol	6
Retained lens matter	12
Iridodialysis	2
Lens dislocation	0
Total	100

60% patients had poorly dilating pupil followed by retained lens matter.

Table 4: Post-OP visual acuity

Post-OP visual acuity	N
6/6-6/12	32
6/18- 6/36	60
6/60 or LESS	8

60% had Post-op visual acuity 6/18- 6/36 followed by 32% 6/6-6/12.

Discussion

PXF syndrome is a multifactorial, genetically determined, age-related and environmentally influenced disorder of the elastic fiber structure, characterized by excessive production and accumulation of an elastotic material within a multitude of intra and extra ocular tissues. [15] For this reason, PXF is a diffuse disease with ocular and systemic manifestations. The ages of the 100 patients in this study was between 55 and 85 years. Out of these 18 (18%) were in 55-65 years age group, 58 (58%) patients were in 66-75 years age group and 24 (24%) patients in were in 76-85 years age group. 55 (55%) were male and 45 (45%) were females. 65 cases had <6 mm pupillary dilatation while 35 had >6 mm dilatation. None of the pupils dilated beyond 7mm. 60% patients had Poorly dilating pupil followed by retained lens matter. 60% had Post-op visual acuity 6/18- 6/36 followed by 32% 6/6-6/12.

The pathogenesis of PXF is multifactorial, where geographical and environmental factors, together with genetic predisposition, explain the different incidence of this syndrome across the world. A documented association with mutations in the lysis oxidase-like 1 gene (LOXL1) at the locus 15q22, [16] which codes for elastic fiber components of extracellular matrix, suggests a genetic factor for the inheritance of this disease. For this reason, it has been suggested that PXF is a form of elastosis resulting from the overproduction of elastic microfibrillar components such as fibrillin-1. [17] The systemic origin of the disease explains why patients with unilateral involvement manifest PXF signs in the normal fellow eye at a later time, indicating that PXF is a generalized, bilateral disorder with a markedly asymmetric clinical presentation at onset. Patients with unilateral signs of the disease are usually younger than those with bilateral involvement.

PXF is generally recognized late in life as the course of the disease is for long time subclinical and the degree of ocular involvement and visual loss is often asymmetrical or more rarely unilateral. The diagnosis of PXF is of paramount importance as this disease is a major risk factor for complications during cataract surgery and the most frequent cause of secondary glaucoma. [18] Intraoperative and postoperative complications may arise from the weakened capsule and zonular apparatus (zonulopathy) secondary to the progressive proteolytic disintegration of the suspensory ligament, responsible for the instability of the crystalline lens during surgery, capsular rupture, zonular dialysis, vitreous loss, nuclear luxation, decentration or dislocation of the intraocular lens (IOL) with time. Further difficulties during surgery result from poor or inadequate pupil dilation (iridopathy), secondary to atrophic changes of the iris sphincter and stroma characterized by trans illumination defects. Postoperative anterior chamber inflammation and fibrinous reaction occur frequently in PXF patients due to an acquired weakened blood-aqueous barrier. [19] Corneal endothelial morphological and functional changes (endotheliopathy) are seen in eyes affected with PXF, explaining the greater susceptibility of these eyes to surgical trauma, resulting in transitory and permanent corneal decompensation. [20]

Conclusion

Inadequate pupil dilatation, and zonular weakness are the common difficulties associated with small incision or Phacoemulcification cataract surgery in eyes with pseudoexfoliation syndrome. Careful surgical evaluation and communication with the patient regarding increased surgical risks should be given in patients with Pseudoexfoliation syndrome. Early diagnosis, detailed ocular examination, beforehand preparedness for and management of intraoperative surgical complications and postoperative outcome associated with pseudoexfoliation improves surgical outcomes.

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