International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 16s,2025
https://theaspd.com/index.php

A Study Of The Incidence Of Cystoid Macular Edema In Patients With Psuedoexfoliation Syndrome Following Small Incision Cataract Surgery

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Abstract
Psuedoexfoliation syndrome is an age related disorder caused by fibrillar granular extracellular material which deposits in the anterior segment of the eye and other body tissues. It is associated with open and closed angle glaucoma and cataract. Eyes with PXF were reported to have prolonged aqueous flare following cataract surgery, the fragility of the blood-ocular barrier and intense postoperative inflammation may be responsible for a higher risk of pseudophakic macular edema in PXF eyes.
Aim
To study the incidence of postoperative cystoid macular edema in patients with PXF undergoing routine small incision cataract surgery
Materials & Methods
It was a prospective study conducted at the department of ophthalmology at Sree Balaji Medical college and hospital between January 2024 to December 2024. A total of 50 patients with PXF syndrome with and without glaucoma were included in the study. They underwent unilateral small incision cataract surgery and postoperative assessment with visual acuity, fundus examination and OCT was done at 2 weeks, 4 weeks and 8 weeks respectively.
Results
Four patients showed clinical and OCT evidence of cystoid macular edema at the eighth week follow up and no association was noted with co-existing glaucoma. 40 patients had good visual recovery, 8 patients impaired and 2 patients poor postoperatively.
Discussion
Cystoid macular edema (CME) is the most common cause of visual impairment related to the postoperative period of uncomplicated cataract surgery. CME has a low incidence of 0.1%–2.35% and occurs between the fourth and tenth postoperative week. The extensive blood-aqueous barrier breakdown in eyes with PEX following intraocular surgery is an important risk factor for early or late postoperative complications. The alterations of the blood-aqueous barrier should be considered in the medical and surgical treatment of eyes with PEX.
Kewords- PXF, CME, blood aqueous barrier.

INTRODUCTION

Psuedoexfoliation syndrome is an age related disorder caused by fibrillar granular extracellular material which deposits in the anterior segment of the eye and other body tissues. It is associated with open and closed angle glaucoma and cataract.[1,2] The prevalence of PXF worldwide ranges from 0.5% in patients< 60 years of age and 1.5% in patients more than 60 years of age, the prevalence of PXF in india ranges from 1.87 to 13.5% .[1] Patients with PXF are at a higher risk of developing complications during and after cataract surgery. Complications associated with cataract surgery in PXF can occur from poor pupillary dilation, zonular weakness leading to intraoperative or postoperative lens dislocation and vitreous loss, postoperative intraocular pressure (IOP) spikes potentiating glaucomatous damage, capsular phimosis, prolonged inflammation, and corneal decompensation.[4,7,8]

Eyes with PXF were reported to have prolonged aqueous flare following cataract surgery, damaged blood-ocular barrier due to iris ischemic changes in these patients leads to increased leakage of serum proteins into the aqueous humor after surgery.[10] The fragility of the blood-ocular barrier and intense postoperative inflammation may be responsible for a higher risk of pseudophakic macular edema in PXF eyes.[3,10,11] In our institute we observed a large number of patients with PXF developing postoperative cystoid macular edema following cataract surgery.

Aim

To study the incidence of postoperative cystoid macular edema in patients with PXF undergoing routine small incision cataract surgery.

MATERIALS AND METHODS

It was a prospective study conducted at the department of ophthalmology at Sree Balaji Medical college and hospital between January 2024 to December 2024. A total of 50 patients with PXF syndrome with and without glaucoma were included in the study. All patients were subjected to routine slit lamp examination, visual acuity, IOP measurement using Goldman applanation tonometer, gonioscopy fundus examination and OCT macula prior to surgery. Pseudoexfoliation syndrome was diagnosed by slit-lamp detection of deposits of fibrillogranular material on the anterior lens capsule and at the pupillary margin.1 They underwent unilateral small incision cataract surgery and all patients were treated with tapering dose of topical Gatifloxacin and Prednisolone acetate 1% tapering dose over a period of 6 weeks. Postoperative assessment with visual acuity, fundus examination and OCT was done at 2 weeks, 4 weeks and 8 weeks respectively. Visual recovery was graded Good (6/6 to 6/12) Impaired (6/18 to 6/36) and Poor (6/60 and worse)

Inclusion Criteria

All patients above 60 years of age with psuedoexfoliation syndrome with and without glaucoma

Exclusion Criteria

Patients with diabetes mellitus, uveitis, high myopia, ARMD, retinal vein/artery occlusion, epiretinal membrane, macular hole, using prostaglandin analogues and prior laser procedures. Intraoperative complications like iris prolapse, zonular dehiscence, posterior capsular rupture, use of sutures and failure to use topical anti-inflammatory postoperatively were also excluded from the study.

RESULTS

AGE

NO OF PATIENTS	60-70	70-80
50	21	29

GENDER

NO OF PATIENTS	MALE	FEMALE
50	32	18

GLAUCOMA

NO OF PATIENTS	PXF WITHOUT GLAUCOMA	PXF WITH GLAUCOMA
50	37	13

POSTOPERATIVE VISUAL ACUITY

GOOD (6/6-6/12)	IMPAIRED(6/18-6/36)	POOR 6/60 AND LESS
40	8	2

MACULAR THICKNESS PRE AND POSTOPERATIVELY

TIME	Macular thickness(microns)	SD
Pre operatively	218.29	26.79

2 weeks	220.71	27.66
4 weeks	225.25	21.66
8 weeks	232.46	29.85

DISCUSSION

Cystoid macular edema (CME) is the formation of fluid-filled cystoid spaces between the outer plexiform and inner nuclear layers of the retina, resulting from disruption of the blood retinal barrier.[18] Cystoid macular edema (CME) is the most common cause of visual impairment related to the postoperative period of uncomplicated cataract surgery. CME has a low incidence of 0.1%–2.35% and occurs between the fourth and tenth postoperative week.[17] Ocular surgery causes inflammatory events with the production of prostaglandins, leading to the accumulation of intraretinal fluid and macular thickening. Inflammatory mediators, when diffused to the vitreous and retina, cause vasodilatation and disruption of the blood–retinal barrier, and the fluid accumulation in the retina can develop CME. [17] The common risk factors for CME are diabetes, uveitis, retinal vascular occlusions, epiretinal membrane, incomplete PVD and intraoperative complications like posterior capsular rupture and vitreous loss.[12]

A number of studies have presented evidence of dysfunction of the blood-aqueous barrier in PEX with consecutive increase of aqueous flare and aqueous protein concentration. I n a study on PXF eyes done by M kuchle et al using laser flaremetry showed that both aqueous flare and protein were significantly increased in eyes with PXF. [10,11] The extensive blood-aqueous barrier breakdown in eyes with PEX following intraocular surgery is an important risk factor for early or late postoperative complications. The alterations of the blood-aqueous barrier should be considered in the medical and surgical treatment of eyes with PEX.

In our study 4 patients with PXF (8%) showed clinical and OCT evidence of cystoid macular edema which was stastically significant. There was no association with coexisting glaucoma, as all four patients who developed CME did not have glaucoma. Prolonged inflammation postoperatively predisposes these eyes to developing cystoid macular edema and we advise the routine postoperative use of topical NSAIDS along with steroids in patients with PXF undergoing cataract surgery to minimize the risk of CME. We may require a study with a larger sample size done over a longer period of time to ascertain the exact incidence of this condition.

Authors Contribution: This article was conceived, designed and written by Dr. Vikram Chellakumar. Collection of data was done by Dr. Aditya Ram and data analysis done by Dr. Snega Priya.

Conflict Of Interest: None

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