



ASSESSMENT OF OCULAR SURFACE DISEASE IN PATIENTS WITH PSEUDOEXFOLIATION SYNDROME

Ophthalmology

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ABSTRACT

PURPOSE: Pseudoexfoliation is thought to affect tear secretion and tear film stability by altering cell morphology in conjunctiva. Aim of this study is to assess abnormalities in tear film in patients with pseudoexfoliation material on iris and lens.

MATERIAL & METHODOLOGY: This is a prospective study conducted from September, 2017 for 6 months on patients attending Ophthalmology OPD of CAIMS, Karimnagar. Subjects of study are divided into 2 groups. Group I consists of 50 normal subjects without any PXF material, serving as controls. Group II consists of 50 patients with PXF, atleast in one eye. Patients with known previous ocular surgeries, PXF glaucoma, adnexal abnormalities, other OSDs, those using any topical medications are excluded. Tear film stability is assessed using Schirmer's II test, TBUT test.

RESULTS: Average Schirmer's and TBUT in Group I (with no PXF) were 17.4+/-3mm and 12.75+/-0.5s respectively, whereas in Group II (with PXF), they were 10.13+/-0.8mm and 6.9+/-0.7s respectively. The differences are clinically and statistically significant.

CONCLUSION: Tear film stability is disturbed in Pseudoexfoliation

KEYWORDS

Pseudoexfoliation, Tearfilm, Ocular Surface Disease

INTRODUCTION:

Pseudoexfoliation syndrome is considered to be a multi-organ disease, characterized by deposition of white flaky substance on various tissues.[1] It is more common in old age. This material is thought to be composed of elastic fibres and non-collagenous basement material, formed as a result of abnormal turnover of extracellular matrix in basement membrane. It can affect organs including eyes, heart, liver, kidney, lungs, skin, among others.[2]

In eye, pseudoexfoliation material can commonly get deposited on conjunctiva, cornea, trabecular meshwork, papillary margin, anterior lens capsule, lens zonules, ciliary epithelium, iris pigment epithelium.[3] It can cause pseudoexfoliation glaucoma, a type of secondary glaucoma, by obstructing outflow of aqueous humor, thereby increasing intraocular pressure. Deposition on papillary margin can prevent complete dilatation of pupil.[4] Deposition of material on lens capsule and zonules increases chance of intraoperative complications like zonular dehiscence during cataract surgery.[5]

The objective of this study is to assess the presence of ocular surface disease in patients with pseudoexfoliation.

METHODS AND MATERIALS:

This is a prospective study, conducted over a period of six months at Chalmeda Anand Rao Institute of Medical Sciences Hospital, Karimnagar, Telangana. 100 subjects are included in the study. Subjects are divided into 2 groups. First group comprised of 50 subjects with normal eyes, without pseudoexfoliation. Second group comprised of patients with visible pseudoexfoliation material on papillary margin or anterior lens capsule.

Patients younger than 55, those with pre-existing ocular surface disease, history of previous eye surgeries, adnexal abnormalities, recurrent eye inflammation, known Diabetics, patients using any type of topical eye treatment are excluded from the study. Slit lamp examination is used to diagnose pseudoexfoliation of iris, lens. Ocular surface disease is assessed using Schirmer's II test, Tear Break-Up Time (TBUT) test, Conjunctival Impression Cytology.

Schirmer's II test is performed under topical anaesthesia (proparacaine 0.5%), by placing the strip in inferior fornix between medial 2/3rd and lateral 1/3rd and reading after 5 minutes.[6] Value of <10mm is considered to be abnormal. TBUT test is performed by instilling fluorescein dye and recording the time after which the tear film with

dye breaks down after last blink.[7] TBUT of <10s is considered abnormal. Conjunctival Impression Cytology is studied under light microscopy. Nelson grading is used to grade the slides.[8]

Statistical analysis in this study is performed using trail version of GraphPad Instat (Version 3, USA) software. The results of Schirmer's test and TBUT were analyzed by unpaired Student's *t-test*.

RESULTS:

In the group with pseudoexfoliation, average Schirmer's II test value is 10.13+/-0.88. Of the 50 subjects, 10(20%) of them have Schirmer's value of less than 5. Among the control group, average Schirmer's test value is 17.4+/-3.2. Of the 50 subjects in the group, only 2(4%) of them have Schirmer's value of less than 5. The difference between the two groups in Schirmer's test is statistically significant.

In the group with pseudoexfoliation, average TBUT value is 6.91+/-0.72. Average TBUT in control group is 12.75+/-0.5. The difference between the two groups is also statistically significant. Among the subjects with pseudoexfoliation in only one eye, TBUT values are similar in both eyes, but Schirmer's values are lower among eyes with pseudoexfoliation.

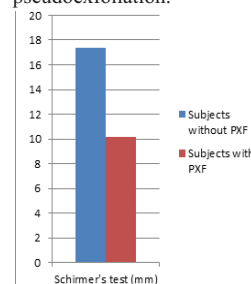


Chart 1

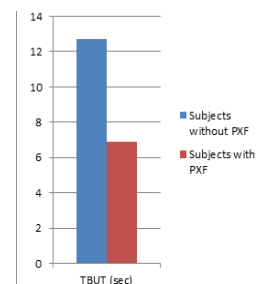


Chart 2

Among control group, 40 (80%) subjects have CIC score in Stage 1, 20% in Stage 2, 0% in Stage 3. Whereas among subjects with pseudoexfoliation, 66% have CIC score in Stage 3, 30% in Stage 2, 4% in Stage 1.

DISCUSSION:

The current study is conducted to assess the ocular surface changes in patients with pseudoexfoliation. These results are compared with

control subjects without pseudoexfoliation. Patients with pre-existing ocular surface disease, history of previous eye surgeries, adnexal abnormalities, recurrent eye inflammation, known Diabetics, patients using any type of topical eye treatment are excluded from the study, as they might potentially distort the results.[11]

Kozobolis et al. conducted a study in eyes with PXF syndrome and found a significant positive correlation between the conjunctival involvement in PXF and decreased tear secretion and tear film stability.[10] In a study by Erdogan et al. which included an additional group of PXF glaucoma, the mean values of TBUT and Schirmer's were lower in PXF and PXF glaucoma groups than in control group.[3]

In the current study, the difference in the average Schirmer's value and TBUT value between subjects with and without pseudoexfoliation is statistically significant. Significant difference is also observed in Conjunctival Impression Cytology results between the two groups.

This study also assessed the ocular surface changes in subjects with PXF in only one eye and compared Schirmer, TBUT readings in both eyes in such subjects. It has been found that Schirmer's results are not statistically significant, whereas the difference in the mean TBUT results is found to be statistically significant. This comparison was not done in some previous studies.

Normal ocular surface and tear film is important in maintaining corneal transparency and also constitute defense mechanism of eye. Hence it is important to explore in detail all the causes of ocular surface diseases. This highlights the need for further future studies to thoroughly understand pseudoexfoliation as one of the causes for ocular surface disease.

CONCLUSION:

Pseudoexfoliation is a relatively common ocular problem in India.[9] This study indicates that pseudoexfoliation could contribute to ocular surface disease, by causing changes in conjunctival cytology goblet cells, and thereby in tear film. There is a need for further studies to better understand how to improve tear film stability in patients with pseudoexfoliation.

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