

A study of dry eye disease prevalence and its clinical profile in patients presenting with ocular surface symptoms

Priyadarshani Patil Cholera¹, Manish S Pendse^{2*}

¹Associate Professor, Department of Ophthalmology} ²Associate Professor, Department of Medicine} Dr. DY Patil Medical College Nerul Navi, Mumbai, Maharashtra, INDIA.

Email: drmanishpendse@gmail.com

Abstract

Background: Dry eye is a disorder of the precorneal tear film that results in damage to the ocular surface and is associated with symptoms of ocular discomfort. **Aim:** to determine the prevalence and study the clinical features of ocular surface diseases at a tertiary care centre. **Material and Methods:** A total of 270 consecutive patients attending ophthalmology OPD with ocular surface symptoms described in dry eye diseases were included in the study. They were subjected to objective tests namely Schirmer's test, Tear break up time and ocular surface stains to confirm the diagnosis of dry eye. **Results:** Out of 270 patients, 122 (45.1%) were diagnosed to have dry eye disease with TBUT < 10 seconds. Schirmer's test was abnormal in 72 patients. Majority (31.1%) patients of dry eye were between the age group of 60-69 years. Majority were females in menopause. **Conclusion:** The prevalence of dry eye disease is more in our region and it increases with advancing age. Knowledge of prevalence and clinical profile help to decide the proper line of management of these patients.

Key Words: Ocular surface diseases, Dry eye, Schirmer's test, Tear break up time, Lissamine Green, Fluorescein Dye.

*Address for Correspondence:

Dr. Manish S. Pendse, Associate Professor, Department of Medicine, Dr. DY Patil Medical College Nerul Navi, Mumbai, Maharashtra, INDIA.

Email: drmanishpendse@gmail.com

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INTRODUCTION

The ocular surface is a delicate structure. Its proper functioning is dependent on a number of systems that contribute to its physiological integrity. In addition, the ocular surface is vulnerable to potential environmental insults by the nature of its function and anatomic location. Ocular surface diseases describe signs of clinical damage to the intrapalpebral ocular surface or symptoms of such disruption from a variety of causes. These can result from compromise to the structure or function of the

conjunctiva, eyelids and their glands, conjunctiva and its accessory glands, or cornea.¹ Conditions that alter the production, composition, or distribution of the precorneal tear film (POTF) may result in symptoms or signs of damage to the structures of the ocular surface. These situations may lead to noticeable irritation, reduction of visual function, and even chronic tissue changes. Additional consequences of chronic compromise to the ocular surface include risk of infection and chronic inflammation that may not respond to treatment.² Dry eye disease is a frequent cause of ocular irritation for which patients seek ophthalmic care. There have been several studies around the world aimed to determine the prevalence of dry eye disease with results ranging from 5 to 30% in people over 50 years.^{3,4} The objective of this study was to determine the prevalence and study the clinical features of ocular surface diseases at a tertiary care centre.

MATERIAL AND METHODS

A total of 270 consecutive patients attending ophthalmology OPD with ocular surface symptoms

described in dry eye diseases were included in the study after obtaining Institutional ethical committee clearance.

Inclusion Criteria

1. Patients above the age of 20 years
2. Patients with any of the ocular surface symptoms like grittiness sensation, non-sticky eye discharge, itching, photophobia, redness, burning/ stinging, heavy sensation, dry sensation, discomfort, ocular pain, watering and temporary blurred vision for minimum one-month duration.

Exclusion Criteria

1. Post-operative patients,
2. Contact lens wearers and
3. Known cases of dry eye under treatment

A detailed history taking was done followed by slit lamp biomicroscopic examination. The lids were examined for presence of any anatomic abnormalities that will interfere with normal spread of tear film. Meibomian orifices were examined for pouting, presence of foam, secretion and plugging. Tarsal conjunctiva was examined for presence of papillae. Presence of mucous threads in the tear film and corneal filaments were noted. The objective tests were done further. Tear break up time (TBUT) and ocular surface staining with fluorescein and Lissamine green were done first. This was followed by Schirmer test. Tear break up time was tested by instilling a 2% fluorescein strip wetted with saline into the conjunctival sac of either eye. Patient was asked to blink once. The time taken for the appearance of the first randomly distributed dark spot on the cornea was noted under the blue filter of the slit lamp. A value less than 10 seconds was taken as abnormal.⁵ Staining pattern with fluorescein dye of conjunctiva and cornea was noted and recorded as Nil, mild or diffuse. Lissamine green staining was done next after washing the conjunctival sac and introducing wet Lissamine green strips. Staining pattern of the conjunctiva was noted and graded as nil, mild or extensive.⁶ This was followed by the Schirmer test. Patient was seated in a room with fans and air conditioners switched off. Proparacaine Hydrochloride 0.5% was instilled into both eyes. Excess local anaesthetic was gently wiped off with cotton. Standard schirmer test strip was applied to the inferior conjunctival sac at the junction of lateral 1/3 and medial 2/3. Patient was asked to look straight and allowed to blink. After 5 minutes test strips were removed and the amount of wetting was noted.⁷ Tear Break Up Time (TBUT) less than 10 seconds Value less than 6 mm in Schirmer test was taken as dry eye. Dry eye was graded into 4 Levels, based on the Delphi panel consensus.⁸

Statistical Analysis: Data was entered in excel and analyzed using SPSS version 20.

RESULTS

A total of 270 consecutive patients attending outpatient Department of Ophthalmology with ocular surface symptoms described in dry eye diseases were included in the study. Most of the patients were in the age group of 40-49 years. Out of 270 patients who presented with ocular surface symptoms, 122 (45.1%) were diagnosed to have dry eye disease with TBUT < 10 seconds. Schirmer test was abnormal in 72 patients. Majority (31.1%) patients of dry eye were between the age group of 60-69 years. Out of 122 patients, 74 were females (60.6%).

Table 1: Demographic characteristics of patients with dry eye

Patient characteristics	No. of patients	Percentage
Age groups (years)		
20-29	09	7.37
30-39	21	17.2
40-49	26	21.3
50-59	28	22.9
60-69	38	31.1
Sex		
Male	48	39.3
Female	74	60.6
Occupation		
Laborers/Outdoor workers	61	50.0
Housewife	34	27.8
Students	16	13.1
Office/Indoor workers	11	9.0

Most common ocular surface symptom in the study population was burning sensation 88 (72.1%) followed by itching in 74 (60.6%) patients. The least common symptom was difficulty in eye opening 14 (11.4%) patients.

Table 2: Frequency of ocular surface symptoms

Ocular surface symptom	No. of patients	Percentage
Burning sensation	88	72.1
Itching	74	60.6
Foreign body sensation	71	58.2
Redness	64	52.4
Dryness	62	50.8
Photophobia	59	48.3
Watering	57	46.7
Ocular pain	38	31.1
Non sticky eye discharge	31	25.4
Temporary blurred vision	22	18.0
Difficulty in eye opening	14	11.4

Level 2 dry eye was the predominant type (i.e., 52.4%) in the study group. Corneal filaments were present in 38 cases. Blepharitis was found to be present in 54 patients (44.2%) with dry eye disease. Pterygium was seen in 3 patients and ectropion in one patient.

Table 3: Levels of dry eye based on the Delphi panel consensus

Level of dry eye	Frequency in number of eyes	Percentage
1	28	22.9
2	64	52.4
3	22	18.0
4	08	6.5

DISCUSSION

Out of 270 patients with ocular surface symptoms, 122 (45.1%) were diagnosed with dry eye disease. Prevalence of dry eye varies with geographical regions. Greater prevalence of dry eye diseases is seen in the regions with hot, humid climate, and higher load of airborne allergens. Asian studies on Dry Eye Disease showed that the prevalence of dry eye is higher than that in western population and ranged between 14.5% and 93.2%.^{4,9} It is a common ocular surface disorder in Asia with rate as high as 93.2%.⁴ Studies from India reported that the prevalence varies between 18.4% and 63%.¹⁰⁻¹⁴ Dry eye occurrence was found in patients over 50 years of age with a peak occurrence in the age group of 60-69 years. With aging, all cellular structures of the body undergo progressive apoptosis. This affects all exocrine glands, the lacrimal gland being no exception. Lacrimal fluid secretion becomes insufficient for normal situations by about 60 years.¹⁵ Nita et al¹⁴ found a peak occurrence of dry eye in the age group of 60-70 years. Other studies also show increasing prevalence with age. There were 74 (60.6%) females as compared to 48 (39.3%) males. Previous studies also reported that females are more prone for dry eye.^{9,16} Most of these females were in menopause. As menopause sets in, an imbalance between oestrogen and androgens, due to decrease in androgen levels can occur. Meibomian gland dysfunction and evaporative dry eye frequently occur during menopause. In present study fifty percent of patients having dry eye were labourers and farmers when compared to other groups. Khurana et al¹⁷ too reported an increased risk of dry eye among farmers and labourers (32% and 28% respectively of the dry eye patients) probably due to excessive exposure to adverse environment. This emphasizes the need for creating awareness among the farmers to adopt protective measures during work. In present study, the most frequent ocular surface symptom in confirmed cases of dry eye was burning sensation in 88 (72.1%) followed by itching in 74 (60.6%) patients. In a population based study conducted by Lee et al in Indonesia burning sensation was the most common symptom.¹⁸ However, in a study conducted in Gujarat, India, watering was the most common complaint (33.5%) followed by itching sensation (15%).¹⁹ The Delphi panel and the DEWS panel have graded dry eye into levels based on severity and have charted out treatment

accordingly. In the present study we found that level 2 dry eye was the predominant type (i.e., 52.4%) in the study group. Dry eye diseases could alter the quality of life independent from the progression and severity of the disease. The ocular surface status should be evaluated regularly to ensure timely detection and treatment of pathologic signs on the ocular surface. Knowledge of prevalence and clinical profile help to decide the proper line of management of the group of patients, who very often present with a vast array of vague symptoms.

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