



Prevalence of Dry Eye Disease in Connective Tissue Disorders

Jigish Desai^{1*}

¹Department of Ophthalmology, Banas Medical College and Research Institute, Palanpur, Gujarat, India.

Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Aim: To assess prevalence of dry eye disease (DED) and its severity in patients of Systemic lupus erythematosus (SLE) and Primary Sjogren's syndrome in a tertiary care hospital in Gujarat.

Methods: It is a Prospective cross-sectional study of 94 patients diagnosed with SLE and Sjogren's syndrome. All patients underwent: 1. History taking 1. Visual acuity assessment using standard illuminated Snellen chart 2. Slit lamp examination with dry eye tests 3. Fundus examination The findings were recorded in the proforma and subsequent analysis was done using SSPS software.

Results: DED prevalence was 51.1% overall, 42% among SLE and 66.66% in Primary Sjogren's syndrome. Severity of DED was noted to be more in Primary sjogren's with 33.33% having severe DED.

Conclusion: DED overall prevalence in connective tissue disorders is significant, highest being in Sjogren's. The findings highlight the severity of DED in rheumatoid arthritis greater to when compared with other connective tissue disorders. Awareness and early detection of dry eye disease is of paramount to initiate appropriate treatment and reduce visual morbidity.

Keywords: Cross-sectional; dry eye disease; systemic lupus erythematosus; visual acuity assessment.

1. INTRODUCTION

Dryeye as defined by international dry eye workshop, is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface [1]. Dry eye is a prevalent, but under-diagnosed condition in patients with connective tissue disorders. Dry eye is usually observed in systemic autoimmune disorders such as Sjogren's syndrome (SS), and systemic lupus erythematosus (SLE) with a prevalence ranging from 14.5% to 56% [2].

Very often patients with systemic disease tend to ignore dry eye complaints because of other systemic manifestations being more troublesome. And thus, ends up in ophthalmology outpatient department with severe manifestations of dry eye or complications leading to visual morbidity or irreversible ocular surface damage in late stages [3]. In few cases dry eye could be initial presentation of underlying systemic disease which could remain undiagnosed for quite some time if not evaluated. And the treatment aims at reducing or alleviating signs and symptoms of dry eye, such as ocular irritation, redness, or mucous discharge; thus maintaining or providing an improved visual function if not secondary to any systemic disease. Thus, further helps to prevent ocular surface damage [4].

In cases of severe dry eye and other complains pointing towards systemic association can be further evaluated. Recent advances in our knowledge of the causation of dry eye disease open opportunities for improving diagnosis and disease management and for finding new, 2 more potent therapies to manage this widely prevalent and attenuating disease state [5].

Dry eye disease is a common yet frequently under-recognized clinical condition whose etiology and management challenges clinicians and researchers alike. It varies in severity, duration, and with etiology. In majority cases, the condition is not sight-threatening and is characterized by irritation and intermittently blurring of vision. In some individuals, exacerbating factors such as systemic medications or environmental conditions may lead to an acute increase in the severity of symptoms. Elimination of such factors often

leads to marked improvement and may even be curative [4].

Diagnosis and treatment of underlying systemic immune disorders may decrease morbidity and may even be lifesaving in some cases. Hence the purpose of study was to evaluate the patients of SLE and Primary Sjogren's for prevalence, manifestations and grade of dry eye disease to help us understand the trend and need of ophthalmic examination in such patients. To detect the dry eye diseases early so as to improve the patient's comfort and to prevent or minimize further structural damage to the ocular surface.

2. MATERIALS AND METHODS

All patients from medicine and rheumatology diagnosed with systemic lupus erythematosus and primary Sjogren's syndrome in outpatient department in Hospital attached to Medical College with following inclusion and exclusion criteria were included in the study.

The present study is the prospective cross-sectional study with patients diagnosed and confirmed cases of SLE and Primary Sjogren's over period of one year. 47 patients were asked history and clinical examination was performed including ophthalmology examination.

All patients underwent: 1. History taking 1. Visual acuity assessment using standard illuminated Snellen chart 2. Slit lamp examination with dry eye tests 3. Fundus examination The findings were recorded in the proforma and subsequent analysis was done using SSPS software.

Inclusion Criteria: Diagnosed and confirmed cases of Systemic lupus erythematosus, and Primary Sjogren's syndrome, Age group between 30 to 65 years. Exclusion Criteria: History of previous ocular surgeries (including cataract surgery) / ocular injuries, Smoking history, Radiation exposure, Age: < 30 and > 65 years, Contact lens users.

2.1 Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

3. RESULTS

The present study was conducted with the aim to evaluate the patients of SLE and Primary Sjogren's for prevalence, manifestations and grade of dry eye disease. Total of 94 patients who had satisfied the inclusion criteria were included in the study. Both male and female were included in the study; females were more in comparison to male. There were 76 females and 18 male population included in the study.

The included patients were divided into two groups with diagnosis of SLE and primary Sjogren's syndrome. Maximum numbers of patients belong to group with diagnosis of SLE. There were 48 patients included in SLE group and rest 46 patients were in other group. As per the age distribution of the patients, it's stated the maximum number of patients belongs to 3rd to 5th decade of life and least number of patients was of age above 60 years.

There was varying degree of congestion found in the patients. There were 43% patients with no degree of congestion, mild congestion was seen in 30% of patients, moderate congestion was seen in 23% and very severe congestion was seen in 4% of the patients.

Of the total included patients there were 49% diagnosed with DED. In the patients diagnosed with SLE there were 43% incident of DED and in other group there were 67% diagnosed with DED. DED was more common in females given the known epidemiology of connective tissue disorders being more common in females. There was no significant correlation between gender distribution and severity of dry eye disease. ($p > 0.05$) There was no significant correlation between presence or absence of DED

or severity grading of it in age groups given the varied occurrence of SLE and primary Sjogren's in particular age groups. ($p > 0.05$)

The degree of severity of DED was compared in different groups. On comparison it was found that there were 29% cases of mild DED and 15% cases of moderate DED in SLE diagnoses group. There were no cases of severe and very severe DED in that group. Whereas in Sjogren's group there were 17% with mild DED, 17% had moderate DED and 33% had severe DED and there were no cases of very severe DED.

4. DISCUSSION

In this study the prevalence of dry eye was found out to be 51.06% in total in SLE and Primary Sjogren's. Along with prevalence dry eye disease severity grading was also noted in each of the disease. According to the study by yogeshwari et al. [6], they observed dry eye in systemic autoimmune disorders such as systemic lupus erythematosus, and Sjogren's syndrome (SS) with a prevalence ranging from 14.5% to 56% which is similar to the current study which states it to be 51.06%. In another study done by Al-Bedri K et al. [7] where ocular manifestations in Rheumatoid Arthritis were studied in 103 patients of Iran and keratoconjunctivitis sicca was the commonest ocular finding noted with prevalence being 28%. This may be explained by their study having larger sample size, also patients belonging to different ethnicity and environmental factors.

Joan J Lee and Stephen Foster [8] in their study of ocular manifestations in SLE found one third of patients with keratoconjunctivitis sicca, further supporting another study done by R. R. Sivaraj et al. [9] stating the similar prevalence. In our study

Table 1. Age distribution and severity in DED patients

DED	30 – 40 n (%)	41 – 50 n (%)	51 – 60 n (%)	> 60 n (%)
No dry eye	14 (30.4)	14 (30.4)	12 (26)	6 (13)
Mild eye dry	4 (25)	4 (25)	6 (37.5)	2 (12.5)
Moderate dry eye	4 (33.3)	4 (33.3)	4 (33.3)	0
Severe dry eye	6 (42.8)	4 (28.5)	4 (28.5)	0
Very severe dry	2 (33.3)	0	2 (33.3)	2 (33.3)

Table 2. Severity of DED in both the groups

Groups	Mild	Moderate	Severe DED	Very severe DED
SLE	29%	15%	0	0
Sjogren's	17%	17%	33%	0

we found a slightly higher prevalence of 44% which could be due to smaller sample size. Further in support of this present study showing 66% of prevalence of dry eye in primary sjogrens disease, a study done by Kassan SS et al. [10] on clinical manifestations and early diagnosis of Primary Sjogren's syndrome also showed a prevalence of 67.5% in their study which makes dry eye as the common and highly prevalent disease in primary SS.

Data from this study also allowed the classification of dry eye severity by the use of the severity grading scheme given by Dry eye international workshop of 2007, which included both symptoms and objective findings. In this regard, we emphasize that dry eye has an important impact on the ability to perform daily activities, even in mild to moderate cases. Our findings show that moderate to severe dry eye is frequent in Primary Sjogren's patients. In primary Sjogren's it was 16.6% and 33.3% having moderate and severe dry eye disease respectively. It also showed that SLE patients have mild to moderate DED. Thus, indicating the importance of making this diagnosis in connective tissue disorder patients so that a therapeutic strategy can be established, this may improve the conditions of the ocular surface, consequently reducing morbidity due to dry eye disease.

5. CONCLUSION

Dry eye disease is frequently underdiagnosed condition in general and more so in connective tissue disorders viz. Systemic lupus erythematosus and Primary Sjogren's syndrome. Dry eye symptoms of irritation, burning sensation, grittiness and other symptoms of ocular symptoms are ignored by patient owing to other systemic manifestations being more troublesome. And hence the patients present to ophthalmologist when patients have severe discomfort or repeated redness of eyes which is usually in later stages where ocular surface damage would have occurred making the patient visually morbid. Hence, by studying the occurrence of dry eye disease and assessing the severity of it in each of these conditions can help us alarm physicians and rheumatologist for an early referral. Diagnosing DED in early stages and starting on treatment will help in maintaining ocular surface which in turn will provide quality of life to patients by making their daily activities less hindering due to reduced ocular discomfort, it will eventually increase workplace productivity and

provide emotional support which has been reported to be hampered due to dry eye diseases.

CONSENT

Written informed consent was obtained from all patients participating in the study.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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