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Research Article

Hospital Based Study Of Dry Eye Disease Among Post Menopausal Women In Kathua

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ABSTRACT

Introduction: Dry eye disease is a multifactorial ocular symptom complex affecting the day to day working of individuals. Its prevalence is found to be exaggerated among post menopausal women Objective: To estimate the frequency of dry eye disease among post-menopausal women and to grade disease severity. Materials And Methods: A hospital based, observational, cross-sectional study was conducted including 214 post menopausal females. Females with pre-existing ocular surface disease and with history of ocular trauma and surgery were excluded. All enrolled females were subjected to the OSDI questionnaire and schirmer's test. Tear film break-up time was also noted Results: The study consisted of 214 post menopausal females. The age of the patients ranged from 47-83 years with mean age of 58.57 ± 11.54 years. The OSDI questionnaire reported dry eye in 136 (63.55%) females, 117 (54.67%) females were found to have dry eye on schirmer's test.A positive correlation was observed between severity of disease and duration of menopause. Conclusion: Sub-clinical dry eye disease is present in majority of post menopausal females. Timely intervention will prevent severe disease and decrease ocular morbidity

Keywords: *cornea, schirmers, tear deficiency*

INTRODUCTION

Dry eye is a syndrome complex comprising of tear film instability, ocular surface inflammation, hyperosmolarity and neuro-sensory abnormalities giving rise to wide range of ocular complaints.[1] The symptoms range from mild discomfort like foreign body sensation, burning, watering eyes to visual impairment.[2] Dry eye disease is broadly categorized as muco-aqueous deficient dry eye and evaporative dry eye. The former occurs due to decreased tear secretion by lacrimal gland and the latter is due to enhanced evaporation of tears caused by alterations in the outermost lipid layer of the tear film. Lacrimal gland function and tear secretion is under control of hormonal and neuronal regulatory systems.[3,4] The lack of naturally occurring estrogen after menopause has been linked to the occurrence of dry eye symptoms in this demographic group.[5] Immunohistochemical staining has shown the presence of estrogen receptors on meibomian glands of upper lid.[6] Reduced estrogen levels may disturb lipid production by meibomian glands leading to evaporative dry eye.[7] Studies conducted worldwide have shown higher incidence of dry eye disease in post menopausal women. There is much impact of dry eye on quality of life and it affects performance of day to day activities. Timely diagnosis of dry eye disease and optimum intervention is important in reduction of ocular morbidity. So, this study was undertaken to estimate the frequency of dry eye disease among post-menopausal women and to grade disease severity.

MATERIAL & METHODS

This hospital based, observational, cross-sectional study was conducted in the Out-patient Department of Ophthalmology w.e.f August 2020 to August 2022 after due approval from the Institutional Ethical Committee. All post menopausal females presenting in ophthalmology OPD with various complaints were screened for dry eye. Total of 214 patients were enrolled and informed about the nature of study in their own language. Inclusion criteria were females who have attained menopause for at least 1 year. Exclusion criteria were history of ocular trauma or ocular surgery, pre-existing ocular

surface disorder, contact lens users, prolonged use of topical medication, any systemic disease known to cause dry eye like rheumatoid arthritis, sjogren syndrome and patients on any drugs associated with dry eye like anti depressants, beta blockers.

All patients were subjected to history taking, thorough ocular examination and objective tests including Schirmer-I and Tear film breakup time (TBUT). Schirmer's test was performed with Whatman filter paper no. 41 which is a 35 mm long strip. Wetting of <13 mm in 5 minutes was considered abnormal. Tear Film Break-Up Time was assessed after instilling 2% fluorescein in each eye. Values of <10seconds were taken as indicative of dry eye. Along with this, Ocular Surface Disease Index (OSDI) questionnaire was administered to every post-menopausal female included in the study with one week recall period. OSDI is a validated and reliable dry eye questionnaire consisting of 12 items divided on the basis of visual function, ocular symptoms and environmental triggers.[8] The presence and duration of eye discomfort is then calculated into a score on a scale of 0-100 with higher values representing greater impairment. The presence and severity of dry eye was assessed on the results of schirmer's test, TBUT and the OSDI questionnaire. The relation between duration of menopause and severity of dry eye disease was also assessed.

Statistical analysis was done using IBM SPSS statistics for windows version 25.0 (IBM Corp. Released 2017,Armonk, NY, USA). Categorical variables were presented as number and percentage whereas continuous variables as mean ± standard deviation. Pearson correlation test was performed to detect any relationship between duration of menopause and severity of dry eye. All statistical tests were carried out at 5% level of significance and $P < 0.05$ was considered statistically significant.

RESULTS

The study consisted of 214 post menopausal females. The age of the patients ranged from 47-83 years with mean age of 58.57 ± 11.54 years (Fig 1). Majority of females were homemakers (71.4 %) and remaining (28.50%) were working as laborer, farmer, skilled or semi-skilled workers.

The OSDI questionnaire reported dry eye in 136 (63.55%) females. Majority females had mild dry eye as summarized in (Table 1)

In this study, 117 (54.67%) females were found to have dry eye on schirmer's test (Table 2).

139 (64.95%) females had tear film break up time <10 seconds.

The number of females having dry eye increased as the duration of menopause increased. A positive correlation was observed between severity of disease and duration of menopause; however, the results were not statistically significant as shown in table 3.

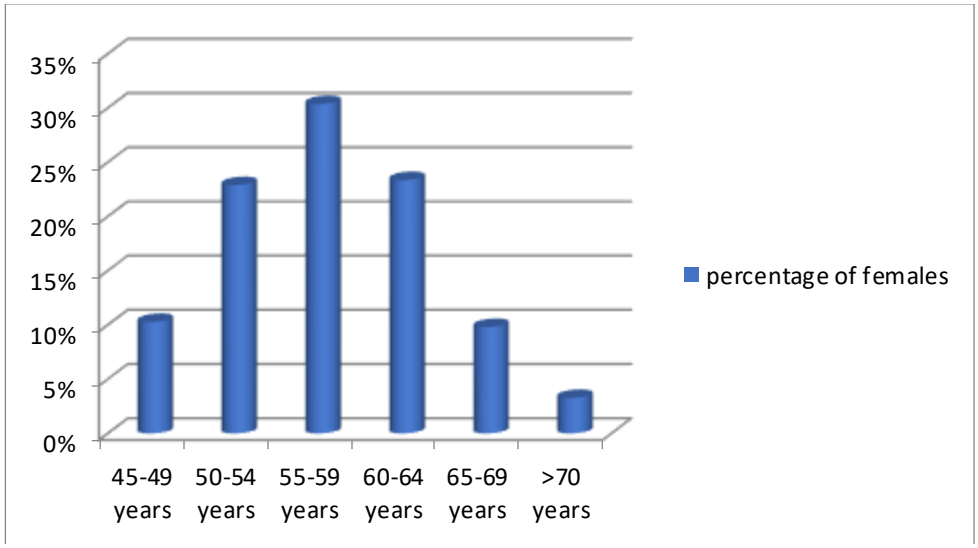

Fig 1: Age wise distribution of post menopausal females

Table 1: Frequency of dry eye on the basis of OSDI score

Duration of menopause	Mild dry eye	Moderate dry eye	Severe dry eye
1-4 years	19 (23.17%)	10 (23.25%)	1 (9.09%)
5-9 years	24 (29.26%)	15 (34.88%)	3 (27.27%)
>10 years	39 (47.56%)	18 (41.86%)	7 (63.63%)
Total	82(60.29%)	43 (31.61%)	11 (8.08%)

Table 2: Frequency of dry eye on the basis of Schirmer's test

Duration of menopause	Mild dry eye	Moderate dry eye	Severe dry eye
1-4 years	13 (23.21%)	8 (19.04%)	2(10.52%)
5-9 years	19 (33.92%)	15(35.71%)	5(26.31%)
>10 years	24 (42.85%)	19(45.23%)	12(63.15%)
Total	56 (47.86%)	42 (35.89%)	19 (16.23%)

Table 3: Correlation between duration of menopause and severe form of dry eye

Number of patients with severe dry eye	Correlation with duration of menopause	
	r-value	p-value
OSDI	0.982	0.121
Schirmer's Test	0.974	0.144

DISCUSSION

Dry eye is an ocular pathology of multifactorial origin giving rise to variable signs and symptoms. The symptoms are often vague and are a common cause of visit to ophthalmology clinics. In this study, we estimated the clinical and sub-clinical presence of dry eyes in post-menopausal females. Studies have been conducted to assess the serum levels of sex hormones in post menopausal females with dry eyes.[9,10]

Menopause causes estrogen deficiency which is thought to decrease tear production by its effects on the lacrimal gland.[11] Estrogen also has effects on all sebaceous glands in the body including meibomian gland, a modified sebaceous gland.[12] Meibomian glands secrete the outermost lipid layer of tear film. Disruption of lipid layer allows more rapid evaporation leading to tear film instability and dry eye. Hormonal changes can also contribute to ocular surface inflammation, which is a common underlying factor in dry eye syndrome.[4]

In this study, 214 post menopausal females were evaluated for dry eye disease. Age group of the enrolled women ranged from 47 years to 83 years. Majority females who presented to OPD were from 55-59 years of age group. Less than 5% females were more than 70 years of age.

According to this study, when subjected to the OSDI questionnaire, 36.4% females had dry eye. Among these, 67.94% had mild, 23.07% had moderate and 8.97% had severe dry eye. A study conducted by Gurung et al.,[13] found 66% post menopausal women were suffering from dry eye on the basis of OSDI scoring system out of which, 21% had mild dry eye while 26% and 19% females had moderate and severe dry eye respectively.

In this study, the prevalence of dry eyes on the basis of schirmer's test was 54.67%. These patients were further divided on the basis of severity which revealed 47.86% had mild dry eye, 35.89% had moderate and 16.23% had severe dry eyes. In a study conducted by Maurya et al.,[14] 73.33% post menopausal females had dry eyes. In contrast, a study by Narayan[15] concluded that majority (61.8%) of post menopausal females did not have dry eye on the basis of schirmer's test.

In this study, 64.95% females had tear film break up time of less than 10 seconds. This finding reveals that majority of females had a compromised outer most lipid layer of tear film. Maurya et al.,[14] also found that 34.85 % of post menopausal females had tear film instability.

In the present study, a positive correlation was found between the duration of menopause and prevalence of dry eyes. Pearson correlation factor(r value) for increasing duration of menopause and prevalence of dry eyes on OSDI scoring system was 0.945 and based on schirmer's test was 1.00. Similar findings were observed in studies conducted by Kumar et al.,[16] and Gurung et al.[13] In another study by Aditi et al.,[17] the r value was found to be 0.971 for increasing age and prevalence of dry eyes.

CONCLUSION

Dry eye syndrome is a prevalent and often bothersome condition that disproportionately affects postmenopausal females. The hormonal changes associated with menopause are significant factors contributing to its occurrence. However, it is essential to establish that dry eye can be managed and treated with the help of an eye care professional. Awareness must be generated among menopausal women attending other outpatient departments for identification of symptoms and screening of dry eye at an early stage.

Limitations

This study did not categorize the socio-economic status and living conditions of post menopausal females. Consideration of standard of living will give a more accurate insight into the demographic factors responsible for prevalence of dry eye in menopausal females. Larger sample size can provide an accurate prevalence rate.

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