COMPARISON OF PREVALENCE OF DRY EYE IN PREMENOPAUSAL AND POSTMENOPAUSAL WOMEN IN A TERTIARY CARE CENTRE IN SOUTHERN INDIA

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ABSTRACT

BACKGROUND

Ocular symptoms due to dry eye is the most frequently encountered problem in the old age, especially in females. Owing to fluctuating levels of various hormones in the female body with advancing age, various hypotheses have been made to identify the aetiology. Further research is needed to find the exact causative mechanism for dry eye for improving the management of these cases and bring awareness among the caregivers.

The objectives of the study were

1. To compare and establish prevalence of dry eye in postmenopausal and premenopausal women
2. To determine the type of dry eye disease in patients attending a tertiary care centre in Southern India.

MATERIALS AND METHODS

All patients' data was recorded in a predesigned proforma and Ocular Surface Disease Index Scoring was done. Visual acuity was assessed on Snellen's chart and anterior segment evaluation was done using slit lamp biomicroscopy. Dry eye evaluation was done with Schirmer Test I and Tear Film Break-Up Time test. Corneal and conjunctival staining with fluorescein strip sand Rose Bengal strip was performed to assess the dry eye.

RESULTS

Among 75 premenopausal and 75 post-menopausal women examined, dry eye disease was more common in the postmenopausal group. It was maximum in age group >60 years. Most of the patients in this study had moderate dry eye. Present study reveals that dry eye symptoms are common in postmenopausal women.

CONCLUSION

It was found that dry eye disorder was more common in post-menopausal women compared to pre-menopausal women. Female patients above 40 years presenting to the hospital should be screened dry eye and referred to Ophthalmology OPD to assist in early detection of dry eye and avoid debility due to dry eye related complications.

KEYWORDS

Dry Eye Syndrome (DES), Tear Film, Hormone, Postmenopausal, Prevalence.

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BACKGROUND

Dry Eye Disease (DED) is defined by the International Dry Eye Workshop as, "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] Different studies have found prevalence estimates from 7% to 33%.[2,3] Most common symptoms associated with dry eye are burning sensation, foreign body sensation and decreased vision, which can hamper activities of daily living in severe cases. Postmenopausal women have shown to have higher incidence of DED. It is said that androgens affect the production and functioning of tears.[4] Novel androgen formulations which are given topically as eye drops, have shown improvement in symptoms in these cases with decreased systemic side effects.[5,6] Hence, keeping in mind the high prevalence of DED in postmenopausal women, it is important for gynaecologists and for primary

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care physicians to recognize symptoms and refer patients for ophthalmological evaluation of their symptoms.

The major components of tear film are – aqueous layer secreted by the lacrimal gland, the lipid layer secreted by the meibomian glands, and mucin secreted by the conjunctival goblet cells. Factors influencing ocular surface homeostasis are tear production, evaporation, drainage, health of corneal epithelial cells, corneal sub-basal nerve plexus and corneal immune status. Sex hormones have an effect on these factors. Androgens and oestrogen influence the synthesis of the tear film. Sex steroid receptors are found on the meibomian glands.[7] Androgen binding results in synthesis and secretion of lipids from these glands, while oestrogen decreases the lipid production.[8] Hence, high levels of estradiol is a risk factor for dry eye. Testosterone deficiency also has been shown to promote meibomian gland dysfunction especially in patients taking antiandrogen therapy. However, the exact relationship between serum sex hormone levels and clinical symptoms of dry eye still remains unclear.

Objectives of the Study

1. To assess the prevalence of dry eye in premenopausal and postmenopausal females.
2. To assess the prevalence of dry eyes with relation to the age of post-menopausal females.
3. To assess the prevalence of various types of dry eye in post-menopausal females.
4. To assess the most common complaints in patients with dry eye.

MATERIALS AND METHODS

This observational cross-sectional study was conducted on 75 postmenopausal and 75 premenopausal females attending Department of Ophthalmology. This research work was executed after approval from the Institutional Ethical Committee. All the patient data was recorded in a predesigned proforma, including the detailed history. Patients were informed about the procedure and a written consent was taken. The inclusion criteria were postmenopausal women who had completely achieved natural menopause of at least one year and premenopausal women with regular monthly menstrual cycles. Patients with systemic disorders known to cause dry eyes such as Rheumatoid Arthritis, Diabetes Mellitus, Thyroid Disease, AIDS, Graft Versus Host Disease, patients on medications known to cause dry eyes like anticholinergic medications, Non-steroidal Anti Inflammatory Drugs, Beta-blocker and radiation therapy, patients with known ocular surface diseases like Herpes Simplex Keratitis and Herpes Zoster Ophthalmicus, topical eye drop users and patients who had recent ocular surgery within 3 months and contact lens wearer were excluded. Visual acuity was assessed on Snellen's chart and anterior segment evaluation was done with slit lamp biomicroscope. Ocular surface Disease Index (OSDI) questionnaire was completed and grading done. Dry eye evaluation was done with Schirmer I, by placing a special filter paper (Whatmann Filter paper No.: 41) in the lower fornix and Tear film Break-Up time was done by an impregnated fluorescein strip moistened with saline which was instilled into the lower fornix. The TBUT of less than 10 seconds was considered significant. Corneal and conjunctival staining was done using impregnated fluoroscein and Rose Bengal strips which were gently applied to the lower conjunctival fornix after instillation of topical anaesthesia and uniform distribution of the stain was obtained by asking the patient to blink several times. The staining pattern was assessed using the National Eye Institute (NEI) grading system. Data was analysed using the Statistical Package for Social Science (SPSS) standard version 13.0. The t test, Chi square and Pearson correlation test was used for data analysis. A value of $p<0.05$ was considered statistically significant.

RESULTS

This prospective observational study was undertaken on 75 postmenopausal and 75 premenopausal females attending OPD and IPD of Department of Ophthalmology. Out of 75 postmenopausal, 31 patients (41.33%) had dry eye (Table 1). Out of 75 premenopausal, 3 patients (4.00%) had dry eye. Based on the OSDI questionnaire blurred vision and gritty eyes were the most common symptom experienced by the patients having dry eye, which was present most of the times. These patients found reading and watching television difficult half of the times. Associated ocular discomfort was noted when patients were exposed to windy conditions and in areas with air conditioners. On staining, according to the NEI grading system most of the patients had grade I- II staining. i.e. trace to mild staining (16%) and the patients with more sever dry eye had grade III staining, i.e. moderate staining (8%).

	Total Number of Patients	**No. of Patients of Dry Eye**	**%**
Postmenopausal	75	31	41.33
Premenopausal	75	3	4.00

Table 1. Shows Prevalence of Dry Eye Among Postmenopausal and Premenopausal Women

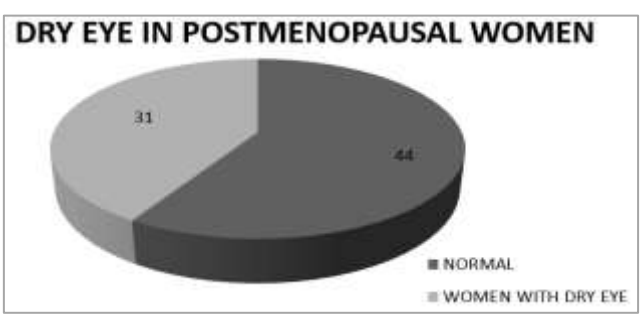

Figure 1

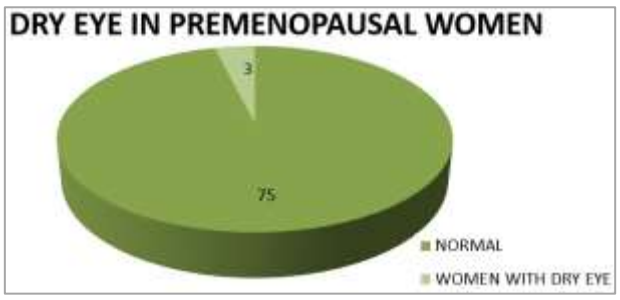

Figure 2

Age Group (in years)	No. of Patients
20-24	04
25-29	08
30-34	11
35-39	34
40-44	18
45-49	07
50-54	08
55-59	18
60-64	13
65-69	10
70-74	11
>74	10

Table 2. Number of Participants in each Age Group

Age Group (in years)	No. of Participants	No. of Patients with Dry Eye	Prevalence of Dry Eye (%)
20-24	04	0	-
25-29	08	0	-
30-34	11	1	1.33
35-39	34	1	1.33
40-44	18	1	1.33
45-49	07	1	1.33
50-54	08	1	1.33
55-59	18	3	4.00
60-64	13	5	6.67
65-69	10	6	8.00
70-74	11	6	8.00
>74	10	9	12.0

Table 3. Percentage Prevalence of Dry Eye in Each Age Group

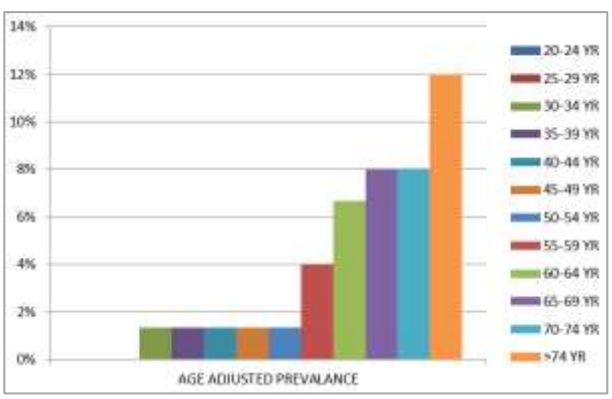

Figure 3

Grading of Dry Eye	No. of Patients	%
Mild	4	5.3%
Moderate	0	0%
Severe	0	0%

Table 4. Grading of Dry eye in Premenopausal Women

Grading of Dry Eye	No. of Patients	%
Mild	16	21.33%
Moderate	9	12.00%
Severe	6	8.00%

Table 5. Grading of Dry Eye in Postmenopausal Women

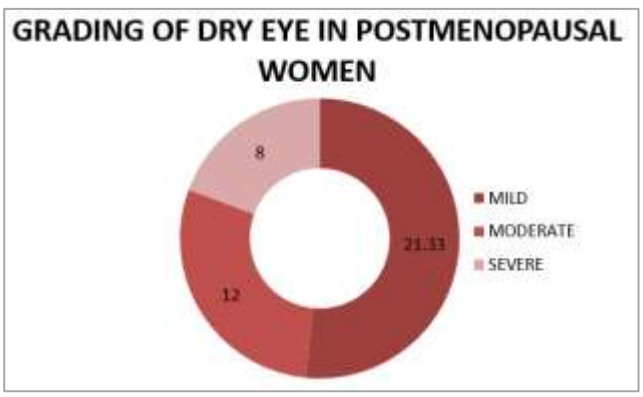

Figure 4

DISCUSSION

The aim of our study was to find out the prevalence of dry eye in post-menopausal and pre-menopausal women visiting the hospital. To our surprise 31 out 75 (41.33%) of postmenopausal women and 4 out of 75 (4.00%) of pre-menopausal women had dry eye (Table 1). In our study we have also found that the prevalence of mild dry eye was maximum (21.33%) and that of severe dry eye was least (8.00%). (Table 4). Also, we have found that the prevalence of dryness increased with increase in age group. (Table 3). Our finding was closely related to study done by B. Shaharuddin et al (2008)[9] in which prevalence was 29%. In our study, prevalence of dry eye was maximum in age group greater than 74 years (12.00%) and we also found that prevalence increases progressively with age. These results were consistent with study done by Anshu Sahai et al (2005).[10] Ram S Mirley (2000) suggested that both tear flow rate and tear stability reduce with age and by the age of 40 years, tear production is reduced to 50% of that at the age of 10 years. Reduction of tear volume and flow and increase in evaporation have been noted in elderly as seen in study of Mathers et al (1996).[11] In another study of dry eye syndrome where the female population of US was studied showed that the prevalence of DES increased with age, from 5.7% among women <50 years old to 9.8% among women aged ≥75 years old. The age-adjusted prevalence of DES was 7.8% in women aged ≥ 50.

The prevalence of DED is known to increase with increase in age. There are several hypotheses to support this, one important hypothesis being age-related decrease

in meibomian gland secretion which could be due to acinar cell atrophy, which is similar to the age-related decline in the functioning of other sebaceous glands of the body. Also aging affects the quality of meibomian gland secretions. An overall prevalence of dry eye was found to be consistent with other studies of dry eye in postmenopausal age group.

CONCLUSION

Postmenopausal dry eye has now evolved as a significant problem in recent years as its prevalence is very high and it is difficult to treat condition in late stages, the reason being hormonal changes, under diagnosis of mild to moderate cases and poor compliance of patients in this age group. Alteration of sex hormones plays an important role in the pathophysiology of DED in perimenopausal and menopausal age group. Often, simple measures such as lubrication may provide relief. In more severe cases, anti-inflammatory, immunomodulatory, and rarely surgical interventions are required. Novel hormonal replacement treatments, both systemic and topical, are also evolving. Hence, patients presenting to Gynaecology OPD with post-menopausal complaints should also be screened for dry eye and referred to Ophthalmology OPD to assist early detection of dry eye and avoid debility and possible blindness due to dry eye related complications.

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