Section: Ophthalmology

Research

ASSESSMENT & CLINICAL EVALUATION OF OCULAR SURFACE DISORDERS AMONG HIV/AIDS PATIENTS – A PROSPECTIVE HOSPITAL BASED STUDY

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Abstract

Background: Human immunodeficiency virus [HIV] is causing morbidity and mortality at a higher rate. Ocular manifestations due to HIV infection are common. Approximately 70-80% of HIV infected patients will get treated for an HIV-associated eye disorder during their illness [1]. Now the estimated prevalence of eye diseases among HIV patients in India is reported to be between 8-45%. The aim and objectives are to evaluate tear function, tea r film and ocular surface in HIV patients. The present study was aimed to investigate dry eye in HIV and AIDS patients on retroviral drugs and their prevalence in our region. **Materials and Methods:** This prospective hospital-based study was conducted for a period of 11/2 year [from Jan 2021 to June 2022] at Department of Ophthalmology, ACSRGMC Nellore among patients who are attending ART Centre in GGH Nellore after getting approval and after taking informed consent from each patient. A total of 100 patients was included based on particular inclusion and exclusion criteria. **Result:** Among the study objects, the majority of them belong to the age group of 31-40 years [38%] [Table 1]. Males [62%] were high in number than females [38%] [Table 2]. The majority of them were labourers[26%] [Figure 3]. Majority of them are asymptomatic [42%]and most common presenting symptom is burning and foreign body sensation followed by ocular irritation and pain in 4% each [Table 3]. **Conclusion:** HIV is affecting majority of reproductive age group in our population. But since the incidence of ocular diseases is very high and most of the time asymptomatic, it is essential to give a regular check-up in patients with HIV as they are asymptomatic and not aware of the ocular surface damage.

INTRODUCTION

Human immunodeficiency virus [HIV] causes a broad spectrum of diseases and a multisystem disorder Antiretroviral drugs and Highly active antiretroviral therapy [HAART] has changed the clinical and prognostic outcome of fundus changes in HIV seropositive patients.[1] In India ocular illness was first published in 1995, the number which has dramatically increased since then. Now the estimated prevalence of HIV related ocular complications in India is reported to be between 8-45%.[2,3] Keratoconjunctivitis sicca, keratitis, iridocyclitis, and other complications are the manifestations of anterior segment, whereas that of posterior segment includes an HIV associated retinopathy and several opportunistic infections of Retina and choroid. HIV may also result in neuro-ophthalmic manifestations such as nerve palsies, visual field defects, papilledema and diplopia.

MATERIALS AND METHODS

This prospective hospital- based study was conducted for the period of 18 months at Department of ophthalmology, GGH Nellore. A total of100 patients was included based on the below –mentioned inclusion and exclusion criteria.

Inclusion Criteria

- Patients diagnosed HIV positive
- Patients of HIV on HAART [highly active antiretroviral therapy]
- Patients of the age group from 10 years to 80 years including males and females.

Exclusion Criteria

Normal individuals.

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Patients with collagen vascular and connective tissue diseases.
Patients with the debilitating illness.
Patients with Lagophthalmos.
Patients with burns and cicatricial Ectropion.
Patients operated for cataract and refractive surgeries.
Positive serology for Hepatitis B/ Hepatitis C
Use of ocular medication or contact lenses one week before assessment.
Pregnant and Nursing women.
Previously diagnosed ocular diseases which affect Lacrimal production or draining [Sjogren's syndrome, Steven-Johnson syndrome, ocular Pemphigoid, Ocular chemical burns, Trachoma].
Data was collected with prescribed proforma meeting the objectives of the study. A detailed history of each HIV infected patient was obtained with respect to gender, address, occupation, duration of disease, duration since the start of ART, history of any other illness. Each patient was subjected to dry eye questionnaire, anterior segment examination by slit- lamp biomicroscopy for Dry eye symptoms, ocular surface evaluation with, Tear film break up time [TBUT], Schirmer's test, 1% Rose Bengal staining.
Tear film break-up time was assessed by staining the eye with 2% fluorescein strips, and time taken for the first random dark spot to appear was noted and considered as positive when less than 10 seconds. Schirmer's test was considered negative if the wetting was more than 10mm, mild dry eye between 5mm and 10mm and severe when less than 5mm. As Rose -Bengal stains healthy epithelial cells if a reasonable amount of much in does not overlie the cell surface, in patients with dry eye, Rose-Bengal stains the conjunctiva and/ or cornea.

Statistical Analysis

SPSS [Statistical package for social sciences] version20. [IBM SPASS statistics (IBM corp. Armonk, Ny, USA released 2011)] was used to perform the statistical analysis. Data was entered in the excel spreadsheet.

Descriptive statistics of the explanatory and outcome variables were calculated by the mean, standard deviation for quantitative variables, frequency and proportions for qualitative variables.

RESULTS

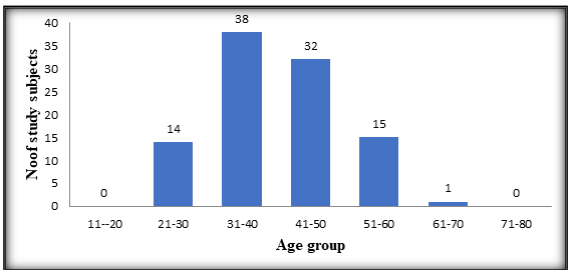

Figure 1: Age distribution of the study subjects

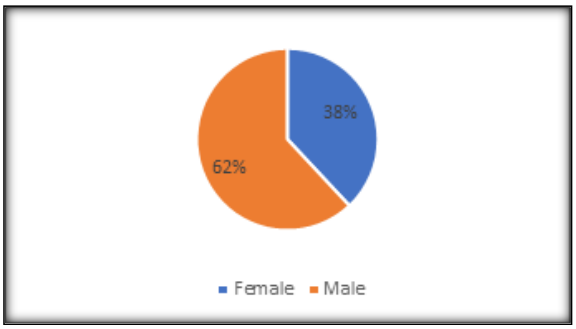

Figure 2: Gender wise distribution of the study subjects

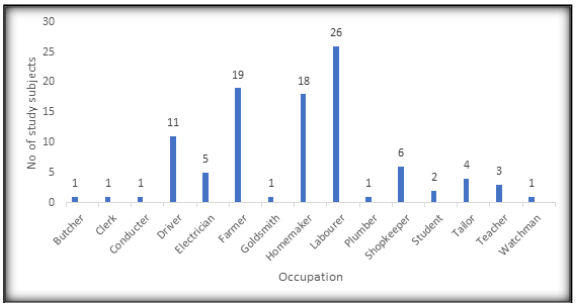

Figure 3: Distribution of the study subjects according to occupation

Table 1: Age distribution of the study subjects

Age group	Frequency	Percent
11-20	-	-
21-30	14	14.0
31-40	38	38.0
41-50	32	32.0
51-60	15	15.0
61-70	1	1.0
71-80	-	-
Total	100	100.0

Table 2: Gender wise distribution of the study subjects

Gender	Frequency	Percent
Female	38	38.0
Male	62	62.0
Total	100	100.0

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Table 3: Distribution of the study subjects according subjective symptoms of dry eye

Subjective symptoms of Dry Eye	Frequency	Percent
Burning sensation of eyes	24	24.0
Burning sensation of eyes with redness	6	6.0
Ocular irritation	5	5.0
Foreign body sensation	11	11.0
Grittiness of eyes	7	7.0
Mild discomfort & pain	5	5.0
Nil	42	42.0
Total	100	100.0

Table 4: Rose Bengal staining

Rose Bengel Staining	Right		Total	Left		Total
	Dry eye present	Dry eye absent		Dry eye present	Dry eye absent	
Frequency	2	98	100	2	98	100
Percentage	2	98	100	2	98	100

Table 5: Tear film breakup time test findings

TBUT	Right		Total	Left		Total
	< 10sec Dry eye Present	> 10sec Dry eye absent		< 10sec Dry eye Present	> 10sec Dry eye absent	
Frequency	43	57	100	41	59	100
Percentage	43	57	100	41	59	100

Table 6: Schirmer test findings in millimeter.

Schirmer`s Test (mm)	Right eye		Left eye	
	Frequency	Percent	Frequency	Precent
< 5	3	3.0	1	1.0
5-10	32	32.0	34	34.0
>10	65	65.0	65	65.0
Total	100	100.0	100	100.0

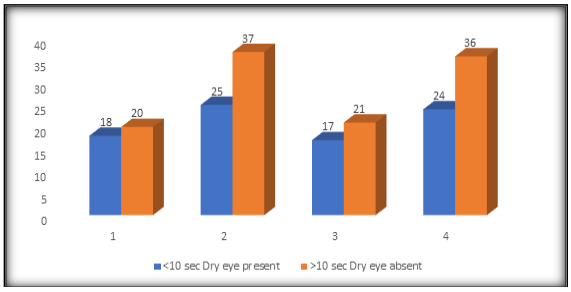

Figure 4: TBUT findings with respect to gender

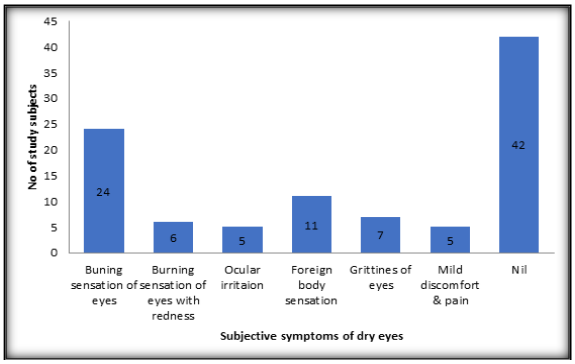

Figure 5: Distribution of the study subjects according subjective symptoms of dry eye

DISCUSSION

HIV is undoubtedly a multisystem disorder and causing a wide spectrum of diseases, but when it comes to ophthalmic manifestations it does not affect around 70-80% HIV infected patients during the natural course of their infection period. Many studies reported that around 40-45% of HIV infected patients reported with various ophthalmic manifestations ranges from adnexal disorders to posterior segment manifestations including Retina and optic nerve. In patients with HIV infection asymptomatic ocular lesions occur in earlier stages and the opportunistic blinding infections occur in later stages of the disease.

The sequelae of HIV infection increase as immune competency decreases, while the asymptomatic ocular lesions occur in earlier stages, the relentless destructive and blinding infections especially the opportunistic ones occur in the later stages of the disease.

Age Distribution

In the present study, the majority of subjects belonged to the age group of 31-40 years[38%], followed by 41-50 years [32%], 21-30 years [14%] and 61-70 years [1%][Table 1, Figure 1]. Biswas J et al found the mean age of the participants being 26 years, and the most patients [76%] belonged to the age group of 20-40 years.[2] Another study conducted in South India by Sahu DK et al reported the mean age as 34 years [range 25-43 years].[3] According to the study conducted by Lamichhane et al, ocular manifestations in HIV/ AIDS cases in Nepal, the mean age of the subjects was 30.04+-11.32 years. Our study findings were concordant with the reported studies.[4]

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Gender Distribution

In our study males [62%] study subjects were high in number than females [38%] study subjects. The male- to –female ratio is 1.6:1[Table 2]. Male predominance is consistently higher in most of the studies. [Figure 2] In the present study male-to-female ratio was almost equal to the study conducted by Acharya PK et al in which male –to-female ratio was 1.17:1.[5]

Occupation distribution and subjective symptoms:

In the present study on HIV patient's majority of them were labourers [26%] by occupation, followed by the farmers [19%], housewives[18%], drivers[11%], shopkeepers[6%], electricians [5%] [Figure 3]. Majority of the subjects in our study are asymptomatic with a maximum of 42% and the most common subjective symptom seen was burning sensation of eyes in 24% of the subjects, followed by foreign body sensation in 11%, grittiness of eyes in 7%, Red eye presentation in 6%, ocular irritation and pain in 4% each. Cunnigham et al. and his coworkers studied that 40-45% of HIV infected patients have one or other ocular manifestations.[6] Narang et al observed ocular symptoms in 35% of all AIDS patients.[7] Some other found that the lifetime risk of atleast one abnormal ocular lesion in HIV patients ranges from 52%-100%.[8,9]

Dry Eye Test findings

Data presented in this study has shown that analysis of tear function tests and ocular surface status in HIV –positive patients. In the present study according to the Rose-Bengal staining test, 2% of the study subjects had dry eye in both the eyes [Table 4]. On performing TBUT, 43% and 41% of the study subjects had dry eye right and left side respectively [Table 5]. On Schirmer's test less than 5mm wetting was found in 3% and 1% of the right and left eyes of the study subjects, 5-10mm was found in 32% and 34% in the right and left eyes of the study subjects, more than 10mm was found in each in both eyes of the study subjects [Table 6]. As a result, around 35% of the study subjects had dry eye in both the eyes. These results indicated that dry eye in a significant feature of the HIV and AIDS disorders. According to the results of this study, around 35% of HIV and AIDS participants had a dry eye in both the eyes. The present study finding is supporting with previous studies which represented that dry eye disorder is one of the most important manifestation of HIV and AIDS patients.[10] The cause of deficient tear production in HIV and AIDS patients may be due to dysfuntion or disturbance of lacrimal functional unit[LFU].[11] Geier et al. demonstrated the decreased tear production in 20%-25% of HIV patients.[12] A recent study of Gowda et al represented decreased tear production in 50% of HIV patients. According to Stern, M.E; Gao et al the LFU plays a regulatory role in maintaining the normal physiology of ocular surface.[13,14]

The lacrimal function unit involves ocular surface, Tear film, cornea, conjunctiva, lacrimal gland, meibomian gland, lids and innervating sensory, Motor nerves. The LFU plays regulatory role in the secretion of tears and formation of the tear film and maintains the normal physiology of ocular surface. Dysfunction and Damage to any component of the LFU may lead to tear deficiency or evaporative dry eye. Despite the introduction of HAART, ocular manifestations remain as prevalent complications in HIV and AIDS patients. With all the above findings our study provided a fairly representative data of dry eye and its ocular manifestations in HIV patients.

CONCLUSION

HIV as an epidemic in our population affecting most commonly males of reproductive age group. Usually in general, practitioners check for ophthalmic manifestations only after a complaint by the patient. But since the incidence of ocular diseases is very high and most of the time they are asymptomatic, it is essential to give a regular check-up for ocular surface disorders in patients with HIV and AIDS.

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