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A study on ocular manifestations in People Living with HIV in a tertiary care centre in Dibrugarh, Assam: a cross-sectional Study

Dr.Abhishikta Chakraborty, Dr. Tapan Gogoi, Dr. Abhijit.k. Handique, Dr. Rajendra Nath Gogoi, Dr. (Mrs.) Subhalakshmi Das

Post graduate student; Department of Ophthalmology, Assam Medical College, Dibrugarh.
Professor and Head of the Department, Department of Ophthalmology
Assistant Professor, Department of Ophthalmology
Associate Professor, Department of Ophthalmology
Associate Professor, Department of Ophthalmology
Associate Professor, Department of Medicine,
Assam Medical College, Dibrugarh.

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ABSTRACT

Background- AIDS is a virus mediated immunosuppresive disorder which rose to prominence in the 80's. Due to introduction of Highly Active Anti-Retro Viral Therapy (HAART), the ocular manifestations which were initially seen , have undergone a change in presentation and timing, which is explored in this study.

Material and Methods-A hospital based cross sectional study was conducted in the Department of Ophthalmology, Assam Medical College, Dibrugarh,for 6 months, between December 2021 to May 2022. It included 80 People Living with HIV (PLHIV)/ AIDS, undertaking Highly Active Anti-Retro Viral Therapy (HAART) for HIV in the ART clinic of Assam Medical College, attending Department of Ophthalmology during the study period fulfilling the inclusion criteria. The subjects were examined and screened for ocular complaints, regardless of presence or absence of symptoms.

Results- The study included 80 People Living with HIV (PLHIV)/AIDS, 53 cases were females and 25 cases were females (Male:Female = 2:1)

Conclusion- From the present study of 80 People living with HIV (PLHIV)/ AIDS, we found the maximum visual disturbance is in the subjects with CD4 count <100 cells/mm^3 and minimum visual disturbance is in the subjects with CD4 count >200 cells/mm^3. Also, posterior segment findings were more in the subjects with CD4 count <100 cells/mm^3 whereas anterior segment findings were more in the subjects with CD4 count >200 cells/mm^3.

KEYWORDS- PLHIV, AIDS, Ocular manifestations, HAART, ART Centre

I. INTRODUCTION

- Acquired Immunodeficiency Syndrome (AIDS) is caused by Human Immunodeficiency Virus (HIV), a lentivirus that causes, a condition in humans in which progressive failure of the immune system allows life threatening opportunistic infections and malignancies.
- In India, ocular lesions associated with AIDS were first reported in 1995[1]. HIV and AIDS-related ocular manifestations may affect 45–75% of HIV+ individuals. The types of manifestations seen in developing nations varies in comparison to those reported in developed countries.[2,3,4,5] A study on HIV positive individuals in India reported around 8%-45% having ocular manifestations.[6,7,8,9]
- It was difficult to compare because of the difference in population demographics.[10]
- With the introduction of HAART, HIV, has changed from a nearly universally fatal disease to a chronic manageable illness. According to National AIDS Control Organisation of India (NACO), the prevalence of AIDS in India in 2013 was 0.27 million, which is down from 0.41 in 2002[11]. While the NACO estimated that a total number of people living with HIV (PLHIV) is estimated at 21.17 lakhs in 2015.
- Therefore, a study is proposed to observe the patterns and risk factors of the ocular manifestations of HIV in the HAART era and their relation to the CD4 count.

II. MATERIALS AND METHODS

A hospital based cross sectional study was conducted in the Department of Ophthalmology, Assam Medical College, Dibrugarh between

December 2021 to May 2022 including all patients undertaking Highly Active Anti-Retro Viral Therapy (HAART) for HIV in the ART clinic of Assam Medical College, attending Department of Ophthalmology during the study period fulfilling the inclusion criteria. Considering 95% Confidence Interval with relative precision of 20% and, assuming that 45% of the people living with HIV has developed ophthalmic manfestations[7], the sample size for the present study has been calculated and rounded off to 80 cases.

Ethical consideration- The study proposal submitted in the Institutional Ethics Committee of Assam Medical College and Hospital , Dibrugarh for review and appraisal and the study was commenced after approval.

Consent-A written informed consent was taken from the participants for conducting the study.

(A) Inclusion Criteria-1. All patients diagnosed positive for HIV antibodies taking Highly Active Anti-Retroviral Therapy (HAART) in the ART clinic of Assam Medical College & Hospital, Dibrugarh. 2. Patients belonging to age groups above 18 years.

(B) Exclusion Criteria-1. Patients with Diabetes, Hypertension, Autoimmune diseases, Collagen Vascular diseases, Blood dyscrasias or any other known systemic diseases. 2.Patients with any known pre-existing ocular disorder. 3.Patients on long-term steroids or immunosuppressants for any medical or surgical conditions. 4.Patients with disseminated metastases. 5. HIV patients who are terminally ill/ comatose and cannot be examined thoroughly. 6. Patients refusing examination.

III. METHODOLOGY

- A complete general, medical and ophthalmological examination has been performed. Interview, clinical examination, and laboratory investigations were undertaken. They are then subjected to various tests as enumerated. Distance and near vision were tested using Snellen's distance and Jaeger near vision chart, respectively. Anterior segment examination was done with the help of slit lamp biomicroscope. Fundus examination with indirect ophthalmoscopy and 90 D was done in all patients. Positive findings were documented on Zeiss slit-lamp camera, Topcon fundus camera, and digital camera. Fundus fluorescein angiography, ultrasound examination, and other ancillary investigations such as magnetic resonance imaging and infectious agent antibody titres were obtained in cases wherever necessary. CD4-count was obtained in all cases. Retinal examination done with Direct and Indirect Retinoscope , anterior chamber angle examined with Gonioscope and intra ocular pressure checking is done with Applanation tonometry method. Routine blood examination was done. Ancillary investigations , Chest X-ray, ECG, Ultrasound, MRI were done wherever necessary.

IV. STATISTICAL ANALYSIS

- Continuous data were presented as Mean +/- Standard Deviation or Median, based on the normality test. Categorical data were expressed as frequency and percentages. Statistical significance was tested using Fishers's Exact Test and Chi-squared Test. A p-value of less than 0.05 was considered as statistically significant. Analysis was done using the SPSS Software.

V. RESULTS AND OBSERVATIONS

- In our hospital based, cross sectional study of 80 patients diagnosed with HIV/AIDS serologically at the ART centre of Assam Medical College and Hospital, Dibrugarh at and referred to Ophthalmology department for ocular involvement, we studied these patients for ocular manifestations of HIV/AIDS in relation to CD4 count and the severity of visual disturbance.
- The results and observations made in the study has been tabulated, analysed and remarked if necessary.

Table 1: Age and Gender distribution of study participants

Age in Years	Male		Female	
	No	%age	No	%age
18-20	2	3%	1	1%
21-30	15	19%	7	9%
31-40	20	25%	9	11%

41-50	5	6%	5	6%
51-60	9	11%	3	4%
>60	3	4%	1	1%
Total	54	66%	26	31%

Table 2: Distribution of study participants according to visual acuity in right and left side

Vision	**Right side**		**Left side**		**Bilateral**	
	No.	%age	No.	%age	No	%age
6/6 – 6/12	55	69%	60	75%	41	51%
6/18 –6/36	12	15%	9	11%	7	9%
6/60 or less	13	16%	11	14%	8	10%

Table 3 : Distribution of study participants based on CD4 Count

CD4Count (cells/mm^3)	**No.ofpatients**	**Percentage**
1-100	36	45%
100-200	23	29%
>200	21	26%
Total	80	100%
Mean±SD	**172.7 ± 169.3**	

Mean ± SD: 172.7 ± 169.3
Median CD4 count: 108.5 cells/mm^3
Range:866 cells/mm^3

Table 4 : Classification of the study participants based on the ocular manifestations in different segments of the eye

Ocular Manifestations	**No. of Patients**	**%**
Anterior segment & adnexal lesions	32	40%
Posterior Segment Manifestations	52	65%

***Somepatients had both anterior and posterior segment manifestations.**

Table 5 : Classification of ocular manifestations and their distribution based on eye affected

Ocular Manifestations	**Right (n=80)**		**Left(n=80)**	
	No.	%	No.	**%**
Anteriorsegmentandadnexallesions	27	34%	25	31%
Uveitis	7	9%	5	6%
Molluscum contagiosum	3	4%	4	5%
Complicated Cataract	5	6%	5	6%
Kaposis sarcoma/SCC	1	1%	1	1%
HZO	5	6%	3	4%
Episcleritis	1	1%	0	0%
External hordeolum	1	1%	3	4%
Bells palsy	0	0%	1	1%

Dry eye	3	4%	3	4%
Chronic dacryocystitis	1	1%	0	0%
Corneal opacity	1	1%	1	1%
Posteriorsegmentmanifestations	50	63%	48	60%
CWS	24	30%	27	34%
CMV Retinitis	13	16%	11	14%
Chorioretinitis(Active/healed)	8	10%	5	6%
Papilloedema	0	0%	0	0%
Optic neuritis	0	0%	0	0%
Discoedema	3	4%	3	4%
Myopicfundus(B/E)withCWS	1	1%	1	1%

Table 6 : Relation of ocular manifestations according to CD4 Count, segment wise

Ocular Manifestations	**CD4 count in cells/mm3**						**p-value#**
	1-100 (n=36)		100-200 (n=23)		>200 (n=21)		
	no	%	No	%	no	%	
Anterior segment and adnexal lesions	11	31%	13	55%	8	38%	0.136
Posterior segment manifestations	27	76%	11	49%	13	63%	0.104

p-value was calculated using Chi-Square Test (as at least 80% of the cells have an expected frequency of 5 or greater, and no cell has an expected frequency smaller than 1.0)
*It is NOT statistically significant.

Table 7: Relationship of Visual disturbances according to CD4 count

Visual disturbance	**CD4 count in cells/mm3**						**p value***
	1-100 (n=36)		101-200 (n=23)		>200 (n=21)		
	no	%	No	%	no	%	
6/6-6/12	16	44%	17	72%	15	73%	**0.19**
6/18-6/36	9	24%	3	14%	3	16%	
6/60 or less	11	31%	3	12%	3	13%	
Total	**36**		**23**		**21**		

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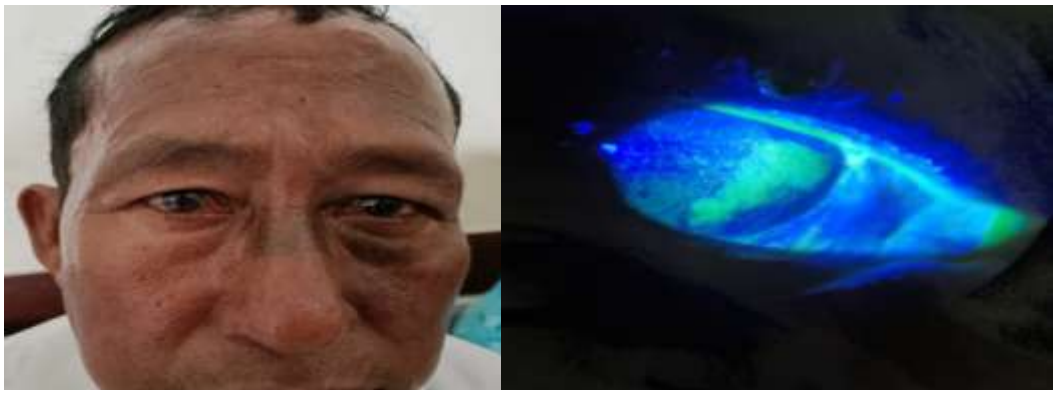
*p-value was calculated using Fisher's Exact Test.
*It is NOT statistically significant



Herpes Zoster Ophthalmicus

CMV retinitis

VI. DISCUSSION

- In this study, 3 out of 4 subjects i.e. 76.3% belonged to the age group of 21-50 years. This age group is considered the economically productive age group. The findings of the present study have been found to be in line with the previous studies.
- 67.50 % of males are affected compared to 32.50 % of females in the study group which approximates a ratio of 2:1. The male-to-female ratio in this study is comparable with other studies.
- Moderate visual deterioration (6/18 -6/36) in 15% of right eyes and 11% of left eyes of the total number of patients.Severe visual deterioration (6/60 or less was seen in 16% of the right eye and 14% in the left eye of the 80 study participants studied here.Bilateral visual deterioration i.e<6/60 in 10% of the subjects.
- Table 3 shows the CD4 distribution among all 80 study participantsof this study. Severe depletion of CD4 counts was seen in the majority of the study participants (1-100 cells/mm3) 45.00% of them. Moderate depletion (100 -200 cells/mm3) was seen in 29% of the 80 cases and mild depletion (>200 cells/mm3) in 26%. The median CD4 count in this study was 108.5 cells/mm^3
- 65.00% of the patients had posterior segment involvement and 40.00% in the anterior segment of the eye. As some of them had involvement of botheyes and in such case, the findings are counted separately.
- Among80 patients studied here, 27 patients had only anterior segment and adnexal lesions in the right eye, and 25 had only anterior segment and adnexal lesions in the left eye, the findings if present in both anterior and posterior segments in the same eye were counted separately. Amongst the anterior segment and adnexal lesions of study subjects uveitis is the most common finding (9% in the

right eye and 6% in the left eye), followed by complicated cataracts (6% in the right eye and 6% in the left eye) and herpes zoster ophthalmicus (6% in right eye and 4% in left eye). The next common adnexal lesion observed was molluscum contagiosum (4% in the right eye and 5.0% in the left eye).The appearance of dry eyes in this study was 4% and 4% in right and left eyes respectively. External hordeolum was observed in the right eye (1%) and left eye (4%) as acute lesions. Squamous cell sarcoma, corneal opacity were seen in 1% of the eyes in 80 patients studied. Chronic dacryocystitiswas observed in 1% of right eye of the study subjects.

- The 80 patients of this study had only posterior segment lesions in 50 patients in the right eye and 48 patients in the left eye. The cotton wool spots(CWS)/HIV retinopathy/HIV micro vasculopathy was the most common lesion(30% in right eyes and 34% in left eyes), which was the commonest ocular manifestation.
- The next common posterior segment lesions observed in these patients were Cytomegalovirus (CMV)retinitis 16% in right eyes and 14% in left eyes, which is comparable to the findings of Arateepalsule et al (2007)[12]and Douglas A Jabs et al (2007)[13]. In the pre-HAART era, the prevalence of CMV Retinitis in the developed world was 30-40%[61] .
- Present study observed, chorioretinitis (active/healed) 10.0% in right eye and 6% in the left eye of the study subjects, which were similar to the findings of Jyothirmay Biswas et al (2000)[14].
- Disc oedema was seen in 4% of patients in both eyes, and myopic fundus with CWS was seen in 1% of the patients in both eyes.
- Maximum posterior segment manifestations were found in the group with CD4 count <100 cells /mm^3. Whereas, maximum anterior segment manifestations were present in the group with CD4 count between 100-200 cells/mm^3 .
- Maximum visual disturbances were seen in the group with CD4 count <100 cells/mm3. Minimum visual disturbances were seen in the group with the CD4 count between >200 cells/mm3.

VII. CONCLUSION

- The introduction of Highly Active Anti Retroviral Therapy has not only reduced but also delayed the presentation of ophthalmic manifestations.
- The vision affecting posterior segment complications is still prevalent, which should be detected and managed early.
- It is of paramount importance to do periodic assessments of CD4 count. That will be helpful to detect incidental, acute, and occult development of signs, that may contribute to early diagnosis and management of the same.
- High-risk individuals should be counselled on the nature of the disease and the risk they are subject to. They should be counselled on safety practices and encouraged to ask for medical help whenever they feel he need to.
- The most important tool in the prevention of disease spread is mass awareness. Adequate and appropriate knowledge about the transmission, spread, and symptoms of the disease will not only reduce the social stigma associated with the disease but also help in developing a sense of sympathy amongst the general public, allowing the afflicted to have a better quality of life.

REFERENCES

[1]. Biswas J, Madhavan H N, Badrinath S S. Ocular lesions in AIDS: A report of first two cases in India. Ind J Ophthalmol 1995; 43: 69–72.

[2]. Cunningham ET Jr, Margolis TP. Ocular manifestations of HIV infection. N Engl J Med. 1998 Jul 23;339(4):236-44.

[3]. Kestelyn PG, Cunningham ET. HIV/AIDS and Blindness. Bull World Health Organ. 2001;79(3):208–213.

[4]. Cochereau I, Mlika-Cabanne N, Godinaud P, Niyongabo T, Poste B, Dazza MC, et al. AIDS Related Eye Disease in Burundi Africa. Br J Ophthalmol. 1999;83:339–342.

[5]. Kestelyn P. The Epidemiology of CMV Retinitis in Africa. Ocul Immunol Inflamm. 1999;7:173–177.

[6]. Shah SU, Kerkar SP, Pazare AR. Evaluation of ocular manifestations and blindness in HIV/AIDS patients on HAART in a tertiary care hospital in western India. Br J Ophthalmol. 2009 Jan;93(1):88-90.

[7]. Gharai S, Venkatesh P, Garg S, Sharma SK, Vohra R. Ophthalmic manifestations of HIV infections in India in the era of HAART: analysis of 100 consecutive patients evaluated at a tertiary eye care

center in India. Ophthalmic Epidemiol. 2008 Jul-Aug;15(4):26.

[8]. Biswas J, Madhavan HN, George AE, Kumarasamy N, Solomon S: Ocular lesions associated with HIV infection in India: a series of 100 consecutive patients evaluated at a referral center. Am J Ophthalmol. 2000, 129: 9-15. 10.1016/S0002-9394(99)00415-8.

[9]. Vrabec T R. Posterior segment manifestations of HIV/AIDS. SurvOphthalmol 2004; 49: 131–157.

[10]. Pathai, Sophia et al. "Prevalence of HIV-associated ophthalmic disease among patients enrolling for antiretroviral treatment in India: a cross-sectional study." BMC infectious diseases vol. 9 158. 23 Sep. 2009, doi:10.1186/1471-2334-9-158.

[11]. World Health Organisation . Geneva: WHO Global Programme on AIDS: The Current Global Situation of the HIV Infection/AIDS Pandemic; pp. l–10. WHO/GPA/NP/EVA/94.1.1993;1-10.

[12]. AarateePalsule, Vinay Kumar, Pallavi Bhargava. Ocular manifestations in HIV positive patients in Western India.All India Ophthalmic Conference proceedings 2008.

[13]. Jabs DA, Van Natta ML, Holbrook JT, Kempen JH, Meinert CL, Davis MD; Studies of the Ocular Complications of AIDS Research Group. Longitudinal study of the ocular complications of AIDS: 1. Ocular diagnoses at enrollment. Ophthalmology. 2007; 114(4):780-6.

[14]. Jyothirmay Biswas, Sudarshan S. Anterior segment manifestations of Human immunodeficiency/acquired immunodeficiency syndrome. Indian J Ophthalmology 2008; 56: 363-75.