Original Research Article

Ocular manifestations of HIV infections in southern India in the era of HAART

Kanishk Singh[1], R Pavan Kumar[2], Karike Sabita[3], Sudhir Babu Padgul[4*], Tejaswi Kotla[5] Kiran Beesam[6]

[1,5,6]Assistant Professor, [2,3]Junior Resident, [4]Professor and HOD, Department of Ophthalmology, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda, Telangana, INDIA.
Email: drkanishksingh@gmail.com

Abstract

Aim: To study the various ocular manifestations in HIV/AIDS patients and their correlation with CD4+ cell count. **Materials and Methods:** In this study, 76 HIV-positive patients were studied for ocular features of HIV/AIDS in the Department of Ophthalmology and Department of Medicine, for a period of one and half year. Statistical Analysis and ocular findings with CD4+ cell count was analyzed using the Chi-Square test and 'P' valve was calculated. **Results:** Out of 76 patients, 53 were men and 23 were women. Twenty-seven (36%) patients were in the age group of 31-50 years. HIV infection was mainly acquired through heterosexual transmission in 63 (83%) patients. Ocular lesions were seen in 30 (40%) cases, and most common anterior segment finding was herpes zoster opthalmicus, however 17% patients suffered from HIV Retinopathy. Out of 30 (40%) ocular finding positive patients, 17 cases had CD4+ cell count less than 50 cells/mm3. The study showed that the prevalence of ocular manifestation was higher among patients on HAART (31%) than those patients not on HAART (8%) regimen. **Conclusion:** HIV retinopathy and opportunistic ocular infections were common in HIV/AIDS patients. Ocular lesions were more common when CD4+ cell count was less than 250 cells/mm3. All patients who had CD4+ cell count less than 250 cells/mm3 must undergo complete ophthalmic checkup to rule out ocular lesions.

Key Word: Acquired immuno deficiency syndrome, Human immunodeficiency virus, ocular manifestation

***Address for Correspondence:**
Dr. Sudhir Babu Padgul, Professor and HOD, Department of Ophthalmology, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda, Telangana, INDIA.
Email: drkanishksingh@gmail.com

Received Date: 23/01/2019 Revised Date: 10/02/2019 Accepted Date: 16/03/2019
DOI: https://doi.org/10.26611/10091012

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 04 April 2019

INTRODUCTION

Acquired Immunodeficiency Syndrome (AIDS) caused by Human Immunodeficiency Virus (HIV) discovered in the early 1970's is amongst the various communicable diseases having multisystem manifestation associated with opportunistic infections[1]. India has a third largest population of people living with acquired Immunodeficiency syndrome, the four high prevalence States in India includes Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu which account for 53% of all HIV infected population in the country[2,3]. It has become evident from various studies that in majority of the patient suffering from HIV infection also has ocular involvement. The most common ocular finding is a noninfectious occlusive micro angiopathy known as HIV retinopathy characterized primarily by cotton-wool spots and Intra Retinal hemorrhages. Somewhat less frequent than HIV retinopathy, but visually more significant, are opportunistic ocular infections, particularly cytomegalovirus (CMV) retinitis[4,5]. The present study is conducted to evaluate the various ocular lesions in HIV positive patients and also its correlation with CD4+ T-lymphocyte count. Hence this study will provide a reliable predictor of immune status of patient and various other risk factors for ocular manifestation of the disease.

How to cite this article: Kanishk Singh *et al.* Ocular manifestations of HIV infections in southern India in the era of HAART. *MedPulse International Journal of Ophthalmology.* April 2019; 10(1): 06-10. https://www.medpulse.in/Ophthlmology/

MATERIAL AND METHODS

It was a prospective cross sectional study which included seventy six HIV positive patients, who reported in the Department of Ophthalmology in Kamineni institute of medical sciences Narketpally, Nalgonda district. The study was done during the period of October 2016 to July 2018 and all subjects diagnosed as HIV positive and AIDS in general medicine department in our hospital and in Nalgonda govt hospital were taken up for study. Detailed history of each patient was taken information regarding marital status, sexual behaviour, past and present infectious diseases, blood Transfusions, IV drug abuse and any surgical intervention was obtained. Patients suffering from diabetes, hypertension, carcinomatous conditions, patients with other chronic systemic diseases and HBs AG positive patients were excluded from the study. Ophthalmic examination of all HIV positive patients was done thoroughly which included- visual acuity, external eye examination, ocular motility, anterior segment examination by slit lamp biomicroscopy and dilated fundus examination by indirect ophthalmoscopy. Systemic evaluation and relevant laboratory investigations were done for all patients. CD4+ T-lymphocyte count was obtained in all cases. Statistical analysis of correlation between ocular findings and CD4+ cell count was done using the chi-square test.

RESULTS

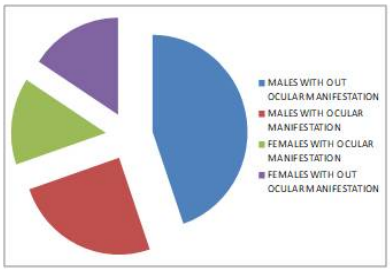
Total of seventy six HIV positive patients were examined for their ocular findings, out those fifty three (70%) were males and twenty three (30%) were females with male female ratio of M:F 2.3:1. The most common age group infected was between 31-40 years in twenty seven (36%) patients [Table 1] followed by 41- 50 years age group. Most common mode of HIV infection transmission was through heterosexual contact seen in sixty three (83%) patients followed by ten cases (13%) through blood transfusion and three cases (4%) by IV drug abuse. Ocular lesions were seen in thirty (40%) cases out of which nineteen were males and eleven were female patients [Table 2]. However there was no association found between mode of transmission and occurrence of ocular manifestations. (P = 0.326). In the present study the ocular manifestations in males and females among the entire study group were 25% and 14.4% respectively. While the gender specific prevalence of ocular manifestations among males and females were 36% and 47% respectively. This skewed deviation was the limitation of the study and can be attributed to the fact that the number of males who were enrolled for the study was more compared to females. After doing complete ophthalmic examination it was found that 20 patients had lid and adnexal lesions like herpatic ophthalmicus, conjunctivitis, dry eye. Eleven had patients had anterior segment involvement out of which keratitis and keratouveitis were the most common. Thirteen patients had posterior segment involvement in which sign like cotton wool spots, Choroidal Granuloma and disc oedema along with exudates and hemorrhages were seen shown in (Table 3and4). In this study out of seventysix HIV patients thirty patients were on HAART regime, were as remaining were not on any treatment. It was found that there is significant association between ocular manifestations in HIV positive patients those who are on HAART therapy (p 0.0001). We observed that there is increase in ocular manifestations of HIV in patients who are on HAART regime, as with the introduction of HAART, the life expectancy of the patients have significantly increased. Also those who were diagnosed as HIV with HAART regime were old cases as in compare to those who were not on any treatment, hence the ocular manifestations continue to present in innumerable forms. In our study number of HIV cases with CD4 >250cells/mm3 were thirty one (41%) and with CD4 count <50cells/mm3 were eighteen (24%). The study concluded that seventeen patients with CD4 count<50cells/mm3 presented with ocular manifestation and only 1 patient with CD4 count >250cells/mm3 had some ocular lesion. There was significant association found between CD4 count and occurrence of ocular manifestations. (P = 0.0001) [Table 5]. In this study out of 76 patients, 30(40%) cases were on HAART regimen in which 24(31%) patients had some ocular involvement. However out of 46 (60%) patients those who were not in HAART regimen only 6(8%) cases presented with some amount of ocular manifestation. There is significant association between ocular manifestations in HIV positive patients who are on HAART therapy (p 0.0001). Hence, we observed an increase in ocular manifestations of HIV in patients who are on HAART Regime[Table 6].

Table 1: Age Distribution (n=76)

Age Group(Years)	Number of cases
<30	15 (19%)
31-40	27 (36%)
41-50	22 (30%)
51-60	11 (14%)
>60	1 (1%)

Table 2: Gender Distribution (n=76)

Sex	Without Ocular Manifestation	With Ocular Manifestation	Total
Male	34	19	53(70%)
Female	12	11	23(30%)
Total	46(60%)	30(40%)	76(100%)



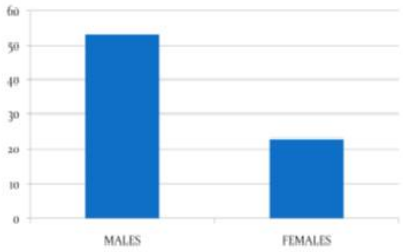


Table 3: Anterior Segment lesion (n=76)

Anterior Segment Lesion	Number of cases
Keratouveitis	4(5%)
Corneal Keratitis	2(3%)
Signs Of Active Uveitis	1(1%)
Signs Of Chronic Uveitis	4(4%)
Total	11(15%)

Table 4: Posterior Segment lesions (n=76)

Posterior Segment lesions	Number of cases
Cotton wool spots	10 (13%)
Choroidal Granuloma	2 (3%)
Disc oedema with Haemorrhages and exudates	1(1%)
Total	13(17%)

Table 5: Correlation of Ocular Manifestation with CD4 Count (n=76)

CD4Count (cells/mm3)	Without Ocular Manifestation	With Ocular Manifestation	Total
>250cells/mm3	1(1%)	17(23%)	18(24%)
201-250cells/mm3	3(4%)	5(7%)	8(10%)
151-200cells/mm3	3(4%)	3(4%)	6(8%)
101-150cells/mm3	3 (4%)	4(5%)	7(9%)
51-100cells/mm3	6 (8%)	0(0%)	6(8%)
<50cells/mm3	30(40%)	1(1%)	31(41%)
TOTAL	46 (60%)	30(40%)	76

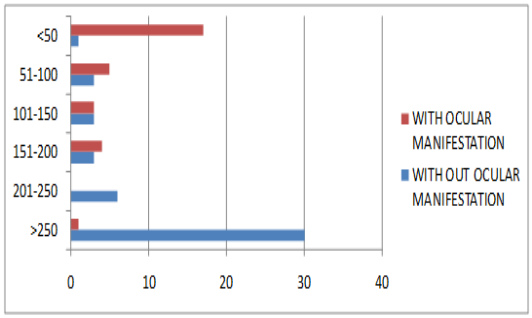
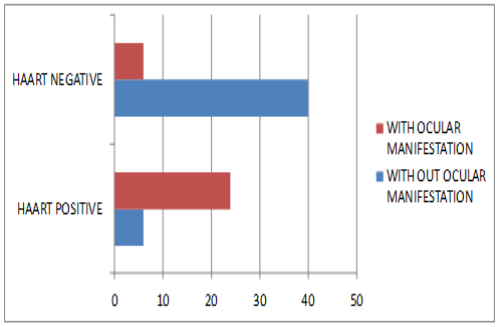


Table 6: Ocular manifestations in HIV positive patients on HAART and not on HAART Treatment (n=76)

Nature of Treatment	Without Ocular Manifestation	With Ocular Manifestation	Total
HAART	6(8%)	24(31%)	30(40%)
Non-HAART	40(53%)	6(8%)	46(60)
Total	46(60%)	30(40%)	76



DISCUSSION

In recent years HIV infection has become one of the world's greatest public health problem. The first reported case of HIV in India was by a female sex worker from Chennai in 1986, and the first ocular lesion in HIV was reported from Sankara Nethralaya , Chennai in 1995[6,7] In our study, the majority of patients were men fifty three (70%), and most of them were in between age group of 31-50years. The mean age of the patients in our study was 38.14 ±2.5 years, which was near similar to Biswas *et al* study[8,9]. Heterosexual transmission was the most common (83%) mode of transmission of HIV infection, followed by blood transfusion and IV drug abuse. None of the patients was infected by homosexual contact. Ocular involvement in HIV was seen in lesser number of patients in our study (40%) and comparable results were seen by Ramlal Sharma *et al* (10) .Chelini DL *et al* in university of Pisa, Italy found that 58% patients had ocular manifestations and near similar result was seen by Jabs DA *et al*[11,12]. This can be due lack of awareness about the disease among and late presentation of the patients in developing countries as compare to developed nations. In our study the number of patients with anterior segment and adnexal ocular lesions were sixteen (21%) among which twelve (16%) had HIV related ocular lesions and four had non related HIV ocular lesions (Blepharitis, Refractive error, early lenticular opacities, Epiphora). The most common anterior segment finding which was more prevalent among HIV positive persons at the time of diagnosis was Herpes zoster Ophthalmicus keratouveitis, which was seen in 5% cases, *Jabs DA et al* , *Yared Aseefa et al* also reported the near similar results[11,13]. In this study, 17 % patients were observed to have HIV retinopathy, comparable results were seen by Sophia *et al*, and Lamichhane *et al* (14,15), however *Yared Aseefa et al* showed patients affected with HIV retinopathy was as high as 24% (13). We also observed that there was an increased in prevalence of ocular manifestations with the cases with CD4 count <250 cells/mm3. Ocular involvement with CD4 count > 250 cells/mm3 was reduced drastically which was in comparison with *Sophia et al* and *Gururaj et al* study (15,16). It was noticed that there was significant association between ocular manifestation and low CD4 Count, which is in accordance with other previous studies as well. Hence, ocular manifestations is seen to increase significantly with decrease in CD4 count, especially in levels < 250 cells/mm3. Therefore patient who had CD4+ cell less than 250 cells/mm3 must undergo complete ophthalmic checkup to rule out ocular lesions**.** In our study 31% of the patients who were on HAART regimen showed some degree of ocular manifestation were as only 8% of the cases who were not on HAART regimen showed ocular involvement. Study done by *Bekele S et al* showed that the prevalence of ocular manifestation was higher among patients on HAART (32.6%) than those patients not on HAART (17.9%). *Gharai S et al* also concluded the same[9,17]. This could be due to the low CD4+ T cells count during the initiation of HAART, as patients with a CD4+ T cell count of <250 cells/µl are put on HAART. Other reason could be due to the fact that with the introduction of HAART, the life expectancy of the patients has significantly increased. However the ocular manifestations continue to present in innumerable forms.

CONCLUSION

Awareness on ocular lesions in HIV patients is important for their early diagnosis and management. Ocular manifestations are among the most common findings in HIV/AIDS patients having various clinical presentations and affecting almost every structure of the eye. HIV with

heterosexual transmission was commoner in our study, the prevalence was higher among male patients, and patients with lower CD4+T cell count. Young individuals between age group of 30-50 years and CD4+ T cell count of <250 cells/mm3 were found to be independent risk factors for developing ocular manifestations. Further large sample size and longer follow up study is required to have final disclosure.

REFERENCES

1. Daniel M. Albert, Frederick A. Jakobiec, "Principles and Practice of Ophthalmology", 2nd edition, volume 5, 2000. 4866 – 4880.
2. Dugel PU, Rao NA: Ocular infections in the acquired immunodeficiency syndrome. IntOphth Clin 1993; 33:103-127.
3. Rao NA: Acquired immunodeficiency syndrome and its ocular complications. Ind J Ophthalmol 1994; 42:51-63
4. Jabs DA, Green WR, Fox R, *et al*: Ocular manifestations of acquired immune deficiency syndrome. Ophthaltmlogy 1989; 96:1092-1099.
5. Freeman WR, Chen A, Henderly DE, *et al*: Prevalence and significance of acquired immunodeficiency syndrome. American journal of ophthalmology 1988;107(3):229-235
6. S Sudharshan, Jyotirmayibiswas: Introduction and immunopathogenesis of acquired immune deficiency syndrome. Indian J Ophthalmology 2008; 56:357-362.
7. HIV-AIDS Epidemiological Surveillance and Estimation report for the year 2005, Indian National AIDS control organisation (NACO) 2006
8. Biswas *et al*: Blepharitis and lid ulcer as an initial ocular manifestation in AIDS patients.Indian J Ophthalmol 1997;45(4):233-234.
9. Bekele S, Gelaw Y, Tessema F: Ocular manifestation of HIV/AIDS and correlation with CD4+ cells count among adult HIV/AIDS patients in Jimma town, Ethiopia: a cross sectional study. BMC Ophthalmology 2013; 13(20):1-6
10. Sharma *et al.*: Ocular manifestations in HIV/AIDS patients. Annals of Tropical Medicine and Public Health 2012;5(5):474-478
11. Chelini DL, Nuccorini AP, Paladini: ocular manifestation of acquired immunodeficiency syndrome SA Clinic of ophthalmology 2008; 4(2): 26-24
12. Jabs DA: Ocular manifestation of HIV infection. Trans Am Ophthalmol Soc 1995; 93: 623-83.
13. Yareed Aseefa, Asfawassen G, Melese A: Ocular manifestations of HIV/AIDS in Gondar university,north west Ethiopia. J Health Dev 2006; 20(3):166-169.
14. Pathai S, Deshpande A, Gilbert C, Stephen D. Lawn: Prevalence of HIV-associated ophthalmic disease among patients enrolling for antiretroviral. BMC Infect Dis 2009; 20(3):166-169.
15. Lamichhanne G, Shah DN, Sharma S, Chaudary M: Ocular manifestations in HIV cases in Nepal. Nep J Oph 2010; 2(3): 45-50.
16. Gururaj K, Kusaur S: Clinical study of ocular manifestation in hiv/aids and its correlation with cd4+t cells. Int J Biol Med Res. 2013; 4(3):3284- 3289
17. Gharai S, Venkatesh P, Garg S,Sharma SK: 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 Epidemiology 2008;15: 264–271

Source of Support: None Declared
Conflict of Interest: None Declared