

## Incidence of ocular manifestations in HIV infected patients: a study in a teaching hospital in Telangana

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### Abstract

**Introduction:** Ocular manifestations of human immunodeficiency virus (HIV) infection are common. The aim of this study was to assess the prevalence of the ophthalmic manifestations observed in AIDS patients.

**Materials and Methods:** 169 patients who were confirmed to be living with HIV were included into the study. Ophthalmic diagnoses were made based upon LogMAR and slit lamp biomicroscopic examination of the anterior segment (eyelids, conjunctiva, cornea, anterior chamber), and dilated indirect ophthalmoscopy to provide views of the central and peripheral retina.

**Results:** Heterosexual mode of transmission was the most common with 91.1%. Most of them had the infection for less than 5 years and 106 of them were on ART. Ocular manifestations were seen in 96 (56.8%) of the patients. Cytomegaloviral retinitis was the most common cause of the ocular manifestation with 29 of the patients being affected. 16 of the patients had cottony conjunctival growth, 11 had uveitis and 10 had a cutaneous lid.

**Conclusion:** But since the incidence of ocular diseases is very high and most of the times asymptomatic it is essential to give a regular check up in patients with HIV.

**Keywords:** Human Immunodeficiency virus, Ocular manifestations, AIDS, Cytomegaloviral retinitis, Incidence

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### Introduction

Ever since Acquired Immuno-Deficiency Syndrome (AIDS) was first described in 1983, it has become a worldwide epidemic and major health problem<sup>1,2</sup>.

World Health Organization (WHO) and the Joint United Nations Program on HIV/Aids, in their joint summary in 2003, have estimated 40 million people living worldwide with Human Immunodeficiency Virus (HIV)/AIDS. Approximately 5 million people were infected with HIV and there were about 3 million AIDS deaths in 2003<sup>3</sup>. Over time, these numbers have decreased and today, according to the global statistics of 2015, released in 2016, 36.7 million people are said to be living with HIV. Around 17 million of them are already on antiretroviral therapy. Still, about 2.1 million people get infected every year. 1.1 million people have died from AIDS related illness in 2015. Since the start of this epidemic, 78 million people have been infected of whom 38 million people have died<sup>4</sup>.

In India, the national adult HIV prevalence in 2015 is estimated to be around 0.26% (21.17 lakhs), with 0.30% being in males and 0.22% in females. Manipur has the highest prevalence with 1.15% and Andhra Pradesh/Telangana being 0.66% (3.95 lakhs)<sup>5</sup>.

Although there is antiretroviral (ART) therapy available for improving the quality of life of the infected people, there is no cure as yet, thus with majority of the people will remain suffering from the profound impacts of the disease<sup>6</sup>.

HIV causes a wide spectrum of diseases and is a multisystem disorder. Ocular manifestations of human immunodeficiency virus (HIV) infection are common. Approximately 70-80% of HIV-infected patients will be treated for an HIV-associated eye disorder during the course of their illness<sup>7</sup>.

The very first report of HIV related ocular manifestations was described by Holland in 1982<sup>8</sup>. Since then, many studies have reported several AIDS related diseases of the eye and the orbit<sup>3,9</sup>. In India, ocular illness was first reported in 1995<sup>10</sup>, the number which has greatly increased since then. Now, the estimated prevalence of HIV related eye diseases in India is reported to be between 8-45%<sup>9-13</sup>.

Reports suggest that the prevalence and spectrum of HIV-related eye disease differs geographically. In Asia, the predominant manifestation is CMVR, followed by other retinal OIs. Estimates are highest in south-east Asia, where CMVR affects 27-33% of HIV-infected individuals<sup>9,12-14</sup>. However, in the sub-Saharan region of Africa, this prevalence is found to be very low, but other complications such as those affecting the anterior segment of the eye like herpes zoster and molluscum contagiosum are more frequently reported<sup>15-17</sup>.

The aim of this study was to assess the prevalence of the ophthalmic manifestations observed in AIDS patients.

**Materials and Methods**

This cross sectional study was carried out in Kamineni Academy of Medical Sciences and Research centre by Department of Ophthalmology during the period of two years. 169 patients who were confirmed to be living with HIV were included into the study.

HIV was confirmed by the Tridot or ELISA test for antibodies against HIV-1 and HIV-2.

The collective demographic details, without the individual patient details were collected from the Integrated Counseling and Testing Centre of our institute as according to the NACO protocols. Other data were collected from the medical notes. Data obtained included the mode of transmission, the CD4, CD8 counts, Clinical stage of HIV, and duration of the disease were also noted.

LogMAR (logarithm of the minimal angle of resolution) was used for measurement of presenting and best corrected visual acuity. Visual impairment and blindness was defined as per recently revised WHO guidelines, where visual impairment is defined as presenting visual acuity of less than 6/18 (0.3 Log MAR), but equal to or better than 3/60 (0.05), and blindness as presenting visual acuity of 3/60 or worse, in the better eye<sup>18</sup>.

Ophthalmic diagnoses were made based upon slit lamp biomicroscopic examination of the anterior segment (eyelids, conjunctiva, cornea, anterior chamber), and dilated indirect ophthalmoscopy to provide views of the central and peripheral retina.

**Results**

Males were predominantly affected (57.4%) than females (42.6%). The majority of the patients belonged to 31-40 years age group and most of the males were drivers or daily wage laborers. Most of them were from the rural background and uneducated Table 1.

**Table 1: Demographic details of the patients**

	Number	Percentage
Sex		
Males	97	57.4%
Females	72	42.6%
Age		
<18	14	8.3%
18-30	54	32%
31-40	76	45%
40-50	16	9.5%
>50	9	5.3%
Occupation		
Laborer	37	21.9%
Driver	46	27.2%
Govt employee	28	16.6%
Pvt employee	11	6.5%
House wife	22	13%
Unemployed	19	11.2%
Others	6	3.6%

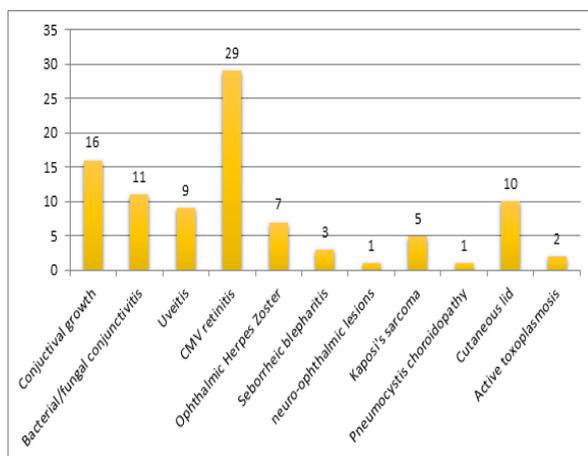
Residence		
Rural	124	73.4%
Urban	45	26.6%
Marital status		
Married	97	57.4%
Single	29	17.2%
Divorced/Separated	19	11.2%
Widowed	24	14.2%
Educational status		
Uneducated	53	31.4%
Primary	51	30.2%
Secondary	46	27.2%
Graduation & above	19	11.2%
Habits		
Smoking	42	24.9%
Drinking	55	32.6%

Heterosexual mode of transmission was the most common with 91.1%. We had no cases of homosexual transmission and 9 of the patients were children, who acquired the infection from their mother. Most of them had the infection for less than 5 years and 106 of them were on ART. Ocular manifestations was seen in 96 (56.8%) of the patients (Table 2).

**Table 2: HIV and eye problem status of patients**

Type of exposure		
Heterosexual	154	91.1%
Homosexual	-	0
Placental	9	5.3%
Parenteral (IV/Syringes)	5	3%
Blood transfusion	1	0.6%
Duration of HIV		
< 5 years	111	65.7%
≥ 5 years	58	34.3%
If on ART		
Yes	106	62.7%
No	63	37.3%
CD4		
< 200	101	59.8%
≥ 200	68	40.2%
Visual acuity of eyes		
Normal	129	76.3%
Impaired	40	23.7%
Ocular manifestation		
Yes	96	56.8%
No	73	43.2%

Cytomegaloviral retinitis was the most common cause of the ocular manifestation with 29 of the patients being affected. 16 of the patients had cottony conjunctival growth, 11 had uveitis and 10 had a cutaneous lid (Fig. 1)



**Fig. 1: Causes of Ocular manifestations**

## Discussion

There is a large population in India who is living with HIV, compared to other countries. There are few studies in India conducted on the ocular lesions in these patients. In one of the studies, 77% of the HIV positive patients were men in the age group 20-40 years and 45.6% to 74.2% had heterosexual transmission<sup>19</sup>.

India also has a unique population of undertreated HIV disease, and they seem to have much lower CD4 counts. Surprisingly, the opportunistic infections seem to have many similarities to the West, with very few differences. Whether long-term exposure to infectious pathogens, or herd immunity, contributes to the tolerance of Indian eyes to opportunistic infections is debatable<sup>20</sup>.

59.8% patients in our study had a CD4 count less than 200. 43% of the patients had ocular manifestations. 63.7% of them were on Antiretroviral therapy. Our study also revealed that heterosexual activity was the most common type of transmission of HIV in all these patients (91.1%). There were 9 infants who got HIV through placental transmission, and 7 (77.7%) of them had ocular manifestations.

Similar results were observed in another study by Pathai et al that ocular involvement was more common in children who has acquired the disease due to perinatal transmission<sup>13</sup>.

Cytomegalovirus (CMV) retinitis is the most common intraocular infection related to HIV infection, affecting around 25% of patients according to reports of the past decade and may cause progressive loss of vision and blindness.<sup>(5)</sup>

Cytomegalovirus is found to be the most common cause of retinitis related to HIV infection and is estimated to affect more than 25% of the cases, leading to loss of vision and blindness. Ocular manifestations were observed in 43.2% of the HIV patients. Of all the manifestations, the most common one was caused because of Cytomegalovirus infection. This was followed by cotton wool conjunctival growth. Next to

HIV retinopathy, Jabs in his study found CMV to be the most common cause<sup>21</sup>.

Patients who were on ART and with improved CD4 counts showed complete resolution of retinitis when treated with intravitreal therapy. The number of recurrences were also low and maintenance therapy was not needed in these patients. Similar presentation was seen in the study by Sudharshan et al<sup>20</sup>.

Kaposi's sarcoma was a rare tumor. After the spread of HIV, the incidence markedly increased. It is a highly vascularized, painless mesenchymal tumor that affects the skin and mucous membranes and occurs in up to 25% of HIV infected patients. In our study, 5 patients had Kaposi's sarcoma of the eyelids and conjunctiva. In a similar study, Lima et al found around 20% of the patients with HIV having ocular Kaposi's sarcoma<sup>22</sup>. However, a study by Biswas et al., who followed 100 HIV positive individuals in India, did not observe a single case of Kaposi's sarcoma of the eye. The low prevalence of this tumor in India may be attributed to the lower proportion of cases associated with homosexual behavior in that country. DNA sequences of human herpes virus 8 have been detected in patients with Kaposi's sarcoma either with or without HIV infection. The low incidence of human herpes virus 8 in India may also contribute to the low occurrence of this tumor in that country<sup>9,22</sup>.

Ocular toxoplasmosis was seen in only 2 of the patients, which was in contrast to the study by Sudharshan et al as it was found to be the second most common cause of ocular diseases<sup>20</sup>.

Although tuberculosis is the most common systemic infection in HIV, ocular TB was very rare. We found no cases of ocular TB, while 2 cases were observed by Sudharshan et al<sup>20</sup>.

## Conclusion

Cytomegalovirus retinitis is the most common ocular manifestation in the patients living with HIV, followed by conjunctival growth in our area.

Normally the general practice is to 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 times asymptomatic it is essential to give a regular check up in patients with HIV.

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