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A Prospective Study of Occular Manifestations in HIV Patients

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Abstract
Introduction: *Human immunodeficiency virus (HIV), the causative agent of acquired immune deficiency syndrome (AIDS), has been identified and has reached virtually every corner of the globe, emerging as the most challenging pandemic of our time. It appears to be omnipresent, with the manifestations sparing no organ.*
Materials and Methods: *A minimum of 200 cases of HIV infected and AIDS patient undergoing highly active antiretroviral therapy attending the Outpatient Department of Ophthalmology were selected for the study. Each patient was subjected to detailed history taking regarding the symptoms and duration of the disease. A careful and detailed examination of the eye was undertaken including examination of ocular adnexa and anterior segment. Examination of posterior segment was done by direct and indirect ophthalmoscopy and +90D biomicroscopy. Recording of BCVA and intraocular pressure was done. Routine laboratory investigation like complete hemogram, serum creatinine, blood urea, blood sugar.CD4+ T lymphocyte count was noted at the start of study and repeated every 6 months thereafter. Followup of all cases was done every 2 months or more frequently depending on the severity.*
Results: *Majority of the patients belonged to the age group of 31-45 yrs. A 49% of the patients had acquired infection by sexual route, 10% had acquired perinatally and 40% denied to reveal the route of acquiring the infection. A 91% had best corrected visual acuity >6/18. A 27% of the patients had ocular manifestations with posterior segment. The most common lesion found was HIV retinopathy found in 9% of patients, followed by CMV retinitis in 6.5%. Upper Lip Bite Test (ULBT) has been evaluated as a simple bedside test to predict the grade of laryngeal visualisation. As the utility of this test is not yet evaluated in patients from this geographical location of India, we intend to investigate whether the combination of the ULBT classification with Sternomental Distance (SMD), Thyromental Distance (TMD), and Interincisor Distance (IID) to predict easy laryngoscopy and compared with each test alone.*
Conclusion: *In our study, we found a significant association between ocular manifestations and lower CD4+ T cell count (0-100 cells/µl), which is in accordance with other previous studies. At present, the HIV/ AIDS pandemic, though global, is overwhelmingly concentrated in Sub-Saharan Africa. Although, this situation has exacted a terrible human cost, the rest of the world has been largely unaffected by Africa's tragedy. Things will be very different, however, in the next major area of HIV infection. Eurasia (which for the purposes of this essay is considered to be the territory encompassing the continent of Asia plus Russia) will likely be home to largest number of HIV victims in the decades ahead.*
Key Words: *HIV, AIDS, Sternomental Distance*

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I. Introduction

Since the report of an unusual occurrence of Pneumocystis carinii pneumonia in five cases on June 5, 1981, by Gottlieb and colleagues (Pneumocystis pneumonia—Los Angeles), which was probably the first publication on this infection, a great collection of literature has accumulated regarding this devastating illness [1]. In the 30 years, since the appearance of that article, human immunodeficiency virus (HIV), the causative agent of acquired immune deficiency syndrome (AIDS), has been identified and has reached virtually every corner of the globe, emerging as the most challenging pandemic of our time. It appears to be omnipresent, with the manifestations sparing no organ.

Among HIV-positive individuals, the lifetime cumulative risk for developing at least one abnormal ocular lesion ranges from 52% to 100% in various studies [2]. Such lesions are varied and affect almost any structure of the eye. Ocular lesions usually occur in the late phase of HIV infection but can also be the presenting manifestation of the disease. Various ocular manifestations including cytomegalovirus (CMV) retinitis, toxoplasma retinochoroiditis, ocular tuberculosis, and toxoplasma retinochoroiditis are considered to be AIDS-defining conditions.

Since it was first described in 1981, AIDS has become a major concern to all doctors, irrespective of their area of study or specialization. Even the ophthalmologists have not been spared. They sometimes make the initial diagnosis of AIDS; most often, however, they are requested to help treat the ocular manifestation related opportunistic infection. These can have disastrous consequences for sight, especially for patient who are first seen when already markedly debilitated. Ophthalmologists are faced with the challenge to recognize and treat potentially sight threatening conditions and to identify unusual presentations. They are sometimes first to diagnose the disease based on suspicious ocular clinical presentation of patients. If these ocular manifestations are detected at an early stage and treated promptly, it will be helpful to prevent or minimize consequent visual damage.

As part of our efforts to provide best of care to HIV patients, prevention of visual morbidity in these patients because of ocular complications also needs to be addressed. Information regarding these ocular manifestations is unavailable from a rural area of India. Till date, to the best of our knowledge, there has been no study indicating the ocular manifestations of HIV/AIDS from a rural area of India. Hence, this study was undertaken to identify the ocular manifestations of HIV/AIDS in M.G.M Medical College, Jamshedpur.

II. Materials And Methods

The data was generated through collection of samples drawn from HIV infected patients attending Outpatient Department of Ophthalmology, M.G.M Medical College, Jamshedpur.

A minimum of 200 cases of HIV infected and AIDS patient undergoing highly active antiretroviral therapy attending the Outpatient Department of Ophthalmology were selected for the study. Each patient was subjected to detailed history taking regarding the symptoms and duration of the disease. A careful and detailed examination of the eye was undertaken including examination of ocular adnexa and anterior segment. Examination of posterior segment was done by direct and indirect ophthalmoscopy and +90D biomicroscopy. Recording of BCVA and intraocular pressure was done. Routine laboratory investigation like complete hemogram, serum creatinine, blood urea, blood sugar.CD4+ T lymphocyte count was noted at the start of study and repeated every 6 months thereafter. Followup of all cases was done every 2 months or more frequently depending on the severity.

III. Results

Route of transmission	Number of patients	Percentage
Sexual exposure	146	73
Post transfusion	2	1
Vertical transmission	20	10
Patients who claim no exposure to any of the above	80	40
Total	200	100

Table 1: Routes of Transmission

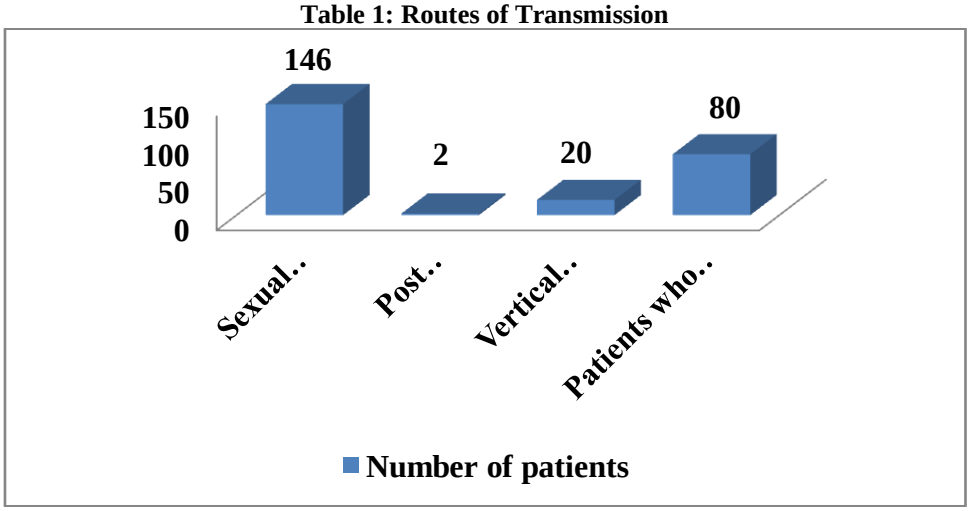


Figure 1: Distribution According to Routes of Transmission

Ocular manifestations	Number of patients (n=200)	Percentage	95% Confidence Interval
Absent	146	73	
Present	54	27	5.7-13.7
HIV Retinopathy	18	9	3.8-10.8
CMV Retinitis	13	6.5	2.0-7.6

Anterior Uveitis	8	4	0.2-3.5
HZO	2	1	0.2-3.5
Vitritis	2	1	0.2-3.5
Optic Neuritis	2	1	0.2-3.5
Choroiditis	2	1	0.2-3.5
Papilloedema	2	1	0.2-3.5
Scleritis	2	1	0.09-2.7
Non-Healing Corneal Ulcer	1	0.5	0.09-2.7
Orbital Cellulitis	1	0.5	0.09-2.7
Retinal Detachment	1	0.5	0.09-2.7

Table 2: Prevalence of Ocular Manifestations in HIV Patients

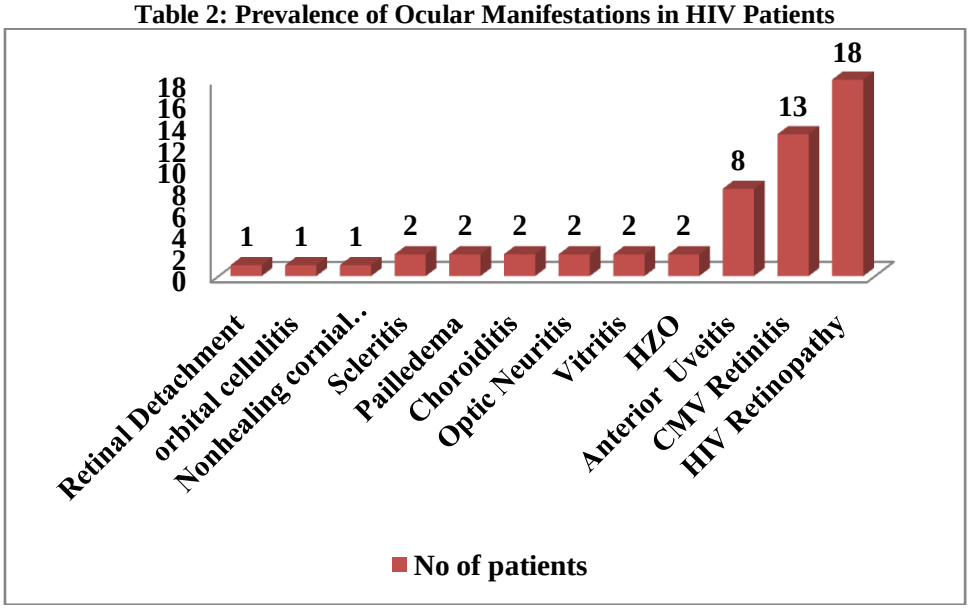


Figure 2: Prevalence of Ocular Manifestations in HIV Patients

Clinical Stage of HIV/AIDS	Total Number of Patients	Patients with Ocular Manifestations	Percentage
1	58	3	5.1
2	60	9	15.0
3	46	14	30.4
4	36	28	77.7
Total	200	54	27.0

Table 3: Ocular Manifestations of AIDS in Relation to the Clinical Stage of Disease

S.No	CD4+ T Cell Count (cells/µl)	Total no. of Patients	Patients with Ocular Manifestations	Percentage
1	1-100	38	26	68.4
2	101-200	44	14	31.8
3	201-300	60	8	13.3
4	301-400	42	5	11.9
5	>401	16	1	6.25
6	Total	200	54	27

Table 4: Correlation of Ocular Manifestations of AIDS with CD4+ T Cell Count in HIV Infected Patients

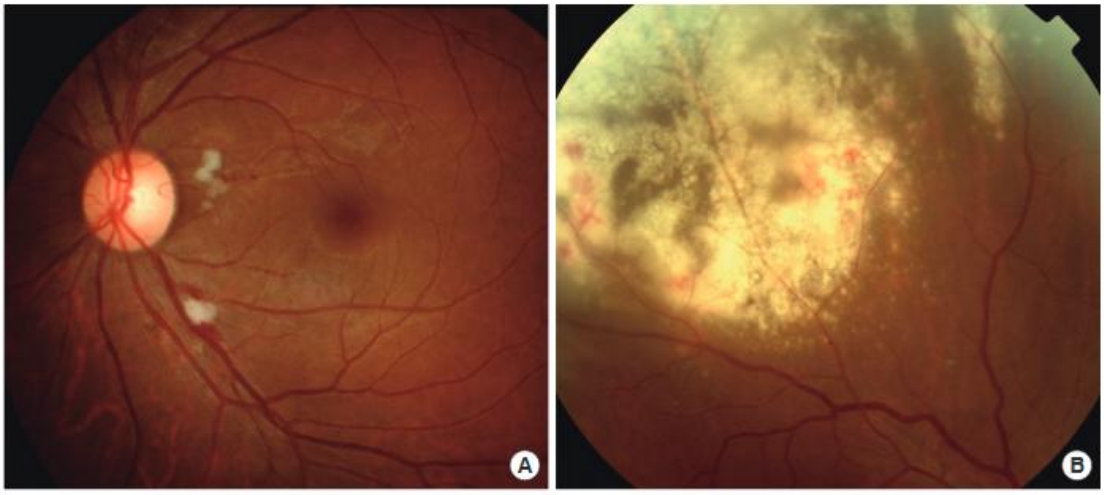


Figure 3: Fundus photographs of AIDS patients (A) Retinal microvasculopathy showing cotton wool spots and retinal hemorrhage (B) Cytomegalovirus retinitis showing granular lesions with retinal hemorrhage

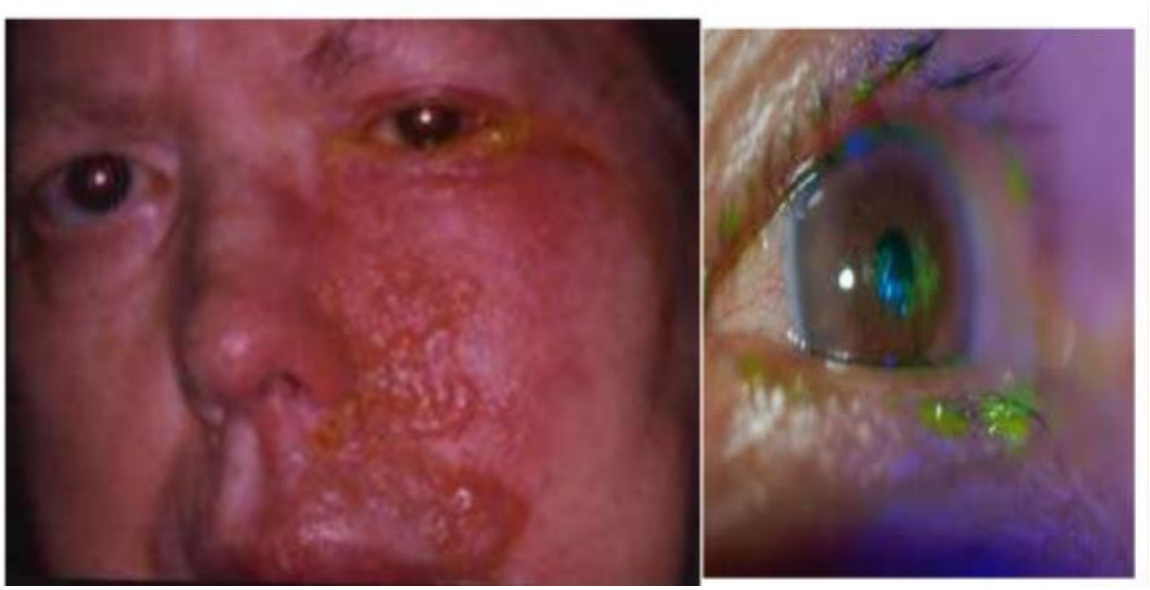


Figure 2: herpes Zoster Ophthamicus

Figure 3: Kaposi Sarcoma

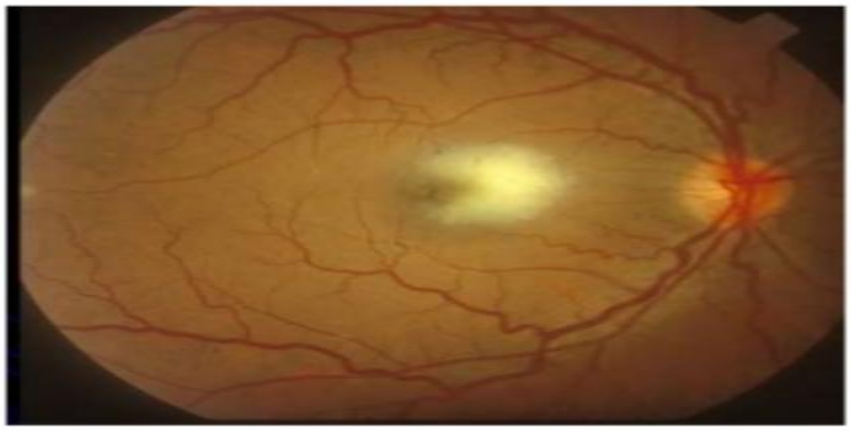
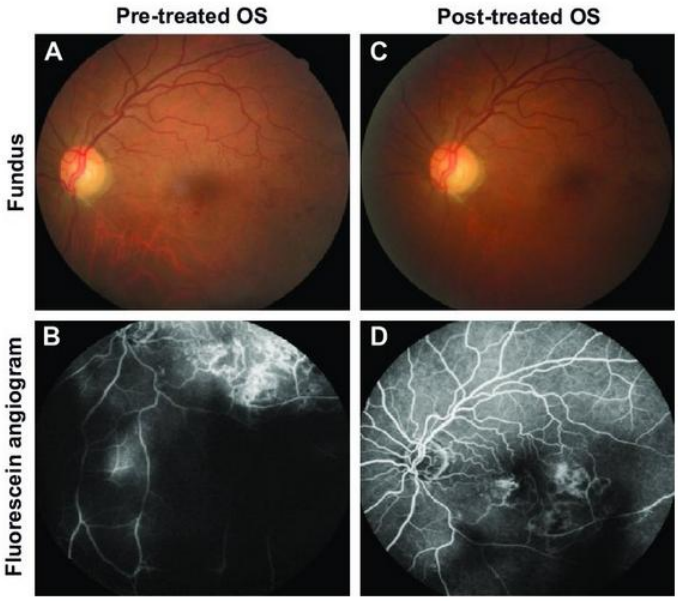


Figure 4: Acute Retinal Necrosis



Caption

Figure 4 Represents the color fundus photo and fundus fluorescein angiography of the left eye at pre-treatment and post-treatment phases. Notes: (A) Color fundus photo of left eye with posterior uveitis discloses vitritis and branch retinal artery occlusion inferotemporally associated with vessel sheathing and intraretinal hemorrhages. (B) Fundus fluorescein angiography late phase discloses venous staining, leakage, and areas of non-perfusion. (C) Color fundus photo discloses resolution of vitritis and intraretinal hemorrhages associated with persistence of arterial sheathing inferotemporally at the 3rd month of the MTX therapy. (D) Fundus fluorescein angiography late venous phase discloses decreased areas of non-perfusion, vascular leakage, and staining associated with the areas of capillary occlusions inferotemporally. Abbreviations: MTX, methotrexate; Os, left eye.

IV. Discussion

In the present study the mean age of the participants was 39.52 years, standard deviation (SD) 16.96 years, ranging from 3-78 years. Majority i.e.,84 (42%) participants were in the age group of 31-45 years;124(62%) patients were males and 76 (38%) patients were females.

Biswas J,et al. (2000) found the mean age of the participants being 26 years and most patients (76%) belonged to the age group of 20-40 years. Another study conducted in South India by Sahu DK et al. (1999) reported the mean age as 34 years (range 25-43 years).

In our study 62% of the patients were males, 38% were females. The male-to-female ratio is 1.6:1. Male predominance is consistently higher in most of the studies. In the present study male-to-female ratio was almost equal to the study conducted by Acharya PK et al. (2012) in which male-to-female ratio was 1.17:1.

The present study shows the most common risk of exposure is sexual 98(49%) participants. Twenty patients (10%) had acquired the infection perinatally and in 2(1%) patients, the mode of acquiring infection could possibly be traced to blood transfusion. Rest of the 40% denied revealing the route of infection. Biswas J et al. (2000) have similarly reported that 70%of the patients had acquired HIV infection by heterosexual.

Shah SU et al. (2009).(9)have reported that the percentage of visual impairment in AIDS patients due to HIV related ocular disease is 6% including blindness (1%). Acharya PK et al. (2012) found that out of 553 patients, 481(87%) patients had a BCVA of >6/18, whereas 26 patients (4.7%) had BCVA less than 3/60.

In our study majority, i.e. 182(91%) had good vision (>6/18). In our study, the ocular manifestations of HIV/AIDS was found in 54(27%) patients. Lewallen S et al. (1994) in a study of 99 patients with AIDS reported

that 26% of the patients had abnormal ocular findings. Biswas J et al. (1999) reported ocular lesions in 45.7% of the HIV infected patients examined at a referral eye center in Chennai.

In the present study, 18(9%) patients had HIV retinopathy as the most common ocular finding. Of these 18 patients, 12 had cotton wool spots (CWS),i.e. 8 having only CWS and 4 having both CWS and dot haemorrhages;6 patients had retinal hemorrhages only in the form of flame shaped and dot haemorrhages. No patient had visual impairment attributable to HIV retinopathy.

In the present study, Cytomegalovirus retinitis was found in 13 patients (6.5%). It is the second most common ocular finding and the most common ocular opportunistic infection in our series. Biswas J et al. (1999) in a study have reported CMV retinitis in 17% of the patients. Jabs DA et al. (2007) observed CMV retinitis as the most frequent ocular finding in 22.7% of the study participants.

In our study, 4(2%) patients had neuro-ophthalmic abnormality. They included papilledema in 2(1%) patients with meningitis and optic neuritis in 2(1%) patients. Mansour AM (1990) in a study on neuro-ophthalmic findings in acquired immunodeficiency syndrome reported abnormalities in the form of perineuritis, papilledema, papillitis, retrobulbar neuritis, and optic atrophy in about 6% of the patients.

V. Conclusion

In our study, we found a significant association between ocular manifestations and lower CD4+ T cell count (0-100 cells/µl), which is in accordance with other previous studies. At present, the HIV/ AIDS pandemic, though global, is overwhelmingly concentrated in Sub-Saharan Africa. Although, this situation has exacted a terrible human cost, the rest of the world has been largely unaffected by Africa's tragedy. Things will be very different, however, in the next major area of HIV infection. Eurasia (which for the purposes of this essay is considered to be the territory encompassing the continent of Asia plus Russia) will likely be home to largest number of HIV victims in the decades ahead. Driven by the spread of the disease in the region's three largest countries- China, India and Russia- the coming Eurasian pandemic threatens to derail the economic prospects of billions and alter the global military balance. And although the devastating costs of HIV/ AIDS are clear, it is unclear that much will be done to head off the looming catastrophe.

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