OCULAR MANIFESTATIONS OF HUMAN IMMUNODEFICIENCY VIRUS IN RELATION TO CD4 COUNT

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HOW TO CITE THIS ARTICLE:

Niveditha H, Sundeep, N. V. V. Himamshu, Vinutha B. V, K. N. Udayakumar, Pooja Patil, Liji P, Emma Jayanti Madariya. "Ocular manifestations of human immunodeficiency virus in relation to CD4 count". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 24, June 17; Page: 4403-4409.

ABSTRACT: AIM: This study evaluates varied type of ocular manifestation associated with HIV/AIDS in co relation to CD4 count **METHODS:** All patients with HIV/AIDS attending KIMS ART center between August 2008 to August 2010 were enrolled. 100 Cases which were proven HIV were enrolled in the study. Thorough ophthalmic examination was carried out in terms of slit lamp examination and fundus examination with 90D after dilatation of pupil. **RESULTS:** The posterior segment lesions (65%) were more commonly observed than anterior segment lesions (40%) in this study. The commonest manifestations encountered in this study were HIV retinopathy (30%), CMV retinitis (14%), Chorioretinitis (14%), Uveitis (8%), Complicated Cataract and Herpes zoster ophthalmicus (7%) each and Molluscum contagiosum and disc edema (4%) each, followed by dry eyes (3%). The other relatively rarer manifestations of this study were external hordeolum (2%), myopic fundus with cotton wool spots (2%) and Bell's palsy (2%), Kaposi sarcoma (1%), chronic dacryocystitis (1%), corneal opacity (1%) and Episcleritis (1%). **CONCLUSION:** In our study HIV retinopathy was most common ocular manifestation encountered with mild vision deterioration

with relatively high CD4 count. CMV retinitis was next commonest lesion with varied degrees visual affection and CD4 count range. The posterior segment lesions being 65% and anterior segment lesions 35%.

KEY WORDS: AIDS, HIV, CMV retinitis, HIV retinopathy, Eye manifestation, CD4, Kaposi Sarcoma, uveitis, posterior segment, anterior segment,

INTRODUCTION: India is emerging globally as country with largest number of AIDS patients.⁽¹⁾ According to data released by NACO, based on HIV sentinel surveillance 2008-2009 it is estimated that 23.9 lakhs people are infected with HIV/AIDS in India, Out of which 39% female and 4% children. New annual infection in India is 1.2 lakh and prevalence is 0.31% according to data released by NACO in 2009. HIV/AIDS related ocular manifestation may range from 45-75% ⁽²⁾.

Ocular manifestations in Acquired immunodeficiency syndrome (AIDS) are varied and affect almost all structures in the eye. The life time cumulative risk of developing ocular lesions in these patients is 52% to 100 %.⁷ During early phase of AIDS ophthalmic manifestations of the disease in fact help to suspect underlying HIV infection and associated opportunistic infections.¹ Of the total cases of human immunodeficiency syndrome 58% are thought to be sub manifestation of HIV infection involving the anterior or posterior segment of the eye. ⁸ posterior segment diseases of the eye are majorly seen in severely immune compromised patients with CD4 counts less than or equal to 100cells/cumm, most commonly occurring posterior segments lesions are retinal microvasculopathy and Cytomegalovirus retinitis.⁹

MATERIALS AND METHODS: Patients were enrolled in the study after patient blood sample were tested positive for HIV antibodies. Study period was from august 2008 to august 2010. ART center KIMS hospital and research center was source of selected patients in this study. It was observational study with purposive sampling. As per the NACO guidelines the definitive diagnosis of symptomatic patients was made. Informed consent was taken. Confidentiality of patient personal details maintained. 100 cases included in this study were positive for HIV antibodies.

EXCLUSION CRITERIA:

1. Diabetes mellitus
2. Systemic hypertension
3. Age related macular degeneration
4. Patients on long term steroids for any medical or surgical conditions
5. Patients with disseminated metastasis
6. HIV/AIDS patients who are terminally ill/comatose and cannot be examined completely
7. Patients refusing repeat examinations and lost follow up.

All patients were personally examined by author and a detailed history was taken. All patients had CD4 values investigated at 1st visit. A detailed ophthalmic examination was carried out in all patients. All patients irrespective of symptoms were subjected to visual acuity assessment with Snellen's chart, Schirmer test, Slit lamp examination, direct and indirect ophthalmic examination (90D and 20D) after pupillary dilatation with tropicamide eye drops. Documentation was done by fundus diagrams, slit lamp photographs and photographs of eyes with adnexal and anterior segment lesions.

RESULTS: in this study 100 patients diagnosed serologically positive for HIV/AIDS who were examined for ocular manifestations. Majority of patients were 3rd and 4th decade. [FIG-1] It was found prevalence of ocular manifestation was higher in males (67%) than females (33%). [FIG-2]

The posterior segment lesions (65%) were more commonly observed than anterior segment lesions (40%) [FIG-3]. The common ocular manifestation encountered in this study were HIV retinopathy (30%) [FIG-4], CMV retinitis (14%) [FIG-5], chorioretinitis (10%), uveitis (8%), complicated cataract and herpes zoster ophthalmicus (7%) and molluscum contagiosum [FIG-6] and disc edema (4%) [TABLE-1]

Amongst the patient studied majority of patients with ocular manifestations, 45% had severe depletion of CD4 count (1-100cells/mm³) followed by moderate depletion in 28% (101-200 cells/mm³) and mild depletion in 27% (>200cells/mm³) [FIG-7]. In terms of visual acuity, 69% were in range of (6/6-6/12), 15% were (6/18-6/36), 18% had (<6/60). [TABLE-2]

DISCUSSION: In our prospective observational clinical study of 100 patients diagnosed with HIV/AIDS serologically and referred to ophthalmology department for ocular involvement before starting anti-retroviral therapy at Kempegowda Institute of Medical Sciences, Bangalore. We studied these patients for ocular manifestations of HIV/AIDS in relation to CD4 count and the severity of visual affection for a period of two years and observed for the improvement or worsening. In this study majority of (77%) patients belonged to economically productive age group (21-50 years) with male preponderance which is comparable to other previous studies like Jyothirmay Biswas et al 76 %⁽³⁾, Aratee Palsule et al 58.2 %⁽⁴⁾, Lamichhanne et al 78.6%⁽⁵⁾. In the present study 65% of patients had posterior segment lesions which are higher than that of Lamichhanne study at Nepal (33%).³ The most common ocular manifestation in our study was HIV retinopathy (CWS) 30% with mild visual deterioration, CMV retinitis (14%) with various degree of visual affection, Chorioretinitis (10%), uveitis (7%), Complicated cataract (7%), Herpes zoster Ophthalmicus (7%) with moderate visual affection. Anterior segment lesions like molluscum contagiosum (4%), external hordeolum (2%), dry eye (3%), and Kaposi sarcoma (1%), Bell's palsy (2%), chronic dacryocystitis (2%) did not affect visual function significantly.

In this study CMV retinitis occurred with severe depletion of CD4 count (1-100cells/mm³) as explained by Douglas A Jabs et al (2007).⁶ Amongst the lesions observed CMV retinitis causes major visual disturbance and presumed cause for the same is necrotizing retinitis and associated uveitis. The neuro-ophthalmic lesions, disc edema (4%) associated with tubercular meningitis and meningitis of unestablished cause. In the present study, the comorbid systemic disorders were reported 12 % and the conditions include pulmonary tuberculosis, tubercular meningitis and candidiasis (oral and esophageal), cryptococcal meningitis. The patients of present study had visual deterioration depending upon the immune status (i.e. CD4 count), mild (6/6- 6/12) with CD4 count range between 101-200 cells/mm³, moderate (6/18-6/36) with CD4 count range between 1-100 cells/mm³, severe disturbance (<6/60) with CD4 count range < 100 cells/mm³ and is comparable to that explained by Aratee Palsule et al (2007).

CONCLUSION: HIV/AIDS which was virtually unknown 30 years ago has become a common disease in our population and around 50-80% patients had ocular manifestation at some point during the

course of illness. Prevalence of posterior segment lesions in our study was higher with moderate to severe visual disability with a strong correlation to a low CD4 count was also observed stressing on the need for early ocular examination to recognize ocular involvement and to prevent visual morbidity.

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ORIGINAL ARTICLE

TABLE-1 Classification of ocular manifestations and their distributions based on eye affected

Ocular Manifestation	Right (n=100)		Left(n=100)	
	No.	%	No.	%
Anterior segment and adnexal lesions	31	35.0	26	26.0
1. Uveitis	8	8.0	7	7.0
2. Molluscum contagiosum	4	4.0	5	5.0
3. Complicated Cataract	7	7.0	6	6.0
4. Kaposi sarcoma/SCC	1	1.0	1	1.0
5. HZO	7	7.0	3	3.0
6. Episcleritis	1	1.0	0	0.0
7. External hordeolum	2	2.0	3	3.0
8. Bells palsy	0	0.0	2	2.0
9. Dry Eye	3	3.0	4	4.0
10. Chronic dacryocystitis	1	1.0	0	0.0
11. Corneal opacity	1	1.0	1	1.0
<u>Posterior segment manifestations</u>	60	60.0	58	58.0
1. CWS	30	30.0	33	33.0
2. CMV Retinitis	17	17.0	14	14.0
3. Chorioretinitis (Active/healed)	10	10.0	7	7.0
4. Papilloedema	0	0.0	0	0.0
5. Optic neuritis	0	0.0	0	0.0
6. Disc oedema	4	4.0	4	4.0
7. Myopic fundus (B/E) with CWS	2	2.0	2	2.0

TABLE-2 Distribution of patients according to visual activity in right and left side

Vision	Right side		Left side	
	No.	%	No.	%
6/6-6/12	69	69.0	75	75.0
6/18-6/36	15	15.0	12	12.0
6/60 or less	16	16.0	13	13.0
Total	100	100.0	100	100.0

[FIG-1] AGE DISTRIBUTION

[FIG-2] SEX DISTRIBUTION

[FIG-3] NO PATIENTS AND CD4 COUNT

[FIG-4] HIV RETINOPATHY

[FIG-5] CMV RETINITIS

[FIG- 6] MOLLUSCUM CONTAGIOSUM