

ORIGINAL RESEARCH

A study to assess the Visual parameters associated with HIV retinopathy

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ABSTRACT

In HIV/AIDS patients changes can also occur in the absence of retinal infections which include alteration in color vision, contrast sensitivity and visual fields. These microvasculature changes which alter subtle changes in vision are related to retinal damage characterized by loss of ganglion cell axons. All patients who were attending ART center who are on HAART were screened for HIV retinopathy. Patients found to have retinal changes were evaluated further in Ophthalmology OPD. Majority 66% had best corrected visual acuity (BCVA) of 6/6, followed by 27% patients who had best corrected visual acuity of 6/9 and 7% patients had best corrected visual acuity of 6/12. Mean contrast sensitivity was (mean \pm SD) 1.93 \pm 0.26 10% patients had \leq 1.5, 3% patients contrast sensitivity in range of 1.5-1.65, 40% were in range of 1.65-1.95, 47% were in range of 1.95-2.25.

Key words:HIV retinopathy, BCVA, Contrast sensitivity

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INTRODUCTION

Recognition of AIDS pandemic dates back to 1981, when incidence of two rather rare diseases Pneumocystis carinii pneumonia (PCP) now known as Pneumocystis jiroveci and Kaposi sarcoma were observed. Since these conditions were first seen commonly in male homosexuals and Intravenous heroin users, in association with lowered immune competence and fatal infections, the term Acquired Immuno Deficiency Syndrome (AIDS) was coined.¹ HIV/AIDS is a global pandemic with cases reported from virtually every country. Demographically the second largest country in the world India has 3rd largest number of people living with HIV/AIDS. As per NACO reports the beginning of the human immunodeficiency virus (HIV) epidemic, more than 60 million people have been infected globally and as on December 2006, nearly 39 million people were living with HIV/AIDS worldwide.²

In the era before Highly Active AntiRetroviral Therapy (HAART) catastrophic loss of vision from opportunistic infection of retina such as CMV retinitis was the major focus of study regarding ocular disease in HIV. But with decreased incidence of CMV retinitis and other opportunistic infections and increased survival of HIV infected individuals with

HAART now focus has shifted to subtle changes in vision impairment.³

In HIV/AIDS patients changes can also occur in the absence of retinal infections which include alteration in color vision, contrast sensitivity and visual fields. These microvasculature changes which alter subtle changes in vision are related to retinal damage characterized by loss of ganglion cell axons.⁴

It has been shown that the prevalence of reduced contrast sensitivity and abnormal color vision are 2-3 fold greater than in general population. Studies have shown that abnormal contrast sensitivity in HIV patients has increased risk of mortality in AIDS patients. And this can be used as marker for acceleration of disease processes common to all people with AIDS.

METHODOLOGY

All patients who were attending ART center who are on HAART were screened for HIV retinopathy. Patients found to have retinal changes were evaluated further in Ophthalmology OPD.

INCLUSION CRITERIA

1. All patients aged between 20 to 55 years referred from ART center who are HIV seropositive and

- are on treatment with HAART
- 2. Clear media/ no media opacity
- 3. Patients without retinal or choroidal lesions which affect visual function(egneoplasia, maculopathy, opportunistic infections)
- 4. CD4 counts

- 4. Leukemia
- 5. Cataract
- 6. Hereditary color vision defects
- 7. Collagen vascular disease

The following ophthalmologic data were collected for each eye of all subjects: best corrected visual acuity, contrast sensitivity score, fundus examination. All examinations were carried on same day. Only data from one eye of each patient were used for analysis. Right eye was taken for analysis.

EXCLUSION CRITERIA

- 1. Diabetes Mellitus
- 2. Malignant Hypertension
- 3. SLE

RESULTS

Table 1: BCVA

BCVA	No. of patients	%
6/6	66	66.0
6/9	27	27.0
6/12	7	7.0
Total	100	100.0

Table 1 shows patient distribution according to visual acuity. Majority 66% had best corrected visual acuity (BCVA) of 6/6, followed by 27% patients who had

best corrected visual acuity of 6/9 and 7% patients had best corrected visual acuity of 6/12.

Table 2: Contrast sensitivity

Contrast sensitivity	No. of patients	%
≤1.5	10	10.0
1.5-1.65	3	3.0
1.65-1.95	40	40.0
1.95-2.25	47	47.0
Total	100	100.0

Mean ±SD: 1.93±0.26

Table 2 shows patient distribution according to contrast sensitivity. Mean contrast sensitivity was (mean ± SD) 1.93±0.26 10% patients had ≤1.5, 3%

patients contrast sensitivity in range of 1.5-1.65, 40% were in range of 1.65-1.95, 47% were in range of 1.95-2.25.

Table 3: Color vision

Colour vision	No. of patients	%
Normal	89	89.0
Abnormal	11	11.0
Total	100	100.0

Table 3 shows distribution of patients based on color vision after matching with age matched population.

89% patients had normal color vision and 11% had abnormal color vision.

Table 4: CD4 count

CD4 count	No. of patients	%
1-100	37	37.0
101-200	33	33.0
201-300	20	20.0
>300	10	10.0
Total	100	100.0

Table 4 shows distribution of patients based on CD4 count. We observed 37% of patients in CD41-100 cells/mm³ group, 33% in 101-200 cells/mm³ group,

20% and 10% in 201-300cell/mm³ and >300 cells/mm³ group respectively

Table 5: Comparison of Contrast Sensitivity and Color vision

Contrast Sensitivity	Color vision		Total
	Normal	Abnormal	
≤1.5	8(8.9%)	2(18.2%)	10(10.0%)
>1.5	81(91.1%)	9(81.8%)	90(90.0%)
Total	89(100.0%)	11(100.0%)	100(100.0%)

Contrast Sensitivity is positively associated with Color vision with P=0.302

Sensitivity:18.18%

Specificity:91.01%

PPV:20.00%

NPV:90.00%

Accuracy:83.00%

⁵where all 75 patients under study had visual acuity 20/15 or better.

Contrast sensitivity abnormality was seen in 10% of patients in our study. We compared these values with other studies conducted by kayur shah² where abnormal contrast sensitivity was seen in 7% of patients, Gary Holland where abnormal contrast sensitivity was seen in 16.8%, William Freeman 12% patients had abnormal contrast sensitivity. Even though the altered contrast co related with other studies it was not statistically significant. ⁶

DISCUSSION

We found that >90% of patients (66% 6/6 and 27% 6/9) had vision ≥6/9 which is similar with other studies conducted by kayur shah², William freeman

Table 6: COMPARISION OF ABNORMAL CONTRAST SENSITIVITY

Study	Abnormal Contrast Sensitivity In%
Present study	10%
Kayur shah <i>et al</i> ²	7%
Gary Holland <i>et al</i> ⁴	16.8%
William Freeman ⁵	12%

Altered color vision was seen in 11% of the patients in our study. We compared our values with study conducted by kayur shah 9.9%, Joerg Sommerhalder⁷ 16%, Leigh C Kozak⁸21% and Stephan A Geier 35%.

CONCLUSION

- BCVA was 6/6 in 66%, 6/9 in 27%, 6/12 in 7%.
- Contrast sensitivity was reduced in 10% of patients
- Color vision was reduced in 11% of patients.

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