

OCULAR MANIFESTATIONS IN HIV PATIENTS AT BALUNG REGIONAL HOSPITAL, JEMBER

^{1*}Reyhana Khansa Mawardi, ²Heni Wijayanti

¹Alumni of the Faculty of Medicine, Airlangga University, ²Balung Regional Hospital, Jember

Email: khansamawar01@gmail.com

ABSTRACT

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Introduction: Human Immunodeficiency Virus (HIV) infection predisposes individuals to various ocular complications, ranging from benign conditions like dry eye syndrome to severe, vision-threatening diseases such as CMV retinitis and HIV-associated retinopathy. These manifestations are significant markers of disease progression and correlate with viral load. Early identification and management of ocular conditions are crucial for preserving vision and improving the quality of life in HIV-positive patients. Aim: This study aimed to determine the ocular manifestations of HIV patients. Methods: This study was an observational study with a cross-sectional design and random sampling, involving a total of 20 samples, conducted in January 2024 at Eye Clinic at Balung Regional Hospital, Jember. Data were collected through history taking and ocular examinations, which included the variables of gender, age, antiretroviral (ARV) management, viral load, visus, and ocular manifestation. Data analysis was performed with statistical software. Results: A total of 20 samples were involved in this study. There were 8 women (40%) and 12 men (60%) with an average age of 41.7 years. The maximum duration of ARV treatment is 1-5 years. The viral load test showed that there were 13 respondents (65%) with suppressed viral loads. There were 16 respondents (80%) with visual acuity $\geq 6/12$. Fundus examination showed that 8 respondents (40%) experienced ocular manifestations and 12 respondents (60%) did not experience ocular manifestations. The most frequent ocular manifestation identified was posterior uveitis (3 respondents). Conclusion: The most common ocular manifestation in HIV patients at Eye Clinic at Balung Regional Hospital, Jember was uveitis posterior. Routine screening is needed for HIV patients to assess the condition of the patient's eyes.

INTRODUCTION

Human Immunodeficiency Virus (HIV) remains a significant global health challenge, with millions of individuals affected worldwide¹. While the primary focus of HIV research and treatment has traditionally centered on its impact on the immune system and the development of Acquired Immunodeficiency Syndrome (AIDS), it is increasingly recognized that HIV affects various organ systems, including the ocular system. Ocular manifestations in HIV patients are diverse and can serve as critical indicators of the disease's progression and the efficacy of antiretroviral therapy (ART)².

The spectrum of ocular complications in HIV-infected individuals ranges from opportunistic infections and neoplasms to neuro-ophthalmic disorders and retinal diseases. These manifestations are not merely cosmetic or secondary concerns but can significantly impact the

quality of life and, in some cases, lead to blindness if not promptly and effectively managed. Moreover, ocular signs can often precede systemic symptoms, making ophthalmic evaluation a vital component of comprehensive HIV care³.

In resource-limited settings such as Jember, Indonesia, the burden of HIV and its complications is exacerbated by constraints in healthcare infrastructure and access to comprehensive medical care. Balung Regional Hospital, as a central healthcare facility in the region, plays a pivotal role in diagnosing and managing HIV-related ocular conditions. Understanding the spectrum and prevalence of these manifestations is crucial for improving patient outcomes through early detection and tailored therapeutic strategies.

This study aims to delineate the various ocular manifestations observed in HIV-infected patients attending Balung Regional Hospital. By analyzing clinical presentations, the research seeks to provide insights into the common ocular complications in this population and highlight the importance of regular ophthalmic examinations in the management of HIV.

METHOD

This study employed a quantitative method with a cross-sectional design and random sampling to describe the ocular manifestations in HIV patients at Eye Clinic at Balung Regional Hospital, Jember. The study population comprised all HIV patients visiting the foundation. Participants were included if they were between 20 and 60 years old, had sufficient data in their medical records, were in good enough general health to follow instructions during ocular examinations, and agreed to be examined. Patients with incomplete medical records or who refused to sign the consent form were excluded. The study used a random sampling technique without a required minimum sample size, ultimately including 20 patients.

Primary data was gathered through eye examinations and interviews with HIV-infected individuals about their characteristics. This information included gender, age, antiretroviral (ARV) treatment, viral load, visual acuity, and ocular manifestations. Secondary data was obtained from the patients' medical records at Eye Clinic at Balung Regional Hospital, Jember. The eye examinations began with a medical history (anamnesis) focusing on eye complaints, followed by a visual acuity test using the Snellen Chart. Further examinations included measuring eye pressure with a portable tonometer, conducting a Schirmer test, examining the anterior segment with a portable slit lamp, and

examining the posterior segment using indirect fundoscopy. After data collection, a descriptive analysis was performed.

RESULT AND DISCUSSION

Table 1. Sample characteristics and treatment history of HIV patients

Variables	Frequency (n)	Percentage (%)
Gender		
Male	12	60
Female	8	40
Age (years)		
21-30	4	20
31-40	7	35
41-50	4	20
50-60	3	15
>60	2	10
ARV Management		
<1 years	7	35
1-5 years	10	50
6-10 years	2	10
>10 years	1	5
Viral Load		
Suppressed	13	65
Not suppressed	7	35

Of the 20 respondents, it was found that 12 respondents (60%) were men and 8 respondents (40%) were women. The ages of respondents were distributed almost evenly across all age groups with the highest number in the 31-40 year group with 7 respondents (35%), followed by the 21-30 and 41-50 groups which had the same number of 4 respondents (20%), the 50 group. -60 with 3 respondents (15%), and the >60 group with 2 respondents (10%). Based on the history of ARV treatment, the most respondents consumed ARVs in the 1-5 year range, 10 respondents (50%) and the least in >10 years, 1 respondent (5%). Based on viral load, there were 13 respondents (65%) with suppressed viral load and 7 respondents (35%) with unsuppressed viral load.

Table 2. Distribution of the ocular examination results in HIV patients

Variables	Frequency (n)	Percentage (%)
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Visual Acuity (OD and OS)		
≥ 6/12	16	40
6/15 - 6/60	11	27,5
< 6/60	13	32,5
Ocular Manifestations		
Normal Fundus	12	60
Optic Neuropathy	1	5
Optic Neuritis	2	10
Optic Disc Vasculitis	1	5
Iritis	1	5
Uveitis Posterior	3	15

Based on ocular examination of visual acuity and ocular manifestations, the results showed that the highest visual acuity for OD and OS was >6/12 in 16 eyes (40%), and the least was 6/15-6/60 in 11 respondents (27.5 %). Meanwhile, regarding ocular manifestations, of the 20 respondents examined, 12 respondents (60%) had a normal fundus, followed by posterior uveitis with 3 respondents (15%). Other manifestations have an even distribution.

Discussion

The study provides a comprehensive demographic and clinical profile of the respondents, focusing on gender, age distribution, ARV treatment history, viral load status, and ocular health, particularly visual acuity and ocular manifestations.

Ocular manifestations in HIV patients are diverse and can significantly impact their quality of life⁴. These manifestations can result from direct HIV infection, opportunistic infections, or complications related to antiretroviral therapy (ART). HIV has been isolated from tears, cornea, vitreous, and chorioretinal tissue in affected persons. The ocular structures affected by HIV include the adnexa, anterior segment, posterior segment, and orbit⁵. Understanding these ocular issues is crucial for the effective management of HIV-positive patients.

The gender distribution, with 60% men and 40% women, can be contextualized using epidemiological theories of disease distribution. For instance, social and behavioral theories suggest that men may have higher exposure to risk factors associated with the condition under study, which could explain their higher representation. Gender-specific health-seeking behavior

theories also indicate that men may be more likely to access or be included in studies related to their health issues⁶. This is in accordance with the results of Triningrat et al.'s research, in 2022 which stated that 74.6% of men were infected with HIV⁷.

The age distribution is fairly even, with the highest proportion in the 31-40 year group (35%). This can be analyzed through the life course theory, which posits that health outcomes are influenced by the cumulative exposure to risk factors and health behaviors over an individual's lifespan⁸. The predominance of middle-aged respondents could reflect the period when individuals are most likely to be diagnosed and commence treatment. This result is the same as Triningrat et al.'s research, which stated that most respondents with HIV were in the 30-39 year age group⁷.

The finding that 50% of respondents have been on ARV treatment for 1-5 years aligns with the stages of change model, which suggests that individuals move through different stages (precontemplation, contemplation, preparation, action, maintenance) when adopting health behaviors⁹. The 1-5 year range might represent the action and early maintenance stages, where adherence to treatment is critical and more likely to be sustained. The lower percentage (5%) of respondents on ARV treatment for over 10 years can be explained using the theory of planned behavior, which emphasizes the role of intention, perceived behavioral control, and social norms in sustaining long-term health behaviors. Long-term adherence may be affected by factors such as treatment fatigue, changes in health status, or evolving life circumstances¹⁰.

The finding that 65% of respondents have a suppressed viral load can be understood through the health belief model, which suggests that individuals are more likely to engage in health-promoting behaviors (such as consistent ARV use) if they believe they are susceptible to a condition, believe in the efficacy of the treatment, and perceive fewer barriers to accessing care. The 35% with unsuppressed viral loads may be experiencing issues explained by the social ecological model, which highlights the multiple levels of influence on health behaviors, including individual, interpersonal, community, and policy factors. Barriers at any of these levels, such as lack of support systems or healthcare access, can impede treatment adherence and effectiveness¹¹.

The variation in visual acuity, with 40% better than 6/12 and 27.5% between 6/15-6/60, can be contextualized using the biopsychosocial model. This model integrates biological, psychological, and social factors in understanding health outcomes. Biological factors might include the underlying disease and treatment effects, while psychological and social factors could

influence how individuals manage their vision health. The presence of mild to moderate visual impairment in a significant portion of respondents may also be interpreted through the lens of the health promotion model, which emphasizes the importance of regular health screenings and preventive measures in maintaining health. This suggests a need for routine ocular examinations and early interventions.

The fact that 60% of respondents have a normal fundus can be supported by the theory of preventative health behavior, which posits that preventive actions, such as regular check-ups and effective ARV treatment, can lead to better health outcomes, including ocular health. The occurrence of posterior uveitis in 15% of respondents may be examined through the pathophysiological model, which focuses on the mechanisms of disease. This condition could be a manifestation of the underlying disease or a side effect of the treatment, indicating the complexity of managing comorbid conditions in these patients. Ocular involvement in HIV infection occurs most commonly due to opportunistic infections and neoplasms. Opportunistic infections like CMV retinitis occur with a significantly reduced CD4 T-cell count and are one of the common causes of blindness in HIV patients. Unlike other diseases, ocular infection in these immunosuppressed patients is associated with minimal inflammatory signs. HIV has been isolated from tears, cornea, vitreous, and chorioretinal tissue in affected persons. The ocular structures affected by HIV include the adnexa, anterior segment, posterior segment, and orbit. Neuroophthalmological manifestations also may be seen. The institution of highly active antiretroviral therapy (HAART) has caused a dramatic improvement in the immune status of HIV-infected individuals and a change in the clinical presentation and course of opportunistic infections. However, improvement in immunity may be associated with an inflammatory response called immune recovery uveitis. Drug toxicity of newer therapeutic agents also has been reported¹².

This study explored limited variables, hence in the future more variables such as type of ARV treatment, comorbidities, or history of transmission could be considered and contribute more to the collectivity of study regarding ocular manifestation in HIV patients. Also, treatment compliance was self-reported and could be a subject of social desirability bias.

CONCLUSION

The most common ocular manifestation in HIV patients at Eye Clinic at Balung Regional Hospital, Jember was uveitis posterior. Routine screening is needed for HIV patients to assess the condition of the patient's eyes.

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