Visual Status and Causes of Low Vision and Blindness among HIV/AIDS Patients in Yenagoa, Bayelsa State, Nigeria

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Abstract

**Background of study:** The visual status and causes of visual impairment among HIV/AIDS patients in Yenagoa is not yet determined. In order to optimize the gain of an effective HIV/AIDS control programme, this information is vital.

**Aim/Objectives:** To determine the visual status and causes of visual impairment among HIV/AIDS patients in Yenagoa, Bayelsa state, Nigeria.

**Method:** A prospective cross sectional study was carried out on new consecutive HIV positive patients presenting to the “heart to heart” clinic of the Niger Delta University Teaching Hospital, Okolobiri over a period of 16 months. Relevant history was obtained from the patients and their base line data such as age, sex and CD4 count was recorded. The patients underwent a full ophthalmic examination including visual acuity assessment and an anterior and a posterior segment examination.

**Result:** One hundred and thirty nine patients (139), was evaluated consisting of 91 males and 48 females (M/F ratio of 1:1.9). 15(10.8%) had visual impairment while 124(89.2%) had normal vision. Eighty percent (80%) of patients with visual impairment was found to be blind while 20% had low vision. Eighty percent (80%) of patients with visual impairment has CD4 counts of 300 cells/µl or less. Retrobulbar optic neuritis was the commonest cause of blindness (33.4%) followed by cataract (24.9%) and maculopathy (16.7%). Cytomegalovirus retinitis, herpes zoster ophthalmicus and toxoplasmosis were each responsible for 8.3% of blindness.

**Conclusion:** The visual status of this population was generally good. For a few with visual impairment, it was largely due to retrobulbar optic neuritis and cataract. Improvement of the visual status of this population must pay priority attention to these diseases.

Keyword: Blindness; Visual status; HIV/AIDS

Introduction

In 1981, the first case of HIV/AIDS infection was reported in the United States of America (USA) [1]. Since then the pandemic had taken a toll on the human race with diverse social and economic consequences and above all a potential for visual loss and ultimately blindness.

In north America and Europe, prior to the introduction of highly active antiretroviral therapy (HAART), it was found that 50 - 75% of HIV infected individuals develop non-refractive visual problems at some point during the course of the illness [2]. In the developing world, 5 - 25% of all HIV positive patients are expected to develop blindness at some point in time during the course of their illness [3]. Undoubtedly, patients with HIV/AIDS especially those in developing countries with poor standard of care are at risk of blindness or low vision. In the pre - HAART era, CMV retinitis was the commonest cause of visual loss in patients with HIV/AIDS infection and was responsible for 1 – 2 million cases of bilateral vision loss worldwide [4]. However, with the widespread introduction of HAART and its attendant positive effect on immune recovery and eventual prognostic outlook on HIV/AIDS infection, other causes of visual loss are increasingly becoming apparent. Macular ischaemia has been found to be responsible for some cases of visual loss in HIV/AIDS infection [5-7]. Ischaemic maculopathy has been found to develop as a severe form of HIV microvasculopathy or as a complication of CMV retinitis [8,9]. A study has found cataract to be responsible for a significant proportion (25%) of vision loss in HIV/AIDS patients [10]. Other causes of reduced vision in patients with HIV/AIDS infection include Herpes Zoster Ophthalmicus, Herpes simplex retinitis, Optic nerve disease, uveitis, refractive errors, glaucoma and diabetic retinopathy [3,11].

As part of the holistic intervention to the HIV/AIDS pandemic, visual preservation should be accorded a priority in order to optimize the gains of these interventions. In order to achieve this goal of visual preservation, it is necessary to know the visual status of these patients and the cause(s) of visual loss when it does occur. This information is largely unavailable in Bayelsa State, Nigeria. This study was therefore undertaken to provide this essential knowledge needed for the optimal care of HIV/AIDS patients in this population.

Materials and Methods

**Duration and place of study**

The study took place over a period of 16 months at the eye clinic of the Niger Delta University Teaching Hospital, Okolobiri, Bayelsa State.

**Method**

A descriptive prospective cross sectional study was carried out on every consecutive new HIV positive patient receiving treatment (HAART) at the Heart to Heart clinic of the Niger Delta University
A mean of 36.2 years (SD ± 10.0), (Table 1). Their ages ranged from 9 to 66 years with a male: female ratio of 1:1.9. All patients were evaluated. They consisted of 91 females and 48 males.

Social scientist (SPSS) version 16 and a scientific calculator. They were greater than 3/60 in the affected eye.

Vision was defined as a visual acuity of less than 6/18 but equal to or greater than 3/60 in the better eye, while unilateral low vision was defined as a visual acuity of less than 3/60 in the affected eye.

Main outcome measures

Blindness (Bilateral) was defined as a visual acuity of less than 3/60 in the better eye, while unilateral blindness was defined as a visual acuity of less than 3/60 in the affected eye.

Low vision (Bilateral) was defined as a visual acuity of less than 6/18 but equal to or greater than 3/60 in the better eye while unilateral low vision was defined as a visual acuity of less than 6/18 but equal to or greater than 3/60 in the affected eye.

Statistical analysis

The data was collated and analysed using the statistical package of social scientist (SPSS) version 16 and a scientific calculator. They were presented as frequencies, percentages, means and standard deviation of means.

Results

During the period of this study, 139 previously diagnosed HIV patients were evaluated. They consisted of 91 females and 48 males (Female: Male ratio of 1.9). Their ages ranged from 9 to 66 years with a mean of 36.2 years (SD ± 10.0), (Table 1).

Of this number, 124 (89.2%) had normal vision, while 15 (10.8%) had visual impairment. Among patients with visual impairment, 12 (79.7%) were blind in one or both eyes (2 bilateral blindness (13.3%), 10 unilateral blindness (66.7%), while 3 had low vision (20.0%), (Table 2).

Retrobulbar optic neuritis was responsible for 2 cases each of bilateral and unilateral blindness respectively, constituting 33.4% of total blindness, (Table 3).

Cataract was the commonest cause of unilateral blindness and second commonest cause of overall blindness (24.9%), followed by Maculopathy (16.7%). Cytomegalovirus retinitis, Herpes zoster Ophthalmic and Toxoplasmosis were each responsible for 8.3% of overall blindness in this population.

The cause of low vision in the study population is shown in Table 4. Uveitis was the commonest cause of low vision (66.3%), followed by Glaucoma (33.3%).

Eighty percent of patients with visual impairment have CD4 counts ranging from 0 to 300cells/µl, Table 5.

Patients with normal vision had an average CD4 count of 352.9 (SD ± 249.8) while those with visual impairment had an average CD4 count of 186.7 (SD ± 163.3).

Discussion

The prevalence of visual impairment among HIV/AIDS patients in this study was found to be 10.8%. This is consistent with 11% found by Otiti-Sengeri among HIV patients in Uganda [12] and at variance with 20% and 27% respectively recorded by Pathai et al. [13] and Shah et al. [14], both in India. It has been found that the lower the CD4 count, the more likelihood of a patient suffering from visual impairment compared to a higher CD4 count level [12,14]. This is consistent with our finding as majorities (80%) of patients with visual impairment have CD4 count of 300cells/µl or less. The average CD4 count in our study was 269.8 cells/µl while those for the studies by pathai et al. [13] and shah et al. [14] was 180 cells/µl and 200 cell/µl respectively. The higher average level of CD4 count in our study compared to previous authors may be responsible for the lower prevalence of visual impairment recorded. The prevalence of blindness (bilateral and unilateral combined) in this population was found to be 8.6% while that of low vision (bilateral and unilateral) was 89.2%.
Maculopathy in recent times has been reported as a common cause of visual loss in HIV/AIDS patients [6,7]. In our study, maculopathy was the third commonest cause of blindness and was responsible for 16.7% of cases. Maculopathy in HIV/AIDS patients may be due to the direct effect of HIV on the microvasculature of the retina or as a consequence of associated infections in HIV [23]. These microvascular changes including alteration in blood flow leads to ischaemia of the macular and consequent visual loss as evidenced by fluorescein angiography [24,25]. Herpetic and cytomegalovirus infections has been found to be common causes of maculopathy in patients with HIV/AIDS infection [23,25]. The causes of maculopathy in this study are not known because of absence of good laboratory back up.

Cytomegalovirus retinitis is a rare cause of blindness in this population and was responsible for 8.3% of blindness. In Uganda [12], it was responsible for 17.8% of blindness. In the pre-HAART era, cytomegalovirus retinitis was the commonest cause of visual loss among HIV/AIDS patients [2,26]. However, with the widespread availability of HAART, visual loss and blindness due to CMV retinitis has substantially reduced [18]. The patients involved in this study were on HAART from a period ranging from less than one month to 5years. The low incidence of blindness due to CMV retinitis in this study may be due to the effect of HAART.

Although rare, Herpes Zoster Ophthalmicus is a cause of visual loss in patients with HIV/AIDS [3,27,28]. In this study, it was responsible for 8.3% of blindness. This is similar to the findings in Uganda [12] (3.5%). Herpes Zoster virus is known to cause keratitis, uveitis, retinitis, optic neuritis and central retinal vein occlusion in HIV/AIDS infected patients leading to visual impairment [29-31]. Keratitis was the cause of visual impairment in our study. HIV/AIDS patients presenting with Herpes Zoster ophthalmicus must be thoroughly examined for early detection and treatment of these complications.

Ocular Toxoplasmosis was responsible for 8.3% of blindness among HIV infected patients in this study. It was responsible for 15.8% of blindness among HIV patients in Uganda [12]. Toxoplasmosis is an opportunistic infection in patients with HIV infection [32]. With widespread availability of HAART, its incidence and impact on vision is likely to diminish. The patients in our study were at different stages of treatment with HAART. The lower incidence of blindness due to toxoplasmosis compared with previous study may be due to the effect of HAART.

**Limitation of Study**

The number of patients with visual impairment in this study is low. To conclusively determine the causes of visual impairment in this population a larger population need to be examined in order to increase the yield of cases of visual impairment. However our finding gives an idea of the true situation.

**Conclusion**

Majority of HIV infected persons in this population have normal visual status (89.2%). However, for the minority with visual impairment (10.8%), retrobulbar optic neuritis was the commonest cause of blindness (33.4%) followed by cataract (24.9%) and maculopathy (16.7%). As these complications may mar the beauty of a successfully implemented HAART programme due to their visual effect, early identification and treatment of these complications may improve the overall quality of life of these patients.

**References**


### Table 5: Visual impairment according to CD4 count.

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