

Original Article

Ocular aids: experience at the Guinness Ophthalmic unit, Kaduna , Nigeria.

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Abstract:

Objective: To determine the pattern of presentation of ocular manifestations in HIV/AIDS and the modes of management employed.

Method: This collaborative, hospital based retrospective study between the Ophthalmology and Immunology units covered the period between January-December, 2004.

Results: 1020 new patients were seen during this period with HIV/AIDS, of whom 125(12.3%) cases presented with some form of ocular complications, made up of 74 females (59.2%) and 51 males (40.8%). Herpes Zoster Ophthalmicus (HZO), was the commonest form of presentation in 87 (69.6%) patients, followed by ocular tumours in 17 (13.6%) patients and cotton-wool spots in 5 (4%) patients.

Conclusion: There is still a great need for the definitive diagnoses of ocular lesions, and retinal lesions in particular as well as appropriate treatment of ocular HIV/AIDS.

Key Words: Ocular HIV/AIDS, Guinness Ophthalmic Kaduna.

Introduction

There has been a worldwide increase in the incidence of Human Immunodeficiency Virus infection/Auto Immune Deficiency Syndrome (HIV/AIDS), since the first cases were reported in 1981 from California, USA.^{1,2} In 1984 the transmissible agent was identified and finally named HIV type 1 (HIV-1). In 1985, a second HIV (HIV-2) was identified in West Africa which gave rise to a clinically similar disease. Africa is the area worst affected by HIV-1 in the world. Deaths due to HIV/AIDS in Africa was estimated at over 12million by the end of 2004 with about 40 million people infected world-wide; 90% of whom are in the developing countries of Africa and Asia.

The first cases of HIV/AIDS in Nigeria were reported in Lagos and Enugu in 1986 among commercial sex workers. HIV/AIDS in sub-Saharan Africa is predominantly heterosexually spread. Male to female transmission rate is much higher (15 – 30%) than female to male (8 – 12%). The percentage range of infected adult males is 75 – 90% in all continents except sub – Saharan Africa where it is about 45%.

Uncontrolled HIV infection is characterized by a steady decline in the number of CD4+ T lymphocytes. Suppression of immune responses predisposes to opportunistic infections and certain neoplastic disorders that take on an aggressive course. Ocular

complications occur in about 75% of AIDS patients,³ and may be divided into four categories: Retinal microangiopathy, opportunistic infections, tumours and neuro-ophthalmological lesions. Highly active anti-retroviral therapy (HAART) effectively restores the immune system and lowers the viral load in patients with HIV and AIDS. Hsu WM et al.⁴ found that HIV loads decreased significantly in the plasma, and to undetectable levels in the aqueous humor (< 400 copies /ml) in AIDS patients with opportunistic infections after 4-8 months of HAART. This correlated well with clinical improvement in these patients. It's widespread use in the West since 1996 has resulted in a sharp decline⁵ in the incidence of AIDS- related ophthalmic infections such as cytomegalovirus (CMV) retinitis. In addition, the incidence of Kaposi's sarcoma (KS) has declined by an estimated 87% and molluscum contagiosum is seen less frequently in those using HAART. Whilst CMV retinitis has been recognized as the most common ophthalmic problem in the West, in AIDS patients, Herpes Zoster infection is a common first presentation of HIV infected persons in Africa.⁶ We believe there is a dearth of local studies on the pattern of presentation of ocular HIV/AIDS. Nwosu SNN⁷ in

a related study involving a small sample of subjects found 75% presenting with herpes zoster ophthalmicus and 25% with uveitis. An understanding of the ophthalmic presentations of HIV/AIDS in our environment is important in the early recognition and prompt management of these disorders, as well as aiding in the planning and provision of facilities for the appropriate care of affected persons. A study of the pattern of ocular presentations/manifestations of HIV/AIDS seen, at the Guinness Ophthalmic Unit, Kaduna and the modes of management employed was thus undertaken.

Subjects and methods

This collaborative hospital based retrospective study between the Ophthalmic and Immunology units of the Ahmadu Bello University Teaching Hospital, Kaduna covered the period from January-December 2004. A review of the records of 1020 new patients with HIV/AIDS seen at the Sexually Transmitted Infections/ Human Immunodeficiency Virus (STI/HIV) clinic during this period was done. Of this number, 125 patients had ocular complications of HIV/AIDS. The type of ocular manifestation was recorded and investigations/treatment offered noted. Most of these patients were seen *ab initio* at the Eye clinic and referred to the STI/HIV clinic, with or without ophthalmic treatment after a diagnosis of HIV infection had been made. About twelve (HIV positive) patients had been referred to the Eye clinic from the STI/HIV clinic for minor ocular complaints, two of whom were referred for presbyopia and were excluded from the study. CD4+ T-lymphocyte assay and full blood count were tests recommended, for every patient. Genotype, fasting blood sugar, malaria parasitology, stool microscopy etc., were requested for in some patients when indicated. Individual records were analyzed with the following results.

Results

Of a total of 1020 new records of HIV/AIDS patients reviewed over a one year period, 125(12.3%) showed

Discussion

Ocular complications occur in about 75% of AIDS patients³ during the course of the disease. Only 12.3% of HIV/AIDS patients in this hospital based study had ocular manifestation. This percentage is very low and is a bias attributable to the retrospective nature of the study. The majority of cases seen in this study presented with Herpes Zoster Ophthalmicus (HZO) as a manifestation of HIV/AIDS for the first time. Many had received treatment elsewhere before presenting here. HZO has been demonstrated to be a marker for HIV/AIDS for over a decade. Three of these patients had concurrent involvement of the maxillary nerve on the involved side. Diagnosis in all cases was clinical.

ocular complications of HIV infection. There were 74 females (59.2%) and 51 males (40.8%) whose ages ranged from 6 months-56 years, with a mean of 31.2 years.

Herpes Zoster Ophthalmicus presented as the commonest ocular manifestation, in 87 (69.6%) patients; 62 (49.6%) females and 25 (20.0%) males. This was followed by ocular tumours in 17 (13.6%) patients; 11 (8.8%) males and 6 (4.8%) females and cotton – wool spots in 5 (4.0%) male subjects.

Table 1a: Pattern of ocular manifestation of HIV/AIDS

	M	F
HZO	25	62
Ocular tumors	11	6
Cotton-wool spots	5	-
Cranial neuropathies	2	3
Red Eyes' (conjunctivitis/Episcleritis/Scleritis etc.)	5	3
Paediatric ocular AIDS		
Bilateral cataract	1	-
ii. Bilateral endophthalmitis	1	-
iii. Bilateral haemorrhagic retinitis	-	-
TOTAL	51	74

Conjunctival intraepithelial	M	F
Squamous cell carcinoma (conjunctiva)	3	2
Squamous cell carcinoma (lid)	1	-
Conjunctival papilloma (post-operatively)	-	1
Kaposi's Sarcoma (Conjunctiva)	3	1
TOTAL	11	6

Table 1b: Types of tumours

64(77.3%) of the 87 patients with HZO had visual acuity below 6/18 on the involved side showing significant ocular involvement. Ocular diagnoses recorded included uveitis, kerato - uveitis, corneal ulceration, corneal perforation, phthisis bulbi, episcleritis, scleritis, conjunctivitis, as well as ptosis and ectropion of the lids. One male patient with HZO had contralateral hemiplegia. The vision in the contralateral eye appeared to have been normal in all cases. Prescribed treatments included the anti-viral acyclovir, in oral and ointment forms, oral non-steroidal anti-inflammatory drugs, topical antibiotics/antibiotic-steroid preparations and mydriatic agents.

There were records of persistent corneal ulcers and perforations but none had definite intervention, with cyanoacrylate glue and bandage contact lens which is simple, non-surgical, and convenient but unavailable. No patient had conjunctival flap or tarsorrhaphy. 17(13.6%) patients, 11(8.8%) males and 6(4.8%) females presented with tumors, *viz*, conjunctival intraepithelial neoplasia (CIN), squamous cell carcinoma (SCC), of the conjunctiva and lid, and Kaposi's sarcoma (KS) of the conjunctiva. The records revealed confirmation of the nature of these tumours by histopathological examination, with the exception of six cases, *viz*: a post – operatively occurring conjunctival papillomatous lesion, two conjunctival intraepithelial neoplasias (carcinoma-in-situ), one squamous cell carcinoma of the lid and two of four cases of Kaposi's sarcoma of the conjunctiva. Conjunctival intra – epithelial neoplasia is a known precursor for squamous cell carcinoma. In patients who have AIDS, several studies describe an aggressive form of squamous cell carcinoma in the conjunctiva and/or eyelids.^{8,9} One 33year old male patient diagnosed with squamous cell carcinoma of the lid, had presented with a three month history of a

both were to have surgical exenteration of the orbits as a result of orbital invasion but apparently absconded. There were no further entries in the clinical notes of the patients with SCC of the lid after testing for HIV proved to be positive. He is presumed to have absconded. 5(5.0%) male patients who had presented with other complaints had cotton wool spots. Cotton wool spots may precede the development of overt cytomegalovirus retinitis, an opportunistic infection, occurring in immunocompromised individuals. In general, CD4+ T-lymphocyte count has been used to predict the onset of certain ocular infections in patients who are HIV positive. CD4+ T-cell count less than 500 cells/*ul* is associated with Kaposi sarcoma, lymphoma, and tuberculosis; CD4+ T-cell count less than 250 cells/*ul* is associated with pneumocystosis and toxoplasmosis; and CD4+ T-cell count less than 100 cells/*ul* is associated with retinal or conjunctival microvasculopathy, cytomegalovirus (CMV) retinitis, varicella-zoster virus (VZV) retinitis, mycobacterium avium complex infection, cryptococcosis, microsporidiosis, HIV encephalopathy and progressive multifocal leukoencephalopathy. CD4+ T-lymphocyte count is expensive. Of the 1020 patients reviewed, only 53 had CD4+ T-lymphocyte assay with count range of 152-438/*ul*. Eni RN¹² had in a previous study at this hospital found CD4+ T-lymphocytes for normal subjects to be from 450-1870/*ul*. Cottonwool spots do not affect vision and tend to regress and recur during the course of HIV disease. These patients were referred to the STI/HIV clinic after testing positive for HIV. Five patients presented with cranial neuropathy, four of whom were unilateral lower motor neuron VII cranial nerve palsy with initial complaints of inability to close the lid on the affected side, and one cranial III nerve palsy.

spontaneously occurring non-healing ulcer of the left lower lid margin and medial canthus. A 38 year old woman developed a very large papillomatous conjunctival lesion less than a month after surgery, at the supra corneal donor site, from where conjunctival graft had been removed to repair the defect in the contralateral eye following excision of a recurrent pterygium (Recurrent pterygium excision with conjunctival autograft). The patient thereafter tested positive for HIV-I. The growth was removed and sent for histopathological examination, but no entries were made thereafter. The patient is presumed to have absconded.

The association of HIV with certain malignancies such as Kaposi's sarcoma(KS) and squamous cell carcinoma of the conjunctiva has been documented. Typically, AIDS associated adnexal KS occurs in the eyelids or conjunctiva late in the course of the disease.^{10,11} However ocular adnexal KS may be the presenting feature of AIDS.

Treatment of the 11 cases of CIN and SCC was by simple excisional biopsy. Two of the four cases of Kaposi's sarcoma were biopsied and diagnoses confirmed by histopathology. Records showed that

Cranial neuropathy may occur as part of atypical aseptic meningitis or HIV ncephalopathy. Management included, oral non-steroidal anti-inflammatory drugs (NSAIDS), investigations for fasting blood sugar, skull x- ray, full bloodcount, erythrocyte sedimentation rate (ESR), electrolytes and urea, blood pressure measurement and HIV I & II testing with subsequent referral to the STI/HIV clinic after it was found to be positive. No patient had computed tomography, (CT scan), though it was recommended in three cases, magnetic resonance imaging (MRI) or angiography. Incidentally these tests were not available in the hospital during the period covered by the study. Three paediatric patients were seen with ocular complications of HIV. Acquisition of the disease in all cases was vertical. One 18 month old child, who was small for date with delayed developmental milestones, was born with bilateral congenital cataract. This may have been coincidental however. Another, had bilateral endophthalmitis of inconclusive aetiology, (despite laboratory investigations) which did not respond to antibiotics and antifungals and the third, a six month old infant had bilateral haemorrhagic retinitis, possibly, cytomegalovirus retinitis. Neither confirmation of diagnosis or specific treatment was offered the latter, apparently because these facilities were (and are still) not available in this hospital. In developing countries about one third of the children born to HIV-seropositive mothers will get the disease. A proportion of perinatally infected children develop severe signs in the first year of life and have a poor survival prognosis due to diarrhoeal diseases and pulmonary infections. The remainder become symptomatic later, present with milder symptoms and complications, and may survive for several years. The ophthalmic manifestations of HIV infection in

children are very different from those seen in adults. Typical cotton-wool spots, are almost never observed in children. CMV retinitis does occur in children with AIDS but at a much lower prevalence than in adults. On the other hand, those children who survive beyond the first years of life and who present milder forms of the disease, often present with decreased tear secretion, a feature that has only occasionally been described in adults with HIV infection. In African children with HIV infection, up to one third may have decreased tear secretion and on fundoscopy these children often display a perivasculitis of the peripheral retinal vessels. Both manifestations are thought to be related to the lymphoid interstitial pneumonitis and parotiditis which are often seen in children with HIV infection who survive the first mortality peak in the first two years of life. These different clinical manifestations are probably the

Conclusion

There is the need to provide appropriate medical facilities for the proper investigation and treatment of ocular manifestations of HIV/AIDS in our hospitals. These should also be at a cost that patients can afford.

Medical/Eye health workers should be taught to recognise, appropriately treat or refer presentations/ manifestations of HIV/AIDS in Africa such as Herpes zoster ophthalmicus as well as CIN and SCC (which may easily be confused with a pingueculum or pterygium, both being benign conditions) and Kaposi's sarcoma which may be confused with sub-conjunctival haemorrhage in its early stages, when it begins in the conjunctiva.

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expression of the same immunopathological mechanism at different sites of the body, a diffuse infiltration with lymphocytes. For the eye care worker it is important to recognise this syndrome and to know that it is relatively benign. Indeed, lymphoid interstitial pneumonitis in children with HIV infection is associated with a better survival.

A few patients (referred from the HIV/STI clinic) presented with 'red eyes', one of which was due to allergic conjunctivitis. (Incidentally, this patient had cotton-wool spots on examination). In the others no specific cause was found. Queried diagnoses included conjunctivitis, episcleritis, scleritis and uveitis, Treatments offered included topical anti - histamine preparations, antibiotics and steroid -antibiotics preparations, as well as oral non - steroidal anti - inflammatory drugs.

Counseling units should be available in hospitals to offer help and advice to persons who test positive for HIV in order to help them overcome fear and despair and adopt improved healthful lifestyles.

There is the need to provide free/ highly subsidized HAART drugs to HIV positive persons to lengthen life span, improve quality of life and reduce blindness and visual/other impairment. Non - governmental organisations and relevant government agencies may be of benefit in this regard. Vertical transmission in HIV positive women can be almost eliminated by the use of anti - retroviral drugs in pregnancy and the avoidance of breast-feeding.

Finally, massive public health campaigns would help to reduce the incidence of the disease.

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