

Ocular manifestations in paediatric HIV/AIDS patients in Mulago Hospital, Uganda

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ABSTRACT

Background: In Uganda the prevalence of HIV averages 12% as was reported to the STD/AIDS control surveillance unit. In Uganda there are approximately 30,000 HIV infected infants per year. The burden of HIV disease is high in Uganda and patients present with ocular complications. However, there is paucity of information and knowledge concerning ocular manifestations in the paediatric HIV/AIDS population and how they may differ from those of adults.

Objectives : To describe the ocular manifestations of HIV/AIDS infection in an African paediatric population. Generally the study will record the external ocular manifestations seen but specifically to document the intra-ocular lesions, in particular the retinal changes associated with paediatric HIV/AIDS.

Design: A cross-sectional hospital based study.

Setting: The study was conducted at the Paediatric Infectious Disease Clinic at Upper Mulago Hospital, in Kampala, Uganda.

Patients: Patients are those with positive HIV sero status, with or without symptoms and signs of AIDS.

Parents/caretakers of the children were interviewed to obtain the socio-demographic data of the patients and a general physical as well as an ophthalmic examination were conducted to document any ocular problems.

Results: A total of 158 HIV -infected children were examined. The overall rate of ophthalmic involvement was 35%. The most common finding was a non-purulent conjunctivitis, observed in 12% of the patients, followed by perivasculitis of the peripheral retinal vessels, in 12 % of patients and molluscum contagiosum.

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INTRODUCTION

Since it was first described in mid 1981 Acquired Immunodeficiency Syndrome (AIDS) has become a major concern to all doctors, irrespective of their area of study or specialisation. Ophthalmologists have not been spared. They are often called upon to make the initial diagnosis of AIDS; most often, however, they are requested to help treat the ocular manifestations of related opportunistic infections. These can have disastrous consequences for sight, especially for patients who are first seen when already markedly debilitated.

Practising ophthalmologists, especially those in the developing world, are faced with the following challenges. One, they must be able to recognise and treat potentially sight-threatening conditions. Two, they must be able to identify unusual presentations of known organisms, so that they are not regarded as part of the AIDS ocular

syndrome. Three, ophthalmologists must be able to identify and document manifestations that have not been described before, or have been seen before but were thought not to occur in AIDS patients.

The ocular complications in adult HIV/AIDS patients have been well documented, especially in the developed world¹. Data available from developed countries indicate that the pattern and prevalence of HIV-related ocular disease in the paediatric population is different from adult patients. The prevalence of cytomegalovirus retinitis is especially low in children², estimated at 5%, yet it continues to be the commonest sight-threatening complication in HIV/AIDS adult patients^{3,4}.

Other paediatric ocular manifestations as seen in developed countries include neuro-developmental delay, a condition often associated with neuro-ophthalmic disorders², a fatal AIDS-related embryopathy with downward obliquity of the eyes, prominent palpebral fissures, hypertelorism, and blue sclerae⁵. In Africa, the scanty literature available appears to indicate that macular oedema, retinal haemorrhages, conjunctival lesions and perivasculitis of the retinal peripheral vessels are the common manifestations⁶.

In order to assess the type and prevalence of ocular involvement in paediatric HIV/AIDS patients in Mulago Hospital, a study of such patients seen at the Infectious Paediatric Disease Clinic was carried out.

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MATERIALS AND METHODS

Patients/study population.

The study population included patients aged less than one year old to sixteen years old attending the Paediatric Infectious Disease Clinic at Upper Mulago between May and October, 2001

Study design:

This was a cross-sectional descriptive study in which HIV/AIDS paediatric patients were assessed for ocular disease complications. One hundred fifty eight children aged six months to 16 years were consecutively recruited and examined.

Inclusion criteria

- Children with HIV/AIDS aged 0 to less than sixteen years attending the Paediatric Infectious Disease Clinic.
- Children whose parents /caretakers gave informed consent.

Exclusion criteria

- Children who were too sick to undergo a detailed physical and ocular examination.
- Children whose parents/ caretakers declined to give consent.

Ethical issues

The study was approved by the ethics committees of Mulago hospital, the Makerere University Faculty of Medicine, and the Department of Ophthalmology. Written consent was obtained from parents/ caretakers of the children who participated in the study.

Sampling and sample size estimation

All patients attending the paediatric infections disease clinic during the study period and who fulfilled the inclusion criteria were enrolled consecutively. On subsequent clinic days only new patients were enrolled.

The sample size of 120 was calculated using the formula for prevalence studies. We assumed a 38% incidence of eye disorders among 180 paediatric HIV/AIDS patients over a one year period, a precision of 5% and 95% confidence.

Examination

The parents /caretakers were briefly interviewed to obtain socio-demographic data of each child. This was followed by a full general examination by the paediatrician and then an ophthalmic

examination. Each child had cyclopentolate 2% eye drops instilled in the eyes three times at an interval of five minutes. After half an hour, an ocular examination was carried out. First, an external ocular examination was done using a light (and a binocular coupe where necessary). This was followed by a detailed funduscopy, using both the direct ophthalmoscope, and the indirect , monocular ophthalmoscope. Reference was made to each patient's case notes to ascertain any systemic conditions a patient might have had in the past, for example pneumocystitis carinii Pneumonia, tuberculosis or Kaposi's sarcoma.

Statistical analysis

The quantitative data was entered into the EPI INFO version 6 package of the computer. The entry was done by the data entry clerk. The data was then cleaned and analysed with the help of a statistician.

RESULTS

General: A total of 158 HIV- infected children, 87 girls and 71 boys were identified. The average age at initial examination was 3½ years (range ½ to 15¼ years).

Ophthalmological results: A total of 130 children had a single examination, 20 children were seen twice, and 8 children were seen three or more times. The average rate of ophthalmic involvement was 35% (55/158 patients).

Retinal findings: By far, the most common finding was inflammation of the peripheral retinal vessels, which was observed in 49(31%) of the patients. The lesions were mainly located in the periphery and the equatorial regions. Veins were involved more often than arteries. Discrete lesions around the arteriolar walls, in the vicinity of the diseased venules were seen. The perivasculitis were seen as patches of fluffy white haziness around vessel walls. The lesions were labelled perivasculitis if they presented as irregular white patches around the vessel wall or as sheathing if they produced a more regular, yellowish, linear thickening of the involved vessels. Eighteen children had involvement in one eye and 31 had bilateral lesions, giving a total number of 80 affected eyes.

CMV retinitis was observed in six children (4%). Fundus examination of these children revealed areas of retinal necrosis, haemorrhages, and cotton wool spots along the major vessels. We did not observe the isolated cotton-wool spots so often seen in the adult CMV retinitis.

External findings: Three children had ophthalmic herpes zoster.

Fourteen patients had conjunctival xerosis, which responded favourably to oral vitamin treatment. All the fourteen had clinical signs of kwashiorkor.

Sixteen children had molluscum contagiosum; 11 of them had extensive bilateral lesions involving both the upper and lower eyelids. Six of these children had extensive body involvement, including the upper limbs.

Eleven patients presented with central corneal ulcers, and one of them had active herpes zoster at the time.

Five children presented with ocular nerve palsy; two had bilateral involvement. Three had isolated sixth nerve involvement and two had a third nerve involvement. The two children who had bilateral involvement had sixth nerve palsy.

Sixteen children out of 20 were reported by parents /caretakers not to be producing tears (when crying), and had these abnormal shirmer tests.

DISCUSSION

Among adults with HIV/AIDS, the incidence of ocular manifestations is high⁸, varying between 50% and 90% (8). However, the incidence in paediatric patients is lower. Dennehy² reported an incidence of 20%, whereas Kestelyn et al⁷ studying children with HIV in Rwanda found an incidence of 33%. This figure of Kestelyn is similar to our finding of 35%.

The most significant finding is the high incidence (31%) of perivasculitis and/or sheathing of the peripheral retinal vessels. This particular finding is in agreement with that of Kestelyn et al⁷. Padhani found an incidence of only 3% in children with AIDS in Muhimbili Medical Centre⁹. This is in total contrasts to incidences of available studies both in Africa and in the Western World, where the incidence reported is 20% and above.

CMV retinitis, the second-most common ocular manifestations in adult patients with AIDS¹⁰ was present in only 4% of our patients.

Smaller incidences of 1.6% and 1.8% have been reported by De Swet and Nussenblatt in a cohort of 120 HIV infected children¹¹. CMV and other infections (tuberculosis, toxoplasmosis, cryptococcosis are less likely to develop in children because they have not yet been infected with these organisms, unlike adults in whom reactivation of potent infection occurs when the immune system deteriorates¹²

None of our patients presented with the typical isolated cotton-wool spots, which constitute the most frequent ocular manifestation of HIV infection in adults¹³. Cotton-wool spots are

thought to be the end result of a chain of events including elevated levels of circulating immune complexes, deposition of immune complexes and resultant microvascular lesions, ischaemia and finally stasis of axoplasmic flow. It is unclear why cotton-wool spots are not seen in children with AIDS.

External pathology of the eye and its adnexae was common in our patients, unlike say, in the study of Kestelyn et al⁷. We found fourteen children with manifest vitamin A deficiency. This is not surprising. All of the fourteen were preschool children, the vulnerable age group for vitamin A deficiency in developing counties.

Other studies have also reported also ocular manifestations such as corneal involvement and molluscum contagiosum⁹. Ocular nerve palsies, however, are not commonly noted in HIV/AIDS in children. In our study, five children presented with ocular nerve palsies that could not be attributed to any cause other than AIDS.

CONCLUSION:

Our data, in agreement with other series reported in the literature, indicate that cotton-wool spots and CMV retinitis, the most common ocular manifestations of HIV/AIDS in adults, are much less prevalent in children. Instead conjunctivitis, perivasculitis and molluscum contagiosum were the three commonest ocular findings in our patients.

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