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ENT presentations in children with HIV infection

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Illnesses of the ear, nose and throat (ENT) are common in children with human immunodeficiency virus (HIV) infection. We reviewed the case files of 107 HIV seropositive children in the paediatric HIV unit at St Mary's Hospital. The prevalence, age of onset and type of ENT disease were reviewed. We also determined sex distribution, maternal country of origin and mode of transmission of HIV. Fifty per cent of the HIV children had ENT illnesses. Fifty-five per cent of the children presented with their first ENT symptom before age 3 years with 98% of the children having ENT manifestations by age 9 years. The commonest ENT diseases were cervical lymphadenopathy (70%), otitis media (46%), oral candidiasis (35%) and adenotonsillar disease (31%). HIV transmission was vertical in 90%. Maternal country of origin was Africa in 70% and the UK in 13%. Compared with previous studies, the proportion of HIV children with ENT problems appears to have decreased. Although our figures report a similar ENT symptom profile, the age at onset of these symptoms has increased.

Keywords *human immunodeficiency virus (HIV)* *AIDS* *ear, nose and throat (ENT)* *paediatric* *prevalence* *retrospective study*

Human immunodeficiency virus (HIV) infection is the fourth highest cause of death worldwide[1] and the ninth highest cause of death among children aged 1–4 years.[2] During 1997, there were an estimated 591 000 newly infected children with HIV with 467 000 child deaths with HIV/AIDS in the same year.[3] The majority of HIV transmission is vertical with an overall mother to child transmission rate of 14–39%. It is alarming that 22% of pregnant women in South Africa are HIV positive.[4] Ear, nose and throat (ENT) diseases are common across the whole clinical spectrum of HIV/AIDS. Paediatric HIV infection can be classified as mild, moderate or severe based on the presence of other infections/illnesses. ENT diseases feature in all these categories (Table 1).

The aim of this study was to determine the prevalence, nature and age of onset of ENT presentations within HIV seropositive children at St Mary's Hospital, London. We compare our findings with previous studies and discuss emerging trends.

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Methods

We reviewed the medical records of children with confirmed HIV infection in our Paediatric HIV Department. We recorded the age at HIV diagnosis, age at first ENT diagnosis, spectrum and management of ENT illnesses, mode of transmission and maternal country of origin.

Results

There were 107 children with confirmed HIV infection. Fifty-four (50%) had ENT illnesses. There were 24 boys and 30 girls. Mode of transmission was vertical in 48 (89%), horizontal in four (7%) and unknown in two (4%). Age at HIV diagnosis ranged from the neonatal period to 9 years. Age at diagnosis of first ENT illness ranged from 2 months to 11 years (Fig. 1).

The maternal country of origin was Africa in 70% (with over half coming from Uganda), the UK in 13% and Europe in 9% (Fig. 2) of cases.

The commonest ENT manifestations were cervical lymphadenopathy, otitis media, oral candidiasis, adenotonsillar disease, salivary gland hypertrophy and rhinosinusitis (Table 2).

Fourteen surgical procedures were performed in seven children contributing to nearly one-fifth of all management

Table 1. Classification of paediatric HIV/AIDS according to disease

Mild (class A HIV/AIDS)	Moderate (class B)	Severe (class C)
Lymphadenopathy	Candidiasis	Oesophageal candida
Otitis media	CMV	Kaposi's sarcoma
Sinusitis	HSV stomatitis	Burkitt's lymphoma
Parotitis	Herpes zoster	HIV-related SCC??
URTI		

outcomes (see Table 3). These included maxillary antral washout, myringotomy, adenotonsillectomy and two cases of ranula excision. Half of all outcomes involved either antibiotic or antifungals, and one-fifth of children required no medical or surgical intervention because symptoms resolved spontaneously.

Discussion

Globally, 3.2 million children under 15 years live with HIV/AIDS.[5] In 1998, worldwide, nearly 600 000 children became newly infected with HIV, and over half a million children died of AIDS. Infant mortality rates in countries affected by AIDS are expected to rise significantly in the next decade.[6] Sub-Saharan Africa is home to over 90% of the HIV-infected children. Infant and under-five mortality is expected to increase exponentially in the worst affected countries over the next years.

In the UK, at the end of 1999, there were an estimated 31 000 adults and children with HIV or AIDS.[7] From the Unlinked Anonymous Surveillance Programme, it is established that, currently, over 300 HIV-infected pregnant women give birth in the UK each year, with two-thirds of these births occurring in London. The current cumulative estimate of children in the UK living with HIV/AIDS (at the end of 1999) is 500.

Most new paediatric HIV cases result from perinatal transmission of the virus and may occur during gestation, labour, delivery and/or breastfeeding.

Forty per cent of children with AIDS are diagnosed by age 1 year, 23% within 6 months.[5,6,8] Vertical transmission could be detected, and perhaps prevented, with increased prophylactic treatment of infants born to women with HIV.[9]

St Mary's Hospital serves a large multicultural and migrant population. Among this population are a large number of HIV seropositive children. A dedicated paediatric HIV team cares for these children. Within the ENT department, we noted the frequent referral of HIV-positive children with ENT symptoms, and their unusual disease spectrum prompted this study.

In this series, we reviewed the case records of 107 HIV seropositive children. We found that ENT conditions are present in half these children. Fifty-five per cent of the children presented with their first ENT symptom before age 3 years with 98% of the children having ENT manifestations by age 9 years.

A MedLine search was conducted and included the following terms: HIV, AIDS, paediatrics, children, otorhinolaryngology, ENT and manifestations. Surprisingly few studies were found looking at the prevalence of ENT manifestations presenting in HIV seropositive children. The Department of Paediatric Otolaryngology at Great Ormond Street Hospital for Sick Children (GOS) in London produced their series in 1996 looking at 66 children. They noted that 91% had ENT symptoms, with the majority of children being of African descent. In the vast majority, the mode of transmission was vertical. Interestingly, 65% of children had ENT symptoms before 2 years of age.[10]

From our data, only half the children had a documented ENT symptom. This is markedly less than that reported by the GOS study. Several reasons may account for this. ENT illnesses in our paediatric series may be under-reported, better managed or truly less frequent. It is possible that the earlier recognition and continuous improvement in antiretroviral therapy has reduced the prevalence of ENT conditions in seropositive children. Highly active antiretroviral therapy (HAART) has been shown to reduce AIDS deaths in industrialized countries.[7]

The age range of our population was from 6 months to 18 years. Fifty-five per cent of children presented with an ENT illness before age 3 years, and nearly all the children had suffered an ENT condition before 9 years of age. The GOS study reported that the majority of children had suffered an

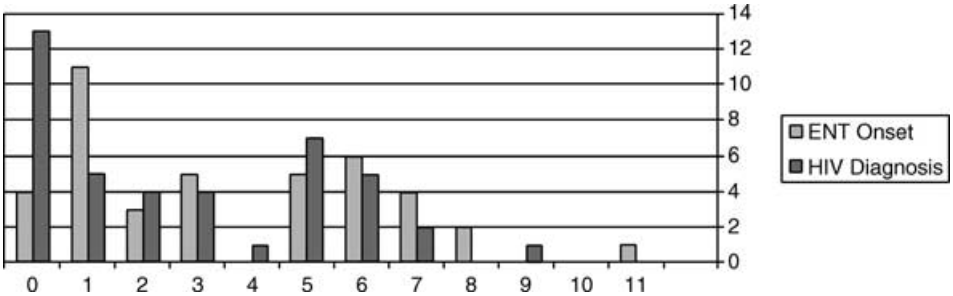

Figure 1. Age distribution at ENT onset and HIV diagnosis.

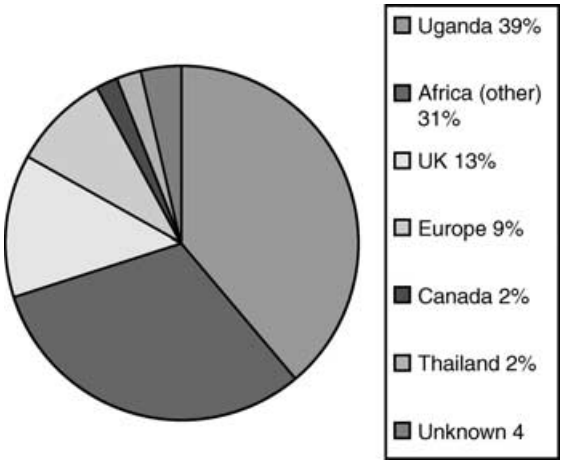

Figure 2. Maternal country of origin.

Table 2. Frequency of ENT conditions seen in the St Mary's paediatric HIV population

Clinical condition	Number	Percentage
Cervical lymphadenopathy	38	70
Otitis media	25	46
Oral candidiasis	19	35
Adenotonsillar disease	17	31
Salivary gland hypertrophy	14	26
Rhinosinusitis	13	24
Epistaxis	7	13
Parotitis	6	11
Oral ulceration	5	9
Dental problems	3	4
Otitis externa	3	4
Ranula	2	
URTI	2	
Orbital cellulitis	2	
Oral warts	1	
Subglottic stenosis	1	
Laryngitis	1	
Cavernous haemangioma	1	

ENT illness by age 2 years. This suggests that seropositive children are acquiring ENT disease at a later age. Delays in presentation may result from tolerance or under-reporting of symptoms or direct treatment of ENT conditions by carers. Better drug regimes providing greater control of HIV-associated illness may prevent the onset of ENT symptoms.

The disease spectrum does not appear to have changed in comparison with our paper. A series of 145 children from Texas displayed similar findings.[11] In contrast, a retrospective study of 250 paediatric AIDS patients in a children's hospital in Thailand[12] revealed that oral candidiasis is the most common oral manifestation of HIV infection, followed by lymphadenopathy and upper respiratory tract infections (see Table 4).

Table 4. Comparison of frequent ENT presentations in different countries

ENT condition	Texas	Thailand	GOS	St Mary's
Cervical lymph nodes	83%	42%	71%	70%
AOM/OME	44%	18%	33.5%	40%
Oral candidiasis	NA	60%	33%	35%

Vertical transfer of maternal HIV infection remains the commonest mode of transmission in all studies.[5] We report similar results with $<90\%$ acquiring the disease by vertical transmission. Four cases of horizontal transmission were reported; two were from blood/blood products, one from an infected needle and one from sexual abuse.

Nearly all newly infected children acquire HIV perinatally from their mothers. According to UNICEF, 90% are believed to have acquired the infection from mother-to-child transmission**,** before or at birth, or through breastfeeding. Methods of HIV transmission vertically include transplacental (30–50%), intrapartum (50–70%) and breastfeeding (16–26%).[13]

Several risk factors for vertical transmission are described in relation to infant and mother.[7] HIV transfer is increased if the infant is firstborn, preterm, born via vaginal delivery, suffers a neonatal bacterial infection or is breastfed. Vertical transmission is also increased if the mother has a low CD4 count, low antibody titre to gp120 (an envelope protein), clinical chorioamnionitis, prolonged labour or a history of illicit drug use.

Providing antiretroviral drugs to HIV-positive pregnant women and ensuring safe delivery procedures can substantially reduce the risk of a mother transmitting HIV to her child.

Non-perinatal transmission in children (including via blood and blood products) has reduced since 1985 as screening procedures have become standardized. Sexual abuse should be considered if evidence for vertical transmission is poor.

Figures from the US show that mothers' exposure has changed from contracting HIV through injection drug usage to heterosexual contact. This is mirrored by similar trends among women with AIDS.[14]

The majority of children infected with HIV were from Africa. Nearly a quarter of the population in our study were from Europe (see Fig. 2). This is a similar distribution to the findings in the GOS paper.

Table 3. Management outcome of ENT conditions

Outcome	Nil	Surgery	Antibiotics	Antifungals	Chemical cautery	Topical drops
Number (%)	14 (21)	12 (18)	19 (51)	15 (23)	2 (3)	4 (6)

In comparison with previous studies, the disease spectrum has not changed significantly in Europe, USA and UK. The commonest findings include cervical lymphadenopathy, otitis media, oral thrush, adenotonsillar disease, salivary gland hypertrophy, rhinosinusitis and epistaxis. The study from Thailand found that oral candidiasis was the most frequent symptom, present in 60% of cases, but the overall disease spectrum was similar (see Table 3).

We noted two cases of ranula in our population. It is possible that lymphoid hyperplasia predisposed HIV seropositive individuals to ranula formation. Unfortunately, little was found in the medical literature to further this supposition.

Conclusion

We have taken the opportunity to look at a large UK-based population of HIV-infected children. In comparison with previous studies, it would seem that the proportion of HIV seropositive children being referred with ENT symptoms or signs has decreased. The age of presentation has risen, but the disease spectrum does not appear to have altered.

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