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A Ten-year Review of Paediatric HIV/AIDS among Hospitalized Children in a Nigerian Teaching Hospital

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Summary

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Background: Regional differences which exist in the prevalence and clinical features of paediatric AIDS worldwide make it pertinent to document findings in our environment.

Objectives: To document the prevalence and clinical features of AIDS in children hospitalized in a teaching hospital situated in South-western Nigeria.

Design: Retrospective study.

Methods: A review of hospital records of all children with AIDS admitted to Olabisi Onabanjo University Teaching Hospital, Sagamu, between January 1996 and December 2005 was made with a view to determining the prevalence and clinical features of the disease in the area served by the hospital.

Results: Thirty three children were diagnosed with AIDS out of a total of 3061 hospitalized children; a prevalence rate of 1.08 percent. The prevalence increased, though not significantly, in the second half of the study period ($\chi^2 = 3.67$, $p = 0.055$). The male: female ratio was 1:1.4 and the age range was two months to 120 months with a mean of 17.4 ± 23.2 months. Fourteen (42.4 percent) were infants, 15 (45.5 percent) pre-school children and four (12.1 percent) were school-aged children. A majority (93.9 percent) of the patients were infected with the HIV-1 strain, while the route of transmission was predominantly vertical. The main clinical features at presentation were chronic diarrhoea (69.7 percent), prolonged fever (63.6 percent), chronic cough (48.5 percent) and skin rashes (39.4 percent). Fifteen (45.5 percent) patients had protein-energy malnutrition which was mostly marasmic in type (73.3 percent). Most (57.6 percent) of the patients belonged to the low socio-economic class, but only four patients (12.1 percent) had associated pulmonary tuberculosis. The mean duration of hospital stay was 8.8 ± 6.8 days. None of the patients received antiretroviral drug therapy. Mortality was 33.3 percent with septicaemia as the major cause.

Conclusion: We observed a low prevalence of paediatric AIDS but the clinical features conformed to the WHO guidelines for its case definition. Lack of access to antiretroviral therapy contributed to the high rate of mortality.

Introduction

THE magnitude of paediatric AIDS has increased in different parts of the world since the first case was described over two decades ago.[1] As a matter of fact, the HIV pandemic is now a serious public health problem.[2] In 1990, the World Health Organization (WHO) estimated paediatric AIDS cases to number about 400,000 excluding 300,000 who had died, and projected that 10 million or more infants and children would have HIV infection by 2000.[3] In 2003, an estimated 630,000 children acquired the infection.[2] Currently, there are over 1.3 million children living with HIV in the world and many more who have been orphaned by the global pandemic.[4] A majority of these children live in the developing countries especially those in Africa where an estimated 80 percent of these children live.[5]

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In Nigeria, a progressive increase in HIV seroprevalence has been observed,[6] and it has been projected that the annual deaths due to paediatric AIDS in Nigeria may increase from about 37,000 in 2000 to about 56,000 in 2010.[6] Available data however, suggest that regional differences exist not only in the rate of paediatric HIV seroprevalence[7] but also in the clinical pattern of the disease in Nigeria.[8,9] Thus, the findings observed in one study may not truly reflect the situation in another part of the country. The present ten-year review of paediatric AIDS among hospitalized patients at the tertiary hospital in Sagamu, southwestern part of Nigeria was undertaken in order to document its prevalence and clinical characteristics in the area served by the hospital.

Patients and Methods

The patients consisted of all cases of AIDS aged one month to twelve years who were admitted in Olabisi Onabanjo University Teaching Hospital, Sagamu in Ogun State, between January 1996 and December 2005. Hospital records of these patients were retrieved from the Medical Records Department of the hospital. Ethical approval was obtained from the Ethics committee of the hospital. Data extracted from the records included the date of admission, age, sex, weight, presenting symptoms, history of past blood transfusion and physical findings. Others were HIV seropositivity, maternal HIV status, as well as the duration and outcome of hospitalization. The socioeconomic class of each patient was determined using parental occupation and level of education, as suggested by Oyedeji.[10] Clinical diagnosis of paediatric HIV/AIDS was based on the WHO case-definition for HIV infection in children.[7] The major features of this are failure to thrive or weight loss, chronic diarrhoea (> one month) and prolonged fever (> one month). The minor features are generalized lymphadenopathy of at least, 0.5cm, present in two or more sites, with bilateral lymph nodes counting as one site; oropharyngeal candidiasis, repeated common infections (otitis, pharyngitis etc), persistent cough (> one month), generalized dermatitis and confirmed maternal HIV. The presence of at least, two major features with at least two minor ones, in the absence of a known cause of immunosuppression are indicative of paediatric AIDS. Only those patients that fulfilled the above criteria were subjected to HIV screening. HIV screening on sera was carried out at the hospital microbiology laboratory using two rapid test methods - the commercially available recombinant antigen-based ELISA Immunocombs II HIV I& 2 Bispot test kit (*Organics, France*) and the Capillus HV-1/HIV-2 kit (*Cambridge Diagnostics, Ireland*). A test was considered positive only when the blood sample gave positive results with both test kits. Neonates were excluded from the study, as there was no confirmatory test or evidence of follow-up at 18 months. However, all other infants less than 18 months whose mothers were ELISA positive and who also fulfilled the WHO clinical criteria of paediatric AIDS in Africa were included in the study.[7]

Data analysis was carried out using EPI info version 6 statistical software package. Descriptive test was used where appropriate and p value <0.05 was considered significant.

Results

A total of 3061children were hospitalized during the study period; 33 of these were diagnosed with AIDS, giving a prevalence of 1.08 percent. Table I shows the yearly distribution of AIDS and total admissions. Although the AIDS prevalence ranged from 0.47 percent in 1997 to 2.29 percent in 2003, there was no significant difference in prevalence between the two halves of the study period (χ^2= 3.67; p = 0.055). Fourteen (42.4 percent) were males while 19 (57.6 percent) were females giving a male: female ratio of 1:1.4. The age range was two months to 120 months with a mean of 17.4± 23.2 months. There were 14 (42.4 percent) infants, 15 (45.5 percent) pre-school children and four (12.1 percent) school-aged children.

Thirty-one (93.9 percent) of the patients were infected with the HIV-1 strain while the remaining two (6.1 percent) tested positive for both HIV-1 and 2. None of the children was infected with HIV-2 alone. The route of transmission was vertical in 23 (69.7 percent) as all their mothers also tested positive to HIV and there was no past history of blood transfusion in these children. Sixteen of the 23 mothers were already symptomatic of the disease. Three

Table I
Yearly Preulence of AIDS among Paediatric Admissions

Year	*Total No of Patients*	*No of Patients with AIDS*	*% of Patients with AIDS*
1996	198	1	0.51
1997	212	1	0.47
1998	251	1	0.40
1999	132	2	1.52
2000	347	2	0.58
2001	304	3	0.99
2002	404	4	0.99
2003	436	10	2.29
2004	405	3	0.74
2005	372	6	1.61

patients had a past history of blood transfusion for anaemia and their mothers were HIV negative. In the remaining seven patients, the route of HIV infection could not be determined due to incomplete records.

The main presenting clinical features (Table II) included chronic diarrhoea (69.7 percent), prolonged fever (63.6 percent), chronic cough (48.5 percent) and skin rashes (39.4 percent). Less common features were oral thrush and lymphadenopathy. The mean weight of the patients was 5.9kg [± 3.3kg] compared to 10.9kg [± 4.1kg] expected for their mean age of 17.4 months. Fifteen (45.5 percent) patients had protein-energy malnutrition: 11 were marasmic, three had marasmic -kwashiorkor and only one had kwashiorkor. Among those that had cough, four were confirmed to have pulmonary tuberculosis while two had pneumonia. Septicaemia was diagnosed in eight (24.2 percent) patients while chronic otitis media and anemia were diagnosed in five (15.2 percent) patients each. Majority (19) of the patients belonged to the low socio-economic classes; only three out of 22 belonged to the middle class. Socio-economic status could not be determined for the rest due to incomplete records. The mean duration of hospital stay for the patients was 8.8 ± 6.8 days. The clinical conditions in 12 (36.4 percent) patients improved with the treatment of associated medical illness and they were discharged home for further treatment at the HIV outpatient clinic. Eleven (33.3 percent) died; seven with septicaemia, three with pulmonary tuberculosis and one with pneumonia. Ten (30.3 percent) children were discharged against medical advice. Unfortunately, none of the patients received antiretroviral drug therapy.

Table II

Presenting Clinical Features

Symptoms/Signs	No (%)*
Chronic diarrhoea	23 (69.7)
Persistent/recurrent	21 (63.6)
Protein energy malnutrition	15 (45.5)
Skin rashes	13 (39.4)
Oral thrush	9 (27.3)
Lymphadenopathy	9 (27.3)
Chronic otitis media	5 (15.2)
Anaemia	5 (15.2)

**All the patients presented with multiple features*

Discussion

A prevalence rate of 1.08 percent of AIDS among hospitalized paediatric patients was observed in the present series. It is likely that this figure represents only a tip of the iceberg with regard to the magnitude of HIV infection among children in the community under study due to the fact that many children infected with the virus but who were not symptomatic would not have been tested. Nonetheless, the prevalence rate of 1.08 percent is much lower than the figures of 13.7 percent and 19.2 percent obtained in similar hospital-based studies in Abakaliki, Nigeria[8] and in Tanzania,[11] respectively; this is probably a reflection of geographical differences. In conformity with earlier reports,[8,12-17] vertical transmission from mother to child was the major route of HIV acquisition among the patients in this study. Strategies that are likely to be effective in reducing the burden of paediatric HIV infection in our community as well as others, are to ensure that all pregnant women have access to voluntary counseling and testing (VCT), as well as comprehensive prevention of mother to child transmission (PMTCT) measures. Government should therefore provide highly active antiretroviral therapy (HAART) free of charge to all HIV-positive pregnant women and children as a form of social service.

The clinical features of HIV infection observed in our study were in keeping with the WHO case definition of paediatric AIDS in Africa.[7] We however, observed a low incidence of pneumonia and tuberculosis. Even though the reasons for this could not be ascertained, the observation nevertheless contradicts the suggestion made by earlier workers.[8,15] that pneumonia should be made a major criterion in the case definition of paediatric HIV/AIDS in Africa.

The finding of 33 percent mortality in our study is similar to some earlier reports from Africa.[11,16,17] This brings to focus the havoc HIV/AIDS is wreaking among African populations. None of the patients in our study could afford antiretroviral therapy as they were mainly from poor socio-economic background. In addition, they had to bear the cost of hospitalization. These factors also contributed to the high rate of voluntary discharge of the patients. Unfortunately, there was no support from the government. More concerted efforts need to be put into the global fight against HIV/AIDS so that antiretroviral drugs can become more affordable. It is only by achieving this that the scourge of pediatric HIV/AIDS can be brought under control. Another limitation in the management of the patients in the present study relates to the problem of diagnosing HIV infection in children less than 18 months. Although it is well known that perinatally acquired maternal HIV antibodies could be detected in children's sera up to 18 months of age, and therefore such children suspected of HIV infection should have confirmatory UNAIDS/WHO test using HIV polymerase chain reaction assay, this could not be

done on our patients due to its high cost and unavailability. Other supportive laboratory investigations such as CD4+ count and viral load estimation required for accurate staging of HIV/AIDS and proper case management could also not be done for similar reasons. These further highlight the need for HIV management capacity building and upgrading of facilities in secondary and tertiary health institutions in sub-Saharan Africa.

In conclusion, we observed a low prevalence of paediatric AIDS but the clinical features conformed to the WHO guidelines for its case definition. Lack of access to antiretroviral therapy contributed to the high rate of mortality. It is recommended that governments should provide highly active antiretroviral therapy (HAART) free of charge to all HIV-positive pregnant women and children as a form of social service.

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