

## Paediatric HIV/AIDS seen at Ahmadu Bello University Teaching Hospital Zaria, Nigeria

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### Abstract

**Background:** Paediatric HIV/AIDS is an escalating problem of frightening proportion in Nigeria, although not much has been reported from our center.

**Method:** A retrospective study of 35 children with the diagnosis of HIV/AIDS admitted into the Emergency Paediatric Unit (EPU) of Ahmadu Bello University Teaching Hospital (ABUTH) over a 3.4 year period between March 1998 and June 2001 was undertaken in order to determine the most common mode of presentation and also the most prevalent complicating infection among these patients.

**Results:** The mean age of the patients was  $2 \pm 1.8$  years (range 2-144 months), with the majority 30 (85.7%) aged three years and below, and a male to female ratio of 2.1:1. The probable mode of infection was vertical in 88.6% patients, through blood transfusion in 8.6%, while the source of infection could not be established in one (2.8%) due to inadequate data. Multiple symptoms at presentation were common with fever and cough being the most frequent, occurring in 82.8% of patients, followed by diarrhea in 71.4% and weight loss in 60.0% of cases. The most common signs were wasting which was found in 74.3%, generalized lymphadenopathy in 68.6% and pyrexia in 54.3%. Commonly diagnosed infections were oral candidiasis, pneumonia and tuberculosis, seen in 60.0%, 45.7% and 31.4% respectively. Nine (25.7%) out of the 35 children died, 7(20.0%) were discharged against medical advice, 19 (54.3%) improved and were discharged to follow up, but all except four have been lost to follow up.

**Conclusion:** Paediatric HIV/AIDS is becoming a major cause of childhood morbidity and mortality in our environment. The prevention of HIV infection in women particularly in the reproductive age group would go a long way in controlling the disease in Nigeria.

**Key words:** HIV/AIDS, paediatric, morbidity, mortality

### Résumé

**Introduction:** L'infection à VIH/SIDA chez les enfants est un problème galopant et d'une ampleur effrayante au Nigéria malgré que peu de travaux ont été rapportés dans notre centre.

**Méthode:** Une étude rétrospective sur 35 enfants ayant chacun un diagnostic de VIH/SIDA admis au service des urgences pédiatriques du Centre Hospitalier Universitaire Ahmadu Bello (ABUTH ZARIA) pendant une période de 3,4 ans a été réalisée en vue de déterminer le plus fréquent mode de présentation et la plus fréquente infection parmi ces malades.

**Résultats:** la moyenne d'âge de ces patients était de  $2 \pm 1,8$  ans (varie entre 2 à 144 mois), avec une majorité 85,7% âgée de trois (3) ans ou moins et un rapport homme: femme de 2,1:1. Le mode de transmission probable était vertical dans 88,6% des cas, à travers une transfusion sanguine dans 8,6% des cas et dans 2,8% des cas le mode de transmission n'a pas pu être établi à cause d'une documentation et des données insuffisantes. Des symptômes multiples ont été un mode de présentation commun avec fièvre et toux constituant les plus fréquents symptômes observés chez 29 enfants (82,8%), suivi de la diarrhée dans 71,4% des cas et perte de poids et défaillance staturo-pondérale dans 60,0% des cas. Les signes cliniques les plus fréquents sont l'amaigrissement observé dans 74,3% des cas, les adénopathies généralisées dans 68,6% des cas et la fièvre dans 54,3% des cas. Les infections communément diagnostiquées chez ces patients sont les candidiases orales, les pneumonies et la tuberculose avec pour incidence respectivement de 60,0%, 45,7% et 31,4%. Neuf (9) enfants sur les 35 admis sont décédés (25,7%), 7 cas sont sortis de l'hôpital contre la volonté médicale soit 20,0%, 19 enfants (54,3%) se sont améliorés et sortis de l'hôpital avec un suivi régulier parmi lesquels quatre (4) étaient perdus de vue.

**Conclusion:** L'infection à VIH/SIDA en pédiatrie devient de plus en plus une cause majeure de morbidité et de mortalité dans notre environnement. La prévention de l'infection à VIH chez les femmes

particulièrement en âge de procréer contribuerait positivement dans la lutte contre cette maladie au Nigéria.

**Mot clés :** VIH/SIDA, pédiatrie, morbidité, mortalité

## Introduction

Paediatric HIV/AIDS is an escalating problem of frightening proportion in Nigeria.<sup>1</sup> It is an established fact that majority of the children infected with the virus are in sub-Saharan Africa with over 90% of those infected being less than 15 years old.<sup>1-3</sup> Documented reports on Paediatric HIV/AIDS in Nigeria are relatively few especially from the Northern part of the country.<sup>4-7</sup> Recurrent bacterial infections are quite common in children with HIV/AIDS and it has been reported that the spectrum of organisms causing infections differ between industrialized and developing countries.<sup>8</sup>

This retrospective study was undertaken to determine the mode of clinical presentation and the most prevalent infections among children with HIV/AIDS at Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Nigeria, as there had not been such a report from this center. This review will assist in adopting appropriate intervention strategies in clinical case management and preventive measures.

## Patients and Methods

All the records of children admitted between March 1998 and June 2001 with the diagnosis of HIV/AIDS were reviewed. The diagnosis of AIDS was mainly based on a positive Elisa test, Western blot and clinical case definition according to World Health Organization (WHO) criteria.<sup>2, 3</sup> The data extracted included age, sex, HIV status of patient, mother and father. Other information extracted were associated infections, laboratory results, treatment, duration of hospital stay and final outcome.

## Results

Thirty five patients seen in the paediatric unit of ABUTH during the 3year 4 months study period were diagnosed as HIV/AIDS. Of this number, 17 (48.5%) fulfilled the WHO clinical case definition for AIDS. Twenty four (68.6%) were males and 11(31.4%) were females giving a male to female ratio of 2.1:1. The mean age was 2±1.8years (range 2months-12years), with 27(77.1%) being aged two years and below. Thirty one (88.6%) of the patients were positive for HIV1; two (5.7%) for HIV2 while the remaining two (5.7%) were positive to both HIV1 and 2. Of the 20 couples tested 17 (85.0%) were positive for HIV1 and two (15.0%) for HIV1&2. The mode of transmission was vertical in 31 (88.6%) patients, via blood transfusion in 3 (8.6%) and indeterminate in one (2.8%). Past history of blood transfusion was positive in only four (11.4%) parents and three (8.6%)

patients. The presenting symptoms and signs (Tables 1 and 2). Recurrent fever and cough were the most common symptoms seen, each accounting for 29 (82.8%) of reported complaints. Recurrent/long standing diarrhoea was seen in 25 (71.4%) of cases while weight loss was documented in 21 (60.0%) of cases. Recurrent skin rashes was seen in 9 (25.7%) of the patients. Other less common symptoms included parotid swelling, jaundice and body swelling. The mean duration of symptoms was 2months (range 2days-4years). The longest duration of four years was seen in an eleven year old boy who was positive for HIV2 and has had blood transfusion about five years prior to onset of symptoms. Twenty six (74.3%) of the patients were malnourished while the remaining nine (25.7%) were well nourished. Eight (32%) of the malnourished children were under weight, eleven (44%) had marasmus, five (20%) had marasmic-kwashiorkor while only one (4%) had kwashiorkor.

The co-infections were due to pyogenic organisms, tuberculosis and candidiasis (Table 3). Many of them had multiple infections. Oral candidiasis was the most common infection diagnosed occurring in 21(60.0%) cases. Pneumonia was diagnosed in 16(45.7%) patients; two had lobar pneumonia while 14 had bronchopneumonia. The two patients that had lobar pneumonia had appropriate weight for age and responded to penicillin. Lung aspiration or biopsy for *pneumocystis carinii* (PCP) or lymphoid interstitial pneumonitis (LIP) was not done. Eleven patients (31.4%) were diagnosed to have tuberculosis (TB), four of whom had disseminated disease. The diagnosis of TB was based on history such as lack of BCG vaccination, contact with TB cases, clinical findings and radiological evidence suggestive of pulmonary TB (PTB), positive Mantoux test and failure of response to conventional antibiotics.

Seven (20.0%) patients had recurrent suppurative otitis media. Isolates from all these patients yielded gram negative organisms and in one case, there was associated isolate of *staphylococcus aureus*. Recurrent skin infection was diagnosed in 7(20.0%) cases. *S. aureus* was the main isolate in 6, *proteus* was isolated in one. Septicaemia was diagnosed in five of the patients. *Klebsiella*, *E. coli*, *pseudomonas* and *S. paratyphi* were the organisms isolated. Urinary tract infection (UTI) was seen in 3 (8.6%) of the cases, with *Klebsiella* and *E. coli* as the organisms responsible for infection. None infectious co-existing conditions included anaemia and lymphoma (Non-Hodgkin's lymphoma in leukaemic phase) seen in only one patient a Fulani boy aged 12 years.

The haematocrit ranged from 0.15L/L to 0.33L/L mean of 0.28L/L. Four (11.4%) patients had severe anaemia with haematocrit range of 0.15L/L- 0.17L/L warranting blood transfusion. CD4 count results were

available in only three patients. The range of CD4 count was 533-2336 cells/ul, (mean±SD 1280±604 cells/ul).

Definitive treatment included administration of antiretroviral drugs lamivudine and zidovudine orally for only three patients whose parents could afford the cost. Of the three patients only one is still on antiretroviral therapy which he has been receiving for the past six years. One patient with non-Hodgkin's lymphoma in leukaemic phase had cytotoxic drugs (vincristine and prednisolone). The anti tuberculosis drugs administered included streptomycin for one month, pyrazinamide for 2 months and isoniazid, rifampicin for a period of 9-12 months. Antibiotics given were mainly ampiclox, chloramphenicol and cotrimoxazole in combination with gentamycin and in a few cases (5 patients), cephalosporins (cefuroxime, ceftriazone) were used. Supportive treatment included administration of intravenous fluids for those with severe dehydration, nasogastric tube feeding, vitamin A and multivitamins. The mean duration of hospitalization was 19 days with a range of 2 days-3 months.

Nine (25.7%) out of 35 died while on admission; seven patients (20.0%) were taken away from hospital by their parents, against medical advise in some of them. Six (17.1%) of the parents of these children later died of AIDS in the adult wards of our hospital. Those that were discharged were followed up for variable periods ranging from one week to three years. Of the three children on antiretroviral drugs, two died, one due to complicated measles (pneumonia with laryngotracheomalacia) and the other of complicated typhoid septicaemia (intestinal perforation) at nine and eighteen months respectively after commencement of therapy. The third patient is still being followed up (six years after diagnosis was made) and is presently on triple therapy which he has been on for 36 months.

Table 1: Clinical symptoms in 35 children with HIV/AIDS

Symptoms	No. (%)
Fever	29 (82.8)
Cough	29 (82.8)
Diarrhoea	25 (71.4)
Weight loss	21 (60.0)
Breathlessness	10 (28.6)
Skin rashes	9 (25.7)
Mouth rash/ulcers	8 (22.8)
Delayed milestones	7 (20.0)
Recurrent ear discharge	6 (17.1)
Body swelling	6 (17.1)
Jaundice	4 (11.4)
Parotid swelling	1 (2.9)

Many patients had multiple symptoms

Table 2: Clinical signs in 35 children with HIV/AIDS

Signs	No. (%)
Wasting	26 (74.3)
Lymphadenopathy	24 (68.6)
Anaemia	20 (57.1)
Pyrexia	19 (54.3)
Crepitations/consolidation	16 (45.7)
Oral candidiasis	14 (40.0)
Hepatomegaly	13 (37.1)
Hepatosplenomegaly	13 (37.1)
Tachydyspnoea	12 (34.3)
Oedema	7 (20.0)
Molluscum contagiosum	2 (5.7)
Finger clubbing	1 (2.9)

Some patients had more than one signs

Table 3: Types of infections among 35 children with HIV/AIDS

Type of infection	No. (%)
Oral candidiasis	21 (60.0)
Pneumonia	16 (45.7)
Tuberculosis	11 (31.4)
Otitis media	7 (20.0)
Skin and soft tissue infection	7 (20.0)
Septicaemia	5 (14.0)
Urinary tract infection	3 (8.6)

Multiple infections was a frequent finding

## Discussion

Prolonged fever, cough, diarrhea and weight loss were the most common presenting symptoms, and wasting, generalized lymphadenopathy and pyrexia were the most frequent signs in children with HIV/AIDS in the present study. These findings are similar to reports from Calabar,<sup>4</sup> Jos<sup>5</sup> and Ile-Ife<sup>6</sup> in southern, western and middle belt of Nigeria respectively. The trio of weight loss, chronic diarrhea and prolonged fever are the major criteria for the clinical diagnosis of paediatric AIDS in Africa as proposed by WHO.<sup>2,8</sup>

The finding of high prevalence of protein energy malnutrition (PEM) in the present study is not surprising as previous reports have documented such findings in Nigeria and other parts of Africa.<sup>5,7,9</sup> Moreover children with HIV infection may have other associated factors contributing to malnutrition such as reduced oral intake, chronic diarrhea and malabsorption resulting from infectious or non-specific causes.<sup>7</sup>

Infection was documented in 30 (85.7%) of the children in this study. The most common infections observed were oral candidiasis and pneumonia. The high prevalence of infection among these patients has similarly been reported by Angyo<sup>5</sup> and Adejuyigbe et al.<sup>6</sup> Oral candidiasis occurred in 21(60.0%) of the patients. It is a common infection in children with HIV/AIDS and may lead to chronic diarrhea when it involves the entire gastrointestinal tract.<sup>10,11</sup>

Pneumonia occurred in 16 (45.7%) of the children in this study. The ability to localize the infection in 2 patients could probably be due to the disease being in its early stage. Bacterial pneumonia is common in children with HIV/AIDS. Encapsulated organisms are the common aetiologic agents, such as *S. pneumoniae*, however, with progression of the disease, gram negative agents like *Klebsiella*, assume importance.<sup>8</sup> This was supported in the present study as the two patients with lobar consolidation responded to penicillin treatment. Majority of the bacterial isolates in patients with clinical AIDS in this study were gram negative organisms.

Tuberculosis was diagnosed in 11 patients (31.4%) in this study. Five out of eleven (45.5%) had disseminated TB. This finding is not surprising in view of the higher risk of TB in patients with HIV/AIDS.<sup>12, 14-16</sup> A high index of suspicion is necessary in view of the difficulty in making the diagnosis of TB in children.<sup>14</sup> Furthermore the two conditions have similar clinical presentation. A definitive diagnosis is thus sometimes difficult and therapeutic trial of anti TB drugs may be the last resort. However it must be born in mind that failure to respond to conventional anti-TB therapy does not exclude TB because of the poor immunologic status of these patients and the fact that infection with anti-TB resistant organisms are being reported.<sup>12</sup>

Lung aspirate/biopsy was not done for lymphoid interstitial pneumonitis and PCP which are common pulmonary complications in children with AIDS in developed countries, but rare in children in Sub-Saharan Africa.<sup>7, 8</sup> Perhaps the rarity may just be apparent as this is not actively looked for in our setting. Also the clinical and radiological features of LIP may mimic pulmonary TB, and the only way to distinguish between the two is through a lung biopsy.<sup>9, 16</sup> Thus there is a need for studies in our environment to ascertain the rarity or otherwise of this condition.

All cases of chronic otitis media had positive isolates in this study, with 77.8% of the isolates being gram negative organisms like *Pseudomonas*; *Proteus* and *Klebsiella*, similar to the agents isolated in normal children with chronic otitis media.<sup>11, 15</sup> Infection of the skin and soft tissue by *S. aureus* and *Proteus* were diagnosed in this study. These organisms are common causes of infection in those with defective immunity. This finding is similar to that from Jos as reported by Angyo.<sup>13</sup>

Gram negative organisms such as *E. coli*, *Klebsiella*, *Pseudomonas* and *S. paratyphi* were the organisms isolated on blood culture. This pattern is similar to the findings of Angyo et al in Jos<sup>13</sup> but differs from reports from USA and Europe where *S. pneumoniae*, *H. influenzae* and *Salmonella enteritidis* were the common isolates from blood cultures.<sup>10</sup> The organisms documented in the present study are similar to those found in children with severe protein energy malnutrition (PEM) in our environment.<sup>17</sup> This may be attributed to the defective immunity in these children. Thus, severe PEM would therefore worsen the immune status of children with HIV/AIDS. It is of

note that over 95% of all the isolates were sensitive to gentamycin.

Urinary tract infection was documented in only 3 (8.6%) of children in this study. The organisms isolated were *Klebsiella* and *E. coli*, same as those seen in normal children.

Most of the cases in our center when diagnosed were symptomatic or had advanced disease, and could not afford antiretroviral drugs due to the cost. This is in contrast to what is obtained in advanced countries where early detection and treatment is the rule.<sup>18,19</sup> It is hoped that with the designation of the hospital as a pilot site for prevention of mother to child transmission of HIV (PMTCT), there will be improved early detection and prompt treatment with available and affordable antiretroviral drugs. This may reduce the high morbidity and mortality observed in the present study.

HIV/AIDS is an increasing cause of childhood morbidity and mortality in Northern Nigeria. The presence of any combination of fever, cough, persistent or recurrent diarrhea, wasting and generalized lymphadenopathy should alert the physician and could be used as a screening test for symptomatic HIV infection in Nigerian children.

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