Nigerian Journal of Paediatrics 1995; 22 (2): 47-50

Discordant HIV Serological Status in Parents and in a Twin Sibling of an Infant with AIDS

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Summary

Asindi AA and Onuba O. Discordant HIV Serological Status in Parents and in a Twin Sibling of an Infant with AIDS. *Nigerian Journal of Paediatrics 1995; 22: 47.* An established case of AIDS in a twin infant is reported. Unusual aspects of the case included the HIV seronegativity in the twin sibling as well as in the mother of the twins; the father of the twins was seropositive. To our knowledge, there has been no such discordant HIV serological reports in the medical literature. Various theories, including the possibility that the seronegative mother was indeed, infected by the seropositive husband and she transmitted the virus *in-utero* to one of the twins, without herself developing detectable antibodies during a period of low viral replication, are considered in order to explain this unusual HIV transmission in childhood.

Introduction

It has been reported that in about 75-80 percent of all cases of acquired immunodeficiency syndrome (AIDS) in childhood, the human immunodeficiency virus (HIV) infection is transmitted from mother-to-child *in-utero*, or during delivery (intrapartum), while in another 20 percent of the cases, the infection is through transfusion of blood or blood products, sexual abuse and breast feeding.[1-6] The exact period of transplancental transmission of HIV is unknown, but the virus has been found in the tissues of 13 to 20-week-old foetuses, thus suggesting that the virus crosses the placenta very early in pregnancy.[3] Studies have indicated that the rate of perinatal transmission is as high as 25-35 percent.[1] It remains unclear why some infected pregnant women do not transmit the virus vertically to their babies. The present case of AIDS in a twin infant is reported because of certain unusual aspects

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of the clinical presentation as well as the HIV seronegativity in the twin sibling as well as in the mother of the twins.

Case Report

A twin female child with a history of recurrent abscess on the left anterior chest-wall, was referred at the age of 13 months to the department of Paediatrics, University of Calabar Teaching Hospital (UCTH). Prior to this referral, the patient had been at the age of 10 months, admitted to a private hospital with a two-week history of weight loss, fever, cough and a swelling on the left anterior chest wall. Treatment at the private hospital consisted of drainage of the pus from the abscess on the chest wall, administration of oral erythromycin and intramuscular (im) gentamicin and blood transfusion; the transfused blood was obtained from a commercial blood donor, and was unscreened for HIV. The pus from the abscess yielded on culture *Staph pyogenes*, sensitive to erythromycin, gentamicin and olfloxacin (taravid). The child was discharged in a satisfactory condition, after two weeks of hospitalization. Some three weeks after the discharge, the patient was readmitted with a recurrence of fever, cough and the anterior chest-wall swelling. The patient responded again satisfactorily with drainage of the abscess and antibiotics therapy.

On admission at the UCTH, additional history was obtained from the parents that the child's illness, in actual fact, started at the age of eight months with fever, cough and anterior chest-wall swelling. Before being taken to the private hospital at the age of 10 months, the child had received treatment from traditional healers. Physical examination revealed an ill, febrile child with temperature 38°C; weight was 8kg, length, 77cms, occipito-frontal circumference (OFC), 47cms and midarm circumference (MAC), 85cms. There was a discharging sinus on the left anterior chest-wall. The cardio-respiratory system, abdomen and oral cavity were normal. Chest radiograph revealed chronic osteomyelitis of the fourth left rib and consolidation of the lower zone of the left lung. Pus that was drained from the chest-wall abscess, yielded on culture, a heavy growth of *Staph pyogenes*, sensitive to gentamicin, cloxacillin and erythromycin. Hb genotype was AA; blood culture was sterile. Treatment consisted of intravenous gentamicin and cloxacillin. There was a remarkable improvement in the general condition of the patient after 10 days of antibiotics therapy. A repeat chest radiograph also showed satisfactory improvement in the rib and lung lesions. The patient was discharged after 14 days of hospitalization; she went home on oral cloxacillin, with the instructions to take the drug for 10 more days and to return for a follow-up at the outpatient clinic after two weeks.

The patient was readmitted to the UCTH after she had defaulted from clinic attendance for eight weeks after discharge. The complaint on this occasion was again recurrent fever, weight loss and chest-wall swelling. On examination, the child was seriously ill with a temperature of 38°C and a weight of 7kg. The liver was enlarged, four cms and the spleen, three cms below the right and left coastal margins, respectively. There were generalized pustular skin erup-

tions and profuse oropharyngeal thrush. Peripheral lymph nodes were not palpable. There were crepitations in the left lung base. Chest radiograph showed a worsening of the rib and lung lesions compared with the findings on discharge, eight weeks earlier. A repeat pus culture yielded *Staph pyogenes* with the same sensitivity pattern as on previous admission.

On the basis of the protracted illness in this child, starting from the age of eight months, the above clinical features and our previous experience with cases of paediatric AIDS in UCTH,[7] a provisional diagnosis of AIDS was entertained during this second admission. ELISA and Western BLOT tests were therefore, carried out and these were both positive, thus confirming the diagnosis. After obtaining informed consent from the parents, the twin sibling of the patient and both parents also underwent the ELISA and BLOT tests. The father was HIV seropositive, while the mother and the twin sibling were seronegative. Both parents who are Nigerians had never travelled out of the country.

The child's condition deteriorated progressively, despite treatment with intravenous cloxacillin, oral nystatin and high protein diet. On the second day of admission, the patient developed profuse diarrhoea which lasted seven days. Antituberculos drug therapy, consisting of combined streptomycin, rifampicin and INH, was empirically added to the treatment after two weeks of admission when no improvement was evident. Later in the course of the illness, repeated generalized tonic seizures developed and lasted two days. These seizures were controlled with diazepam Cerebrospinal fluid analysis and blood sugar estimation were normal. A residual spastic monoparesis of the left upper limb developed after the seizures stopped. Weight loss continued and the child weighed 6.5kg when he died at the age of 18 months. The parents and the twin sibling were unfortunately, not followed up for further observation and development.

Discussion

The present case of an established AIDS in one of twins and the HIV seronegative mother and the twin sibling of the patient and the seropositive father, deserves comments on certain unusual and unexplained aspects of the disease and HIV infection in this family. From the history of the case, the patient developed recognized features of AIDS, such as persistent fever, chronic cough, multifocal infections and weight loss from about the age of eight months, which was about one month before she received transfusion with an unscreened blood from commercial blood donor. It may therefore, be concluded with reasonable certainty that, under these circumstances, the patient acquired the HIV infection *in-utero* and not through the blood transfusion. The age at which AIDS manifested in this patient was about the same as in most other paediatric patients with AIDS that is transmitted vertically. [7]

It is most unusual that the patient's twin sibling and the mother of the twins were HIV-seronegative. Since the father of the twins was seropositive, the expected course of events was a transmission of the infec-

tion from husband-to-wife and vertically, from the mother to the twins. It is possible that this seronegative mother was infected by the seropositive husband, but she passed the virus *in-utero* to one of the twins without herself developing detectable antibodies during a period of low viral replication. This possibility might also explain the seronegativity in the twin sibling. It is known that 25-35 percent of HIV infected pregnant women will transmit the virus to their babies *in-utero* and about 35 percent others will fail to do so; it is also a fact that an infected woman may have one HIV-infected child, but subsequent children may be unaffected or *vice versa*.[2] There have been instances where one of a pair of twins acquired HIV infection during gestation, or labour through contamination with cervical secretions, while the other pair did not.[2 8] The possibility of mother-twin transmission of HIV in the present case, might be through any of the above cited modes of transmission. It must be admitted that the infection status of this seronegative mother and her normal, healthy twin, could have been settled through the determination of viral genetic materials in virus culture and polymerase chain reaction gene amplification,[9] had the facilities for these tests been available in the country. The alternative method of settling the issue would have been long-term follow-up of the mother and twin child, in order to check later development of HIV antibodies.

Another unusual feature of AIDS in the present case was the staphylococcal osteomyelitis of the rib bone. Bone infection generally, is reportedly a rare complication or manifestation of HIV infection.[10] Osteomyelitis of the rib is indeed, a very rare condition (personal observation). Because of this rarity, it is tempting to suggest that occurrence of this in an infant with other salient features, should raise the suspicion of AIDS.

References

1 World Health Organization, Paris WHO Collaborating Centre on AIDS. AIDS surveillance in Europe: Quarterly report No. 24. December 31, 1989.

2 Centres for Disease Control: HIV/AIDS Surveillance Report. May 1990 1-8.

3 US Department of Health and Human Services. The New face of AIDS: a maternal and pediatric epidemic. June 1990.

4 The Working Group on Mother-to-Child transmission of HIV. Methodological issues in mother-to-child transmission of HIV. VIIIth International Conference on AIDS/IIIth STD World Congress Amsterdam, The Netherlands 19-24 July 1992 (POC 4218).

5 Boylan L and Stein ZA. The epidemiology of HIV infection in children and their mothers-vertical transmission. *Epidemiol Rev* 1991; 13: 143-77.

6 Dunn DT, Newell ML, Ades AE and Peckham C. Risk of HIV-transmission through breastfeeding. *Lancet* 1992; 340: 585-8.

7 Asindi AA and Ibia EO. Paediatric AIDS in Calabar. *Nig J Paediatr* 1992; 19: 47-51.

8 Goedert JJ, Dulieg AM, Amos CI, Feltons and Biggar RJ. High risk of infection with HIV type I for first-born, vaginally delivered twins. *Lancet* 1991; 338: 1471-5.

9 Krasinki K and Borkowsky S. Laboratory diagnosis of HIV infection. *Pediatr Clin N Amer* 1991; 38: 17-35.

10 Josh VV. Pathology of childhood AIDS. *Pediatr Clin N Amer* 1991; 38: 97-120.