SOUTHERN AFRICAN HIV CLINICIANS SOCIETY **SHORT REPORT**

PREVENTION OF VERTICAL TRANSMISSION OF HUMAN IMMUNODEFICIENCY TYPE 1 VIRUS IN A MANAGED CARE SETTING

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Since the start of the epidemic some two decades ago, HIV has infected more than 47 million people and has claimed the lives of nearly 14 million adults and children. According to estimates from UNAIDS and the World Health Organisation, some 33 million people were living with HIV and AIDS by the end of 1999. Of these, more than 3 million were South Africans. Africa, and in particular Sub-Saharan Africa, has become the global epicentre of the epidemic. As the seroprevalence of HIV among pregnant women attending public antenatal clinics is 22/100, many newborns are at risk of HIV.[1] In the absence of programmes to prevent mother-to-child transmission, approximately 50 000 HIV-1-infected babies are born each year in South Africa.

In 1994 the Pediatric AIDS Clinical Trials Group (PACTG) 076 trial demonstrated the efficacy of zidovudine (ZDV) in reducing mother-to-child transmission (MTCT) of HIV-1 from 25.5% to 8.3%.[2] This regimen included administration of ZDV orally 5 times daily from late mid-trimester, intravenously during labour, and then to the exposed neonate. In 1998 a simplified regimen from Thailand showed that oral ZDV given twice daily from 36 weeks gestational age could also reduce transmission risk by 51% (18.9% to 9.4%).[3] By this time the importance of ZDV as post-exposure prophylaxis had been demonstrated in health care workers exposed to percutaneous injury,[4] an extrapolation of which suggested that postnatal ZDV might be important for the HIV-exposed neonate.

Aid for AIDS (AfA) is a disease management programme offered by Pharmaceutical Benefit Management (PBM) and Medscheme Integrated Care Division to members of contracted medical aid schemes for the management of HIV. It has been operational since June 1998 and to date over 5 000 members benefit from the programme, which includes provision for a unique vertical transmission prophylaxis (VTP) regimen. We now report our preliminary results on the efficacy of this regimen.

METHODS

Vertical transmission prophylaxis and diagnosis of HIV infection in the neonate

We adopted the simplified ZDV regimen from Thailand, but permitted a dosage of 250 mg twice daily instead of 300 mg, thus allowing a single tablet instead of 3 tablets to be administered, as we felt that this would promote compliance. ZDV was provided from 36 weeks gestational age. During labour ZDV was given either as a continuous intravenous infusion, or *per os* 3-hourly. The newborn received ZDV suspension for 6 weeks at a dosage of 2 mg/kg 4 times a day. Elective caesarean section and formula feeds were funded by the programme and actively encouraged. A qualitative polymerase chain reaction (PCR) assay for HIV-1 DNA or RNA was performed on exposed infants after 6 weeks of age, and if positive was regarded as evidence of infection.

We defined incomplete VTP as either inadequate (less than 2 weeks) ZDV given to the mother or the absence of post-exposure prophylaxis to the exposed infant. Complete VTP was defined as the mother receiving at least 2 weeks of ZDV prior to delivery and the neonate a 6-week course of ZDV suspension.

Data analysis

Women eligible for VTP were identified through confidential application to AfA. Data were evaluated from June 1998 through February 2000. A telephonic interview with the mother was conducted by a registered nurse employed by AfA. The method of delivery, use of formula feeds and the PCR result were obtained. Where possible confirmatory laboratory results were obtained.

RESULTS

During the period under review, 412 pregnant women registered with the programme. By the end of February 2000, 278 deliveries were recorded. The majority (approximately 80%) were delivered by elective caesarean section. The transmission rate in those completing the VTP protocol was 3.4% (4 of 116). The complete analysis of available data is shown in the accompanying organogram (Fig. 1). Of 89 members receiving either incomplete or no VTP, data were available on 15 infants, of whom 8 were infected.

DISCUSSION

The data confirm the efficacy of the AfA VTP programme, as the transmission rate was only 3.4%. In the absence of intervention, vertical transmission may occur in between 18% and 30%.[2,3] These data suggest an improvement on both the PACTG 076 and Thai-CDC studies, where transmission was

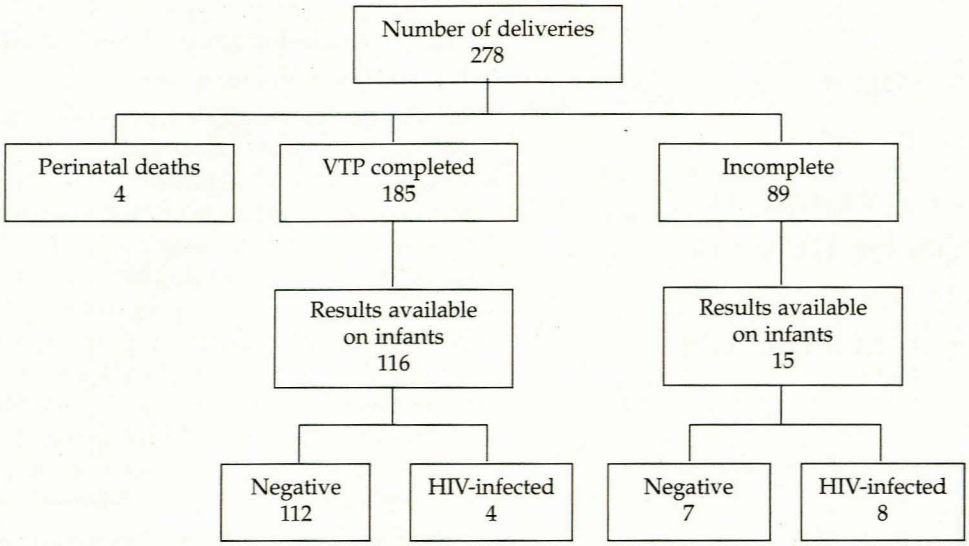

Fig. 1. Organogram illustrating the outcome of the pregnancies of 278 HIV-infected mothers registered with the Aid for AIDS programme (VTP = vertical transmission prophylaxis; Incomplete VTP = inadequate (less than 2 weeks) ZDV given to the mother or the absence of post-exposure prophylaxis to the exposed infant; Complete VTP = at least 2 weeks of ZDV to the mother prior to delivery, and a 6-week course of ZDV suspension to the neonate).

reduced to 8.3% and 9.1%, respectively. A recent meta-analysis showed that elective caesarean section alone could reduce the transmission rate by 50% (16.7% to 8.2%) and to 2% if combined with antiretroviral therapy.[5]

A shortcoming of our analysis is that it did not take place in the context of a study, but rather reflected 'real-life' experience. We relied on telephonic interviews and often experienced difficulty in communicating with members. Approximately 80% of women underwent an elective caesarean section. Another potential problem was that we did not obtain a second confirmatory PCR assay in exposed infants. This is of relevance for infants being breast-fed as HIV transmission may occur at a later date.

Of particular concern is the lack of data in women who did not receive complete VTP. Of 89 women in this group, only 15 could be contacted. Eight of 15 infants were infected.

Our VTP regimen combined the simplicity of the Thai-CDC protocol and the postnatal arm of the PACTG 076 study, as we considered that post-exposure prophylaxis might compensate for abbreviated periods of antenatal ZDV administration, especially if it was for less than 4 weeks' duration. The importance of postnatal ZDV was confirmed in a recent study by Wade *et al.*,[6] where postnatal ZDV alone resulted in a 50% reduction in transmission.[6]

In conclusion, we have demonstrated the efficacy of the AfA VTP regimen and provide the first data on the prevention of mother-to-child transmission from a managed care setting in Africa.

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