

HIV Seroconversion in a Young Child Following A Single Blood Transfusion

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Transfusion associated acquired immunodeficiency syndrome (TA AIDS) in the pediatric age group was first reported in 1983, in an infant(1). In the USA, 11% of all pediatric AIDS cases reported by December 1989 were those of TA AIDS(2). The Centers for Disease Control (CDC), Atlanta, definition for AIDS in children includes the sentinel illnesses with or without laboratory evidence of human immunodeficiency virus (HIV) infection in children under 13 years of age(3). Cases of TA AIDS are classified as those who have history of having received a transfusion of blood or blood components after 1977, without other reported risk factors for AIDS.

In USA, screening of blood for HIV antibody became mandatory in 1985 and this has been very effective in curbing acquisition of new HIV infections through

transfusion of blood products. In India, where an epidemic of HIV infection is predicted and where screening of donors for HIV is still not available at most hospitals, TA AIDS can be expected to contribute significantly to the AIDS problem. To make pediatricians aware of the impending disaster we report here a 3½-year-old symptomatic girl who acquired HIV infection through a single blood transfusion received at 1 week of age.

Case Report

A 3½-year-old girl was admitted to the Pediatric Unit of Postgraduate Institute of Medical Education and Research, Chandigarh in May 1992 with intermittent fever and multiple swellings in neck for 4 months. Fever had been high grade for 1 week before admission. She had been seen outside and antituberculous therapy (ATT) had been started 3 weeks prior to hospitalization.

In the past, she had required admission at 1 week of age in a hospital in New Delhi for neonatal sepsis. During this period she received a blood transfusion. Two episodes of lower respiratory infection had occurred at 3 months and 15 months of age respectively, and both of these were managed with antimicrobials on an ambulatory basis. At 3 years of age she was hospitalized for 'measles', pneumonia and generalized seizures. The recovery was uneventful. Both parents and an elder brother of the child were healthy.

On physical examination the girl appeared well-nourished and her anthropometry was unremarkable. She was febrile (38.5°C), pulse rate 118/min, respiratory rate 36/min, blood pressure 110/66 mmHg. Her skin was flushed. Hyperpigmentation of healed exanthematous illness was noticed. Cervical and axillary lymph-

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adenopathy (1.5-2 cm) was present and the nodes were firm, mobile and somewhat tender. Extensive white patches were seen in the oral cavity and to a lesser extent on the vulva. Systemic examination revealed left sided basal pneumonia and hepatosplenomegaly—liver 4 cm (span 9 cm) and spleen 2 cm below costal margin. Investigations revealed Hb 10.9 g/dl, TLC $15,600/\text{mm}^3$ with 81% polys, and ESR 40 mm in 1st hour. X-ray chest revealed pneumonia in left lower zone. Mantoux test was negative. Throat and vulval swabs showed *Candida*. Blood and urine cultures for bacteria and fungi, fine needle aspiration from lymph nodes and biopsy from liver were not contributory. Ketoconazole was given for candidal infection and ciprofloxacin was given empirically while ATT was continued. She developed a maculopapular rash on 2nd hospital day. Rash subsided within a week but fever and lymphadenopathy persisted. In view of continuing fever, lymphadenopathy and extensive candida infection, screening for HIV infection was done. Antibodies to HIV1 were detected by ELISA and were confirmed with Western blot test. Both parents and elder sibling tested negative.

A diagnosis of TA AIDS was made. She was put on cotrimoxazole prophylaxis and continued on ketoconazole. Follow-up after 5 weeks showed that fever, though continuing, was low grade ($100-101^\circ$) but lymphadenopathy was persisting. The candidiasis had cleared.

Discussion

Pediatric TA AIDS has occurred in children mostly transfused in early infancy for neonatal problems(4). Our patient was given only one blood transfusion at 1 week of age and she became symptomatic at 38 months of age. That she became infected

through this transfusion is clear as no other risk factors for AIDS were present. New-born infants are particularly susceptible to post-transfusion syndromes (e.g., cytomegalovirus, hepatitis B and HIV). Of the 195 cases of possible TA AIDS reported to CDC by August 1985, approximately 10% were infants. Of these, 14 of the 21 children below 13 years of age had received transfusion for illnesses associated with prematurity(4). It has been shown in animal studies that newborn kittens are more susceptible to feline leukemia virus than older cats. This virus is also a lymphotropic retrovirus(5).

Another reason for susceptibility of neonates is said to be the larger inoculum of the virus related to their body size. The greatest risk of HIV infection for recipients is during the window period i.e., the time between infection and development of antibodies of the donor(6). Most seroconversions occur within 2-3 months after infection(7).

In an analysis which did not include children with hemophilia or other coagulation disorders, 70% of reported TA AIDS children were transfused in first year of life and median age at diagnosis was 4 years (mean 0.3-12.8) and estimated median incubation period was 3.5 years. In perinatally acquired AIDS (PA AIDS) median age at diagnosis was 1 year (range 0.1-12.3 yrs) and incubation period shorter (1.75 years). Median survival after the diagnosis was similar between TA AIDS and PA AIDS (13.7 vs 14.3 months)(2).

The most common infections reported in pediatric AIDS are *Pneumocystis carinii* pneumonia (PCP), recurrent severe bacterial infections, oral candidiasis, cytomegalovirus and *Mycobacterium avium* infections(1,2,8,9). Our patient has so far had three episodes of lower respiratory tract

infections. Recurrent or serious bacterial infections (pneumonia, septicemia, cellulitis, abscesses, meningitis) have been seen to occur before symptoms of AIDS become evident(9,10). However, a prospective case control study showed that HIV positive asymptomatic children had infections similar to those seen in matched controls whereas symptomatic children had much higher rate of infections like pneumonia and oral candidiasis(9). We suspected tuberculous infection but it could not be substantiated.

This young girl who has developed HIV infection following a single blood transfusion should act as a warning to all pediatricians, and blood or its components should only be transfused for definite indications. Further, all efforts should be made to use only those products which have been screened and found negative for HIV antibodies. It may be noted that the newer generation ELISA test kits have a very high sensitivity as well as specificity (99.9 and 99.8% respectively)(11-14).

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