Case Report

A Neonate with Petechiae and Pancytopenia at Birth as Uncommon Presentation of Congenital HIV Infection

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The authors describe a Thai newborn boy who was presented with petechiae, hepatosplenomegaly and pancytopenia at birth caused by congenital HIV infection. His clinical presentations were appeared on the early onset after birth. The bone marrow finding has shown hypocellularity which was also rare in HIV-infected children.

Keywords: *Newborn, Congenital HIV infection, Pancytopenia, Petechiae*

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Approximately 30 percent of HIV-infected infants who are not being breast-fed acquired the infection during gestation, however, the rate vertically-transmitted infection with human immunodeficiency virus (HIV) has decreased to less than 10% due to prevention programs by using antiretroviral regimen to reduce mother-to-child transmission (MCTC) during pregnancy, labor and post partum period in newborn baby. Usually, perinatally HIV-infected children have no symptoms at birth. Rarely, some newborns with symptomatic HIV infection have had intrauterine growth retardation, hepatosplenomegaly, pancytopenia, diffuse leukoencephalopathy, and early-onset *Pneumocystis jivoveci* pneumonia and have died early in life[1-3].

Case Report

A 7-hour-old newborn boy was transferred to the neonatal unit at Queen Sirikit National Institute of Child Health (Children's Hospital) with generalized petechiae. The patient had been delivered at Rajvithi Hospital at 36^{+} weeks' gestation to a 21-year-old HIV-infected mother with G_1P_0 who went-through cesarean section due to CPD. The Apgar score was 7 at one minute and 10 at five minutes. A diffuse petechial rash on the face, trunk, and over extremities was noted at delivery.

From ANC, the mother's prenatal serologic tests were negative for hepatitis B surface antigen, VDRL and FTA-ABS for syphilis, but serology for HIV was positive. She had had normal CBC findings during receiving an antiretroviral agent 2 months before delivery. The mother did not have a history of febrile illness, genital lesions, or rash during the period pregnancy.

The infant's temperature was 36.5°C, the pulse 140 beats per minute, and the respiratory rate 64 breaths per minute. The blood pressure was 59/35 mmHg. The weight was 2,750 g (AGA), the length 49 cm, the head circumference 34.5 cm, and the chest circumference 30 cm.

On physical examination, the infant appeared in mild pallor and respiratory distress with acrocyanosis; his general features were not dysmorphic. Multiple petechial rashes were present on his face, trunk, arms and legs. No lymphadenopathy was found. The anterior fontanelle was open and flat. The eyes showed no microphthalmia, icterus, or cataracts; the retinas were not examined. The lungs and heart sounds were normal. The abdomen was soft; the spleen was palpable 3.0 cm below the left costal margin, and the liver edge 3.0 cm below the right costal margin. The arms and legs were well perfused. Muscle tone was good throughout, with appropriate Moro's and sucking reflexes.

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Table 1. Laboratory data: CBC

CBC	7 hours	Day 2*	Day 3	Day 5	Day 8*
Hct (%)	33.6	36.9	40.5	37	29.7
Hb (g/dl)	10.9	12.3	13.7	12.4	9.6
RBC (/mm^3)	3,450,000	4,020,000	4,430,000	4,030,000	3,190,000
MCV	97	91.7	90		
MCH	31	30.6	30.9		
MCHC	22	33.4	34		
WBC (/mm^3)	3,600	7,300	6,300	8,000	4,000
Neutrophil (%)	17	53	58	16	48
Lymphocyte (%)	70	42	29	61	40
Monocyte (%)	6	4	5	9	8
Eosinophil (%)	-	-	-	1	
Atypical lymphocyte (%)	7	-	4	8	
Band form (%)	-	1	4	5	4
Platelet count (/mm^3)	37,000	57,000	35,000	13,000	23,000

* Packed red cells and platelet transfusion

Table 2. Laboratory: serology and culture

Investigations	Results
Screening for anti HIV	Positive
HIV-1 PCR (Day 2)	Positive
VDRL	Non reactive
TORCH titer	Negative
Mararial film smear	Not found
Blood culture	No growth

For several hours in the incubator and O_2 box 5 liter per minute, the infant's heart rate was in the range of 134 to 170 beats per minute. The respiratory rate was 50-60 times per minute, with arterial oxygen saturation 95% or more. The results of laboratory tests were given in Table 1 and 2.

Peripheral-blood smear showed hypochromia 1^+, anisocytosis 1^+, and poikilocytosis 1^+. Coagulograms were normal. The levels of total bilirubin 3.34 mg/dl, direct bilirubin 0.79 mg/dl, total protein 5.74 g/dl, albumin 3.67 g/dl, aspartate aminotransferase 84 U/L, and alanine aminotransferase 5 U/L. The chest and long bone radiographic were unremarkable. The patient was started on ampicillin and gentamicin and was transfused with 10 ml/kg of PRC and 1 unit of platelet concentration on the first day of life after specimens of blood was obtained for culture and serologic studies.

On 8th day of life, bone marrow aspirate was performed to evaluate persistent pancytopenia. The marrow revealed severe hypocellularity with decreased number of erythropoietic, myelopoietic and megakaryocytic series. Hemophagocytic activity was not seen. The immunologic status was evaluated and corticosteroid was given at dose of 2 mg/kg/day due to progressive thrombocytopenia and anemia[4]. One week later, two antiretroviral drugs, d_4T and 3TC, were added due to CD_4 count less then 1,500/mm^3 (CD_4 count 1,227). After corticosteroid and antiretroviral drugs therapy, his condition was improved.

At 7 weeks of age, severe pneumonia with respiratory failure, which suspected *Pneumocystis jivoveci* infection, had developed, and 3 times of PRC transfusion were given. He was diacharged home at 10 weeks of age, receiving trimethoprim/sulfamethoxazole, d4T, 3TC, low dose prednisolone (0.7 mg/kg/day), multivitamin drop, and ketoconazole. At discharged, his CBC revealed Hct 30.2%, Hb 9.9 g/dl, WBC 13,200/mm^3 (N 26%, band 3%, L 45%, Mo 23%, ATL 3%), Platelet count 167,000/mm^3. Corticosteriod was tapered-off soon after his pancytopenia recovery 1 month later. He was followed up until 6 years old before being referred to a regional hospital due to change of residence.

Discussion

Hematologic manifestations of pediatric HIV infection such as anemia, neutropenia, and thrombocytopenia were not unusual. Anemia is the most common abnormality seen in HIV-infected children. Thus, as many as 70% to 80% of HIV-infected patients develop anemia during the course of infection, while

neutropenia may be observed in 26-38% of individuals with more advanced HIV-related immunodeficiency. Thrombocytopenia is also common, occurring in approximately 40% of patients, and serving as the first symptom or sign of infection in approximately 10% of HIV-infected patients[5-8].

These abnormalities have been correlated with the severity of disease, age, and use of antiretroviral agents. HIV infection is also associated with numerous abnormalities of hematopoiesis, affecting both the myeloid and lymphoid lineages derived from the hematopoietic stem cell. The defect in bone marrow production of platelets can be caused by direct HIV-related suppression.

Although hematological complications are common in HIV-infected children and adults, there is very limited information regarding pancytopenic presentation in the neonate[3]. Mostly all infected newborns are asymptomatic at birth and do not develop clinical symptoms until at least 3-6 months of life. However, some newborns have symptomatic HIV infection a few days after birth, which indicates vertical HIV transmission may occur early in pregnancy. A small number of previous reports described that aplastic anemia has been reported in literature as a complication of HIV. Bone marrow changes in HIV disease are non-specific and not pathognomonic[9-13]. The most common bone marrow abnormalities are decreased cellularity and myelodysplasia[14]. Several mechanisms have been implicated and it may be possible that multifactor results pancytopenia. In this case, HIV-1 has been postulated to the cause of bone marrow suppression. CD34+ cells express m RNA for HIV-1 co-receptors CXCD-4 (fusin) and CCR-5. Furthermore, the bone marrow stromal cells can be infected with HIV-1, which may contribute to their decreased function[15,16]. Drug administration to a mother to prevent MTCT regimen is less likely the cause of pancytopenia in neonate[17-19]. This baby showed clinical symptoms of intrauterine HIV infection at birth compared to other congenital infections.

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รายงานผู้ป่วยทารกแรกเกิดแสดงอาการจุดเลือดออกตามตัวและ pancytopenia จากการติดเชื้อ HIV ตั้งแต่ในครรภ์มารดา

สมใจ กาญจนาพงศ์กุล, วราภรณ์ แสงทวีสิน

ผู้ป่วยทารกแรกเกิดเพศชายแสดงอาการจุดเลือดออกตามตัว ตรวจพบตับม้ามโตและ pancytopenia เนื่องมาจากการติดเชื้อ HIV ตั้งแต่ในครรภ์มารดา ผลการตรวจไขกระดูกพบมีการสร้างเม็ดเลือดชนิดต่าง ๆ ลดลงมาก อาการแสดงตั้งแต่แรกเกิดนั้นพบได้น้อยรายมากในรายงานจากต่างประเทศ และยังไม่มีรายงานผู้ป่วยลักษณะนี้ในประเทศไทย