Postpartum Antiretroviral Prophylaxis with Zidovudine, Lamivudine, and Nevirapine during Intrapartum HIV Infection

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Abstract

Perinatal transmission of HIV constitutes 90% of all childhood HIV infections worldwide. The most important prevention strategy for HIV transmission is early diagnosis and taking preventive precautions. Different treatment strategies have been suggested for prophylaxis in infants of mothers with (HIV) infection, who did not receive antenatal antiretroviral therapy. In this report, we present the case of a neonate whose mother did not receive antiretroviral therapy before and during labour; however, she was prophylactically treated with zidovudine, lamivudine, and nevirapine successfully. We recommend that this three-drug combination should be used for postpartum HIV prophylaxis. *(J Pediatr Inf 2015; 9: 178-80)*

Keywords: Antiretroviral prophylaxis, HIV, intrapartum, postpartum

Introduction

Acquired immunodeficiency virus (HIV) is the cause of an important health problem responsible for the infection of 40 million people all over the world. AIDS cases in children were initially defined in 1982. Sub-Saharan Africa is the region where all HIV cases are seen most frequently with 67% and where 91% of the cases are children (1). Perinatal spread is responsible for 90% of the paediatric AIDS cases and nearly for all the new paediatric AIDS cases (2).

The best way of protecting child health is to detect the HIV infection during pregnancy, treat the mother with medication and arrange birth planning in order to avoid infections. If the mother has not been tested during pregnancy or birth, the new born baby is recommended an HIV test within the 24 hours after birth. The treatment commenced within 48 hours help to protect baby from the exposed virus infection.

In this study, we shared our experience of the effectivity of triple zidovudine, lamivudine and nevirapine prophylaxis in preventing intrapartum HIV infection of a case born out of the non-followed-up pregnancy of a HIV (+) mother.

Case Report

The neonatal baby with a 32-year old mother who was not followed up in her pregnancy as Gravida 3 Parity 3 Alive 3, with normal vaginal delivery, at home birth weight of 2870 gr and unknown gestational age was taken to another clinic. The patient, who had an anti-HIV antigen test and whose mother was H1V (+), was admitted to our hospital for further examination and treatment. It was learnt that the mother did not receive any treatment regarding HIV infection and did not get continuous intravenous zidovudine infusion before and during the birth. It was learnt that mother of the patient was under treatment due to HIV infection in another clinic. In her physical examination, general situation was mid-good, conscious, and normal hydration. The patient whose peak heart rate was 125/minute, respiratory rate 40/minute, blood pressure 88/47 mmHg was found to have 3x3 cm and anterior fontanel orifice and normal neonatal reflexes. There was no organomegali, and other system examinations were normal. In the laboratory evaluation, haemoglobin level was 14.4 gr/dL, thrombocyte count 302000/mm^3, white blood cell

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count 22300/mm^3, neutrophil in the peripheral blood smear evaluation neutrophil (PNL) ratio was 70%, and lenfo-monositer cell ratio 24%. Blood glucose level was 72 mg/dL, blood urea nitrogen level 24 mg/dL, creatinine level 0.78 mg/dL, sodium value 134 mEq/dL, aspartate transaminase level 60 IU/L, alanine transaminase level 11 IU/L, total bilirubin level 1.57 mg/dL, and direct bilirubin level 0.4 mg/dL. C-reactive protein level was found as 0.32 mg/dL. It was found that complete urine test was normal. Posterior-anterior chest radiography was normal. Since the mother gave birth at home in a non-sterile environment, tetanus prophylaxis was applied. The patient was given 12 mg zidovudine 2 doses a day; 6 mg lamivudine 2 doses a day and 12 mg nevirapine as a single dose. The second dose of nevirapine was given 48 hours after the first dose and the third dose 96 hours after the second dose. The patient was given fluconazole and TMP-SMX treatment for the purpose of prophylaxis. In the follow-up tests, the patient whose absolute lymphocyte count was 2300/mm^3, CD4 value 1190/mm^3, and CD8 value 790/mm^3 was estimated to have 1.5 CD4/CD8 rate. It was found that HIV PCR result of the patient was negative. On the 14th day of the treatment, HIV PCR was re-evaluated; it turned out to be negative. Lamivudine was given for two weeks. Zidovudine was planned to be continued as the same dose for 6 weeks. The patient whose general condition was good was discharged with some recommendations. In the policlinic follow-ups, the HIV PCR result that was sent on the 6th and 15th months was negative; the one sent after 18th month was anti-HIV negative.

Discussion

90% of the childhood HIV infections worldwide are related to the perinatal transmission of HIV. It was reported mother to baby HIV transmission risk was 20-45% (3). Since vertically-HIV- infected children have shorter latent period in comparison to those children infected through other ways and the disease progress more rapidly, the precautions to be taken in order to reduce especially vertical transmission are crucially important (4). Regarding the prevention of perinatal HIV infection, some precautions should be taken in the three stages (in utero, intrapartum and postnatal with breast milk) where transmission to foetus or infant can occur. These are; supressing the virus load in the mother at a maximum level through combined antiretroviral treatments and caesarean section at the time of birth and not to give breast milk (5). The mother of our case failed to go to doctor controls during pregnancy and receive any antiretroviral treatment. At the same time, the fact that the mother had normal birth and the birth took place in domestic conditions increased HIV infection risk of the patient many times. Since the patient would not be together with the mother due to social reasons, no additional recommendations were suggested as breast milk should not be given.

In the antiretroviral treatment, one of the basic components of an approach to a neonatal born to a HIV-infected mother, zidovudine should be given 8-12 hours after birth and be given with the dose of 2 mg/kg every 6 hours for 6 weeks. In infants born to mother who received very little or no prenatal care or infants who were thought to have increased clinical or virological transmission, a second agent can be added. Lamivudine can be given together with zidovudine for 6 weeks every 12 hours in dose of 2 mg/kg. As an alternative, if the mother did not get any nevirapine during the perinatal period, it can be given as 2mg/kg dose at birth; and at the 48-72nd hour, single additional dose can be given (6, 7).

In some international combined antiretroviral treatment studies, it was demonstrated that the brief use of antepartum, intrapartum and postpartum in some period and zidovudine, lamivudine and nevirapine alone or in combined use prevented the transmission of HIV from mother to the infant in an effective way. The first recommended treatment in centres with limited sources, on the other hand, is to give zidovudine in the shortest period possible in the trimester and additionally single dose nevirapine to the mother and infant (6).

It was demonstrated that combined antiretroviral treatment was more effective than single-drug treatment. The data recommend that if possible, a triple therapy inclusive of either two nucleoside analogue reverse transcriptase inhibitor and along with it either one protease inhibitor treatment is to be used (6). The target of the treatment is to suppress the virus as far as the undetected levels (8).

Later, the effectivity of antiretroviral drugs in reducing the transmission of HIV from the mother to the infant is given after the birth, the more it decreases (9). It was reported that if protective treatment was begun before the birth, contamination was 6.1%; during pregnancy, 10%; after birth, in the first 48 hours, 9.3%; after the third day, 18.4%; when the protective treatment was not given, contamination, transmission rate was 26.6% (10). It was observed that when prophylaxis was given after the first 48 hours following the contact, it was not effective in preventing the transmission in majority of the infants and when these infants were 14 days old, the infection was settled in most of them (9).

In the study by Nielsen-Saines *et al*. (11) in which 1684 infants born to mothers diagnosed with HIV-1 infection in the peripartum period, fed with formula and divided into 3 groups within the 48 hours after the birth and were given 3 different treatments, then the researchers pre-

sented the alternative treatment options. In this study, one group was only given zidovudine for 6 weeks, and the second groups, in addition to zidovudine, was given 3 doses nevirapine in the first 8 days of their lives. The third group, on the other hand, was given lamivudine or nelfinavir for 2 weeks in addition to zidovudine. It was reported that the rate of patients who were observed to have intrapartum transmission in the first group two times more than the 2nd and 3rd groups and in conclusion, double or triple antiretroviral prophylaxis was recommended to the infants of the mothers who did not receive antiretroviral treatment during pregnancy (11).

In a case study in Turkey, Özkaya *et al*. (2) reported that an infant whose the mother did not attend any doctor control in the last two years and did not receive antiretroviral treatment during her pregnancy was given 2 mg/kg/dose, four times a day zidovudine treatment for six weeks and it turned out that the treatment was successful. In this case whose HIV viral load in the cord blood at birth was negative and whose HIV antibody was positive, it was reported that antibody of the patient turned negative in the third month in the first month and third month controls (2).

Conclusion

In our case, the infant whose mother who was HIV (+) and who was not followed up in her pregnancy was not given inutero and intrapartum antiretroviral treatment. It was observed that the triple antiretroviral treatment consisting of zidovudine, lamivudine and nevirapine was effective. Therefore, it should be remembered that in infants with HIV (+) mothers who were not given inutero and intrapartum antiretroviral treatment, the combined treatment, in addition to zidovudine treatment, can be effective in preventing the intrapartum HIV infection.

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