

HIV Transmission associated with Food Offer for a Child through An Infectious Caregiver - Case Report

Ana RB Alfenas^{1*}, Andrea L de Carvalho², Juliana DA Sampaio³ and Roberta MC Romanelli⁴

¹Medical Student, Faculdade de Ciências Médicas da Universidade, José do Rosário Vellano, Brazil

²Master in Pediatrics, Universidade Federal de Minas Gerais, Brazil

³Specialist in Orthodontics, Universidade Federal de Minas Gerais, Brazil

⁴PhD in Health Sciences/Child and Adolescent Health, Universidade Federal de Minas Gerais, Brazil

*Corresponding author: Ana Raquel Alfenas, R. Líbano, 66 - Itapoã, Belo Horizonte - MG, Brazil, CEP 31710-030; Tel: 55 31 34974300; E-mail: kelbalfenas@gmail.com

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Abstract

Objective: To describe a HIV infection case, in which transmission during gestation, childbirth and breastfeeding were excluded, considering the child presented negative viral load and negative serology after one year of life.

Case Description: A six years old child presented abdominal colic and acute diarrhea and she was assisted at an emergency care unit. Two HIV test presented positive results, HIV viral load was 16.274 copies/mm³ and lymphocytes TCD4+ count was 621 cells/mm³. In the medical history and gynecologic evaluation, sexual abuse was excluded. After a month, HIV viral load was 8.432 copies/mm³ and lymphocytes TCD4+ count was 691 cells/mm³. The mother presented poor oral hygiene and she denied contact with wounds, use of injectable drugs or blood transfusion by the child. Mother had a diagnosis of HIV infection during the pregnancy and reported appropriated antiretroviral therapy during pregnancy. Besides, she avoided breastfeeding and the child had negative viral load and also negative after one year of life, excluding probable vertical transmission.

Comments: It is necessary to discourage pre-chewing food to child after the breastfeeding period, in order to avoid infection transmission.

Keywords: Infection; Transmission; HIV; Mastication

Introduction

Around 90% of pediatric human immune deficiency virus (HIV) infections all over the world can be attributed to vertical transmission. In the absence of any intervention, the perinatal infection by HIV will happen in 20-45% of cases [1]. However, it is estimated that 13% of HIV and acquired immune deficiency syndrome (AIDS) diagnoses among children are attributed to other forms of infection such as blood transfusion [2,3].

The maternal-fetal transmission can occur during pregnancy, childbirth or breastfeeding [1]. However, in the last eight years, the occurrence of four cases of pediatric infections by HIV due to adults infected with HIV, and probably suffering from gingivorrhagia, chewing food before feeding a child, has been reported [1,4-7].

HIV screening is recommended for infected pregnant women, since PACTG 076 study. In Brazil, it started in the first decade of this century, with ordines by the Health Ministry [3].

Thus, the objective of the present report is to describe a case of HIV infection in which the transmission during pregnancy, childbirth and postpartum was excluded.

Case Report

C.V.M.M., female patient, six years old, was admitted to the emergency unit, complaining about abdominal colic and acute diarrhea, but no fever. She had used only simethicone to treat the symptoms. It was requested a rapid test for HIV, which presented a positive result. She was transferred to a Referral Infection Disease Hospital, where she was submitted to a new positive rapid test by a different method, followed by load viral 16.274 copies/ml and lymphocytes count T CD4+ (CD4) 621 cells/

mm³ (26,2%). Evidence of abuse was not identified and the gynecologic evaluation showed that the hymen was intact and that there were no other signs of anal sexual abuse. She was then followed by a Pediatric Infectious Diseases Specialist in an outpatient service and after one month, new exams presented viral load 8432 copies/ml and CD4 691 cells/mm³ (25,48%). The only relevant data in the history is the fact that the mother has poor oral hygiene, multiple extracted teeth and wide gingivitis with bleeding to periodontal survey. This woman has informed that she used to chew food before daily offering it to the child. In addition, she denied any contact with exposed wounds, use of injectable drugs, or blood transfusion by the child.

Prior History: Mother, 29 years old, maid, G4P4A0, third year of elementary school, nine prenatal visits. She had the diagnosis of HIV infection during the pregnancy of C.V.M.M. in the 28th gestational week and she presented CD4 226 cells/mm³ (19,01%) and viral load 37955 copies. On the 35th gestational week, she presented lymphocytes count of CD4 409 cells/mm³ (20,45%) and viral load of 1.502 copies. She has used antiretroviral for vertical transmission prevention – zidovudina (AZT), lamivudina (3TC) and lopinavir (LPV)/ritonavir(r) for four months reported in compliance. In the maternity, she received AZT 300 mg oral route in the moment of admission and a new dose three hours later, followed by elective cesarean section.

Newborn was at term, 2805 g birth weight, 48 cm length, cephalic perimeter 34 cm, Apgar 8/9. The mother was oriented to not breastfeed and she had the breasts bandaged after delivery. The child received prophylaxis with AZT 2 mg/kg four times a day for six weeks reported in compliance. Exams during the follow-up were: first undetectable viral load and CD4 2755 cell/mm³ (54,78%) at two months, second undetectable

load viral and CD4 2357 cells/mm³ (31,12%) at four months old. No co-infections were detected at seven (26/07/2010) and thirteen months of age (02/02/2011), she was submitted to serology ELISA for HIV, and both tests presented negative results.

Discussion and Conclusion

To avoid maternal-fetal transmission, the pregnant woman must realize her first HIV screening test at first prenatal visit ideally until the 14th gestational week. The HIV pregnant women must be submitted to at least three viral load exams during pregnancy and the last one should be performed from the 34th week on, to defined delivery route. The antiretroviral therapy must be started in any moment of pregnancy, aiming to reach undetectable viral load. Injectable AZT must be administered from the beginning of labor until the clamping of umbilical cord, and delivery should be a cesarian section, except for those woman whose viral load is undetectable after 34 weeks of pregnancy. The newborn must receive oral AZT in the very first four hours after the birth and it must be continued during four weeks of life. If the mother presents viral load greater than 1000 copies/ml in the last trimester or viral load is unknown, nevirapine must be added to AZT, which should be started until, at least, 48 hours after the birth [3].

Recommended procedures were performed for the pregnant woman in this case, who received prenatal monitoring and she used antiretroviral therapy (AZT/3TC/LPV/r). She received AZT during labor, by oral route. Prophylaxis for the newborn was also provided correctly. The baby received AZT 2 mg/kg immediately after the birth and it was maintained for six weeks.

Infant first viral load must be evaluated at six weeks of life or 2 weeks after prophylaxis is finished [3]. C.V.M.M. presented undetectable first viral load and it was repeated after the fourth month of life, which was also undetectable.

C.V.M.M. had a new negative serology for HIV after twelve months. It is considered that the child was not infected by HIV. The proportion of children that seroconvert at twelve months of age is 95% and, between 15 and 18 years of age, it is about 100%. Rarely, HIV non-infected children can show residual maternal antibodies until 24 months of life [3].

Nevertheless, at six years of age, C.V.M.M. presented acute diarrhea and she was submitted to a HIV rapid test, with positive result. Subsequently, she had two positive viral loads, confirming the diagnosis. In Brazil, AIDS cases under 13 years are registered as: 29,4% under one year of life, 44% from one to five years old, 17,5% from five to ten years old, 9,2% after ten years of age and 4,7% over than 14 years of age [3].

Normally, in the first six months of life, the infected child becomes more susceptible to gastrointestinal infections, and may show enteropathy with nutrients malabsorption, and chronic diarrhea as a result of HIV infection. In the majority of cases, there are no specific gastrointestinal pathogens and the remission of symptoms occurs with HIV treatment. Hepatosplenomegaly and lymphadenopathy are also common, as well as encephalopathy [3].

Older children can show recurrent infections or severe episodes of common infections in childhood, such as chickenpox, pneumonia and diarrhea. Hepatosplenomegaly, lymphadenopathy, growth problems, pubertal delay and expressive language delay with poor of school performance are also observed [3]. However, it must be remarked that the child in this case showed an acute and simple infection, what is not considered severe or atypical manifestation.

Therefore, HIV infection was confirmed in the case of C.V.M.M and vertical transmission, blood transfusion or use of injectable drugs was excluded. The probable infection occurred by mother's habitude of offering

pre-chewed food to the child. Family also had bad oral hygiene, providing the contact with blood, which also led to this hypothesis. Chewing and keeping the food in the mouth, for adjusting its temperature, before offering it to the child occurs in 3,9% of the Brazilian population. This practice has been described during the weaning, mainly, from the 7th to the 36th month of the child's life. Approximately 37% of these caregivers are black and the frequency of this practice is inversely associated to caretaker's age [2].

In 2009, Gaur et al. [8] reported three other cases in which the probable cause of HIV transmission was associated with chewed food offered to a child by an infected caregiver. Diagnosis was performed at 9, 15 and 39 months old, respectively. The complete investigation of others ways of infection was carried out. In two cases, the mother was seropositive and breastfeeding was forbidden. In the third case, the mother was seronegative, but the child was fed by a caregiver, who was seropositive. In two cases, oral hemorrhage was reported.

In 1993, in Miami-USA, a 15-month-old boy, previously healthy, was taken to a pediatric doctor due to a recurrent diarrhea and media acute otitis. ELISA tests and Western blot were carried out, with positive results and polymerase chain reaction (PCR) were not available [8,9]. The mother was submitted to a serologic test for ELISA, with negative results and she and the child lived with a seropositive great-aunt, who helped her to take care of the child using pre-chewing food before offering it. This woman presented gingivorrhagia and her sexual partner was seropositive and he used injectable drugs. On the other hand, the mother denied that they used needles at home and she reported no sexual abuse of the child. The phylogenetic analysis showed that the great-aunt was the source of infection.

In Miami, in 1993, a child of a HIV infected mother, was taken to Pediatric HIV screening. The child presented a negative ELISA test, with normal immunoglobulins and CD4 1700 cells/mm³. Thus, the mother and child did not receive antiretroviral prophylaxis. In 1995, after 39 months of monitoring, it was noticed that the child had anemia and recurrent cervical lymphadenopathy, with an abscess caused by *Mycobacterium fortuitum*. These signs associated to maternal history of cocaine abuse, led to the request of HIV-ELISA serology, Western blot and p24 antigen test and both were positive. CD4 count was 24 cell/mm³, indicating serious immunosuppression. According to the mother, she pre-chewed the food given to the child. After phylogenetic analysis, it was concluded that the mother was the HIV's source of infection [8].

The third case occurred in 2004, in Memphis (Tennessee, USA), where a nine-year-old girl was attended in an emergency healthy service, presenting fever, jaundice, oral thrush, nosebleed and growth deficit. HIV PCR presented 100.000 copies/ml. Around a month before, the girl was diagnosed with oral thrush and unspecific viral infection, diffuse erythema on the face, legs and arms, associated to allergic dermatitis. The mother had been submitted to antiretroviral therapy during the pregnancy, and she had started the use of nevirapine, stavudine and lamivudine, were subsequently substituted for AZT, zidovudine and tenofovir, due to low adherence. After 35 weeks of pregnancy, a cesarean section was carried out and the mother received intravenous zidovudine before the procedure. The child used of oral zidovudine during the first six weeks of life. Three viral loads were taken at 41, 60 and 118 days of life, respectively, and all of them had negative results. It was reported that the mother used to offer chewed food to the child and she had gingival bleeding and wounds in her mouth, besides low adherence of antiretroviral therapy. The phylogenetic analysis of the mother and the child's HIV-1 sequences showed that she was the source of HIV infection [8].

Recently, a similar case was reported in Chile [10]. A HIV infected pregnant received AZT/3TC/LPV/r and she was submitted to a cesarean section. Child was considered negative after three negative HIV-PCR and a negative serology at 18 months of age. After two years old the child

presented fever and diarrhea and had HIV positive serology. Sexual and transfusion infection was excluded and the possibly infection was chewing food.

There are evidences that pre-chewed food offers have been a practice for thousands years in all continents, in different societies, for cultural and/or religious reasons or for survival. According to Mazzeo et al. [1], the reported frequent reasons for offering pre-chewed food to children were: children's desire for the caregiver's food, fear of children's burn and an inherited family custom. Maritz et al. [7] also describe the following reasons: to estimate the food temperature, to encourage the child to eat and homogenize the food to become it supposedly more adequate. The foods frequently used in such practice are meats, fruits and beans [1].

It is considered that HIV patients with AIDS may have mucosal compromised which facilitate mixture of HIV-infected blood to chewed food [4,6,10]. It was also supported by phylogenetic confirmation in one of reported cases [8]. Besides HIV, this route transmission is also associated with higher risk of infection by other pathogens, such as Hepatitis B virus, *Streptococcus A* group, *Helicobacter pylori*, human *Herpes virus* and *Epstein-Barr virus* [1,2].

Thus, in order to avoid the postnatal HIV transmission, it is convenient to advise the breastfeeding worker about the substitution of maternal breastfeeding for infant formulas. In addition, pre-chewed food offers to children must be discouraged.

Conflict of Interest

Nothing to declare. Authors are supported by Universidade Federal de Minas Gerais and Prefeitura de Belo Horizonte.

Contribution to the Study

ARBA - aquisition of data, analysis and data interpretation; drafting the article and critically revision, final approval of the article.

ALC and RMCR- conception, design, aquisition of data, analysis and data interpretation; drafting the article and critically revision, final approval of the article.

JDAS- analysis anda data interpretation; drafting the article and critically revision, final approval of the article.

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