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# CHARACTERISTICS OF BABIES BORN TO HIV POSITIVE MOTHERS IN ULIN GENERAL HOSPITAL BANJARMASIN JANUARY – DECEMBER 2020

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**Abstract:**

The high incidence rate of mothers with Human Immunodeficiency Virus (HIV) increases the potential of vertical transmission to the baby. HIV is a group of retroviruses that attacks the immune system. It can be transmitted through the exchange of various body fluids from the infected person, such as blood, breast milk, semen, and vaginal fluids. HIV can also be passed from a mother to her child during pregnancy and childbirth. Transmission of HIV from mother to baby is called a vertical transmission and may occur in 3 ways, including antenatal, perinatal, and postnatal (breast milk). This study aims to describe the characteristics of babies born to HIV positive mothers at Ulin General Hospital, Banjarmasin during January-December 2020. This is a descriptive observational study using secondary data from medical records of the babies born to HIV mothers at Ulin General Hospital, Banjarmasin. We include 13 cases of babies born to HIV-positive mothers. The characteristics of the babies were male (53.8%), born without asphyxia (92%), has normal birth weight (84.6%), full-term (92%), and 84.6% of babies were delivered through C-section. The results showed that it is necessary to work together with various fields to get early intervention for each baby.

**Keywords:** Neonates; Mothers; Confirmed HIV

## Introduction

Human Immunodeficiency Virus (HIV) is a group of retroviruses that attacks the immune system. HIV can be transmitted through the exchange of various body fluids from an infected person, such as blood, breast milk, semen, and vaginal fluids. HIV can also be passed from a mother to her child during pregnancy and childbirth. Therefore, HIV infection is not only found in adults but also in infants. Transmission of HIV from mother to baby is called a vertical transmission and can occur in 3 ways, including; intrauterine, intrapartum, or postpartum (breastfeeding). HIV slowly weakens the immune system progressively and if not managed properly, patients can no longer be protected from various diseases, especially infections, so that sufferers will often experience various health problems, such as diseases caused by fungal infections, tuberculosis, to malignancy. This condition is called AIDS (Acquired Immune Deficiency Syndrome). [1,2]

Since being discovered in the United States in 1981, the number of people living with HIV and AIDS until 2018 has continues to raise and has developed into a major global health issue, which has so far killed more than 35 million people. HIV occurs in almost 90% of developing countries. Every day, 700 children are born with HIV, and 290 of them die.3 Without access to antiretroviral (ARV) therapy, one-third of these children will die by 1 year of age and one person will die by 2 years of age. Nine out of ten children are infected during pregnancy, childbirth, and breastfeeding.[4]

According to The Joint United Nations Programme on HIV/AIDS (UNAIDS), 1.7 million children worldwide were infected with HIV with 160,000 new cases of infections in 2018. Meanwhile, cases of HIV infection for the age in range 0-14 years reached 3,500 cases. Based on the data from the Indonesian Ministry of Health in 2018, HIV cases in children aged <4 years was 2.1%. Early infant diagnosis in Indonesia, according to UNAIDS in 2018 was still very low, which indicates that the number of HIV diagnoses in children is still relatively low.[5]

Data on HIV cases in Indonesia continues to increase from year to year. HIV cases reached their peak in 2019, which was 50,282 cases. Based on WHO data in 2019, there were 78% of new HIV infections in the Asia Pacific region. The total HIV infection reported in South Kalimantan province in 2019 was as many as 462 cases. The number of HIV infections in 2010-2019 was reported based on age group. The age group of 25-49 years or productive age is the age with the highest number of HIV infection sufferers each year. The high cases of HIV infection and its dominance in the housewife group are very likely to cause the increasing vertical HIV transmission.[1]

These mothers are at a high risk of delivering babies with HIV. The risk increases if there is a co-infection happening with the mother, such as tuberculosis (HIV/TB). This co-infection is the most common one in these populations and increases the risk to transmit TB and HIV to the infants—worse outcome—premature delivery, low birth weight baby, and death.[6]

These mothers are at a greater risk to experience preterm birth, to have infants with low birth weight and low APGAR (Appearance, Pulse Rate, Grimace, Activity Response, Respiratory Rate) score which is less than 7. Yaghoubi et al. did a meta-analysis of cohort studies that examine the relationship between HIV infection in pregnant women with low-birth-weight babies and prematurity. From the 52 cohort studies, the total number of infants with LBW was 15,538 infants and 200,896 infants were born prematurely. The prevalence of infants born to HIV-positive mothers at <37 weeks' gestation ranged from 5.2% to 73.0% compared to pregnant

women without HIV infection which only ranged from 2.2% to 32%. Meanwhile, the prevalence of LBW ranged from 3.4% to 56.0% in mothers with HIV and only 2.5% to 36.9% in mothers without HIV. Without treatment and/or other interventions, the morbidity and mortality of children with HIV are very high. It is estimated that 50% of children infected with perinatal HIV will die in the first year of life, and another 20% will experience the same thing only within the first 3 months of life.[6]

To solve this problem, PMTCT (prevention mother to child transmission) is held, a program that aims to prevent vertical HIV transmission; in Indonesia known as the PPIA (Program Pencegahan Penularan HIV dari Ibu ke Anak). This program consists of 4 pillars, including; 1) prevention of HIV transmission in women of reproductive age; 2) promotion of planned pregnancies in women with HIV; 3) prevention of HIV vertical transmission; and 4) provision of psychological, social, and nursing support to patients and their children and families. The guidelines for this program are contained in Permenkes No. 51 of 2013 concerning guidelines for preventing mother-to-child transmission of HIV. The core of the PPIA is listed in the 3rd pillar, which includes integrated ANC (antenatal care) to diagnose HIV, providing ARV for pregnant women with HIV, administration regimen of ARV as prophylaxis in newborn, prophylactic antibiotics, selection of nutrition for infants, and delivery methods, immunizations to prevent children from being susceptible to opportunistic infections. The implementation of this program is certainly not without challenges, including the implementation of PPIA services which are still relatively minimal. It is necessary to increase cooperation in various fields to be able to realize the 4 pillars of PPIA because with the implementation of an optimal and comprehensive program, the characteristics of infants born to HIV mothers can be known, ranging from the status of infants to HIV infection, prematurity, and low birth weight, to infectious disease, status.[7,8]

Mittal et al. did a meta-analysis to combine data from 8533 pairs of mother-infant showed that the likelihood of transmission of HIV from mother to infant is approximately 87% lower if the operation is done before spontaneous delivery and the ARV therapy is given during the antepartum, intrapartum, and postpartum, as compared to other delivery means and not their treatment.[9]

HIV infection is associated with reduced newborn weight, APGAR scores, and other evaluation of neonatal outcomes. Research conducted by Jao et al. on 36 pregnant women with HIV shows that all infants were born with weight < 2700 gram and APGAR scores <7.[10]

## Research Method

The study was conducted at Ulin General Hospital, Banjarmasin. This is descriptive observational study. Data were obtained from the medical records of patients born to mothers infected with HIV at Ulin General Hospital, Banjarmasin during January–December 2020. The initial phase of data was collected from the entire infants born to mothers with suspected HIV. We obtained 45 babies born to mothers suspected of HIV. Furthermore, the data showed 13 babies to be infected—6 of them were female and the rest were male. The APGAR score of one infant was 8-9-10, 10 infants were 7-8-9, one infant was 6-8-9, and one infant was 1-2-4.

## Results

### Characteristics of research subjects

Table 1 shows the characteristics of 13 infants born from infected mother included in this study.

**Table 1** Characterstics of Subjects

| Variables | N | % |
|---|---|---|
| Maternal risk factors | | |
| Age | | |
| <20 years | 0 | 0 |
| 20 – 35 years | 11 | 84.6 |
| >35 years | 2 | 15.4 |
| Number of delivery | | |
| I | 4 | 30.7 |
| II | 4 | 30.7 |
| III | 4 | 30.7 |
| IV | 0 | 0 |
| V | 1 | 7.7 |
| Occupation | | |
| Work | 3 | 23.1 |
| Housewife | 10 | 76.9 |
| Education | | |
| No formal education | 1 | 7.7 |
| Primary School | 0 | 0 |
| Junior High School | 4 | 30.7 |
| Senior High School | 6 | 46.2 |
| College | 2 | 15.4 |
| Paternal Risk Factors | | |
| Age | | |
| <20 years | 1 | 7.7 |
| 20 – 35 years | 6 | 46.2 |
| >35 years | 6 | 46.2 |
| Occupation | | |
| Work | 13 | 100 |
| No Work | 0 | 0 |
| Education | | |
| No formal education | 1 | 7.7 |
| Primary School | 1 | 7.7 |
| Junior High School | 3 | 23.1 |
| Senior High School | 4 | 30.7 |
| College | 2 | 15.4 |
| Obstetric Risk Factors | | |
| Gender | | |
| Male | 7 | 53.8 |
| Female | 6 | 46.2 |
| Types of delivery | | |
| Spontaneous/normal delivery | 2 | 15.4 |
| Sectio Caesarea | 11 | 84.6 |
| Delivery Risk Factors | | |
| Breech presentation | 3 | 23.1 |
| Premature Rupture of Membrane | 2 | 15.4 |
| Fetal Risk Factor | | |
| APGAR Score | | |
| <7 | 1 | 7.7 |
| ≥7 | 12 | 92 |
| Newborn Weight | | |
| LBW (< 2500gr) | 2 | 15.4 |
| Normal Weight (≥ 2500 gr) | 11 | 84.6 |
| Prematurity | | |
| Preterm (GA <37 week) | 1 | 7.7 |
| Term (GA ≥ 37 week) | 12 | 92 |

## Discussion

From thirteen cases, the majority of women aged 20 – 35 years old (84.6%) and the rest aged >35 years old (15.4%). The results of this study are in accordance with research conducted by Sitepu that stated HIV/AIDS data by age shows that the cases in Jember Regency are dominated by those in productive age and sexually active. This condition may transmit the disease more easily through sexual intercourse. The results of this study are also in line with Darmayasa's research which stated that there is a relationship between maternal age and HIV infection in Bali. HIV infection in housewives occurs at the age of under 31 years in Bali. This relates to biological vulnerabilities and pre-existing and untreated sexual transmitted infections. Women aged younger tend to perform sexual intercourse with older men who most likely have performed risky sexual activity before.[11]

There are four phases of the natural history of HIV infection in a state of pregnancy, namely: primary phase (up to 10 weeks post-incubation of the disease), early disease phase (10 weeks to 5 years), intermediate phase (5 years to 10 years), and the final phase (more than 10 years). Therefore, women infected with HIV often come in the intermediate phase, where if risky sexual intercourse is carried out in their early 20s or late teens, the housewives will only get checked 10 years later. Their self-examination was caused by the appearance of clinical symptoms in this intermediate phase, such as fever, weight loss, skin complaints, minor infections, and TB infection (tuberculosis). Because in the early stages of the disease, it is usually asymptomatic, so that when screening for HIV infection, pregnant women with HIV infection will be found in the age range of 30-40 years. Initial entry of HIV into the body has started 5-10 years before.[12]

There were 4 people ( 30.7 % ) who delivered their first babies; 4 people ( 30.7 % ) who delivered their second babies, 4 people ( 30.7 % ) having their third pregnancies, and one person ( 7.7 % ) delivering her fifth pregnancy. Results of the study are the same as the research that was carried out by Sang Putu in the year 2015 which found that 73 people (46.49%) delivered their first children while having HIV.[13]

There were 10 people (76,9%) who worked as housewives and the latter work outside of the house (23,1%). The results are consistent with research that has been done by Abidah in the year 2017, which is to get the result that jobs are most is the motherhouse of stairs by 73%.14 Research of Tan May stated that most pregnant patients with HIV/ AIDS are housewives who got HIV from her husband, ex-husband, or partner of his so that it might be possible if the husband's works affect the occurrence of HIV / AIDS in this group.[15]

There were 6 people (46.2%) who graduated from senior high school, followed up by 4 people (30.7%) who graduated from junior high school, 2 people (15,4%) finished college, and one person who didn't receive a formal education (7,7%). This research is following the result of Tan Mei which stated that most of the respondents have a quite high educational status. The level of education is often related to one's knowledge—the lower the level of formal education, the smaller the opportunity to obtain information about something. [15]

Two women underwent spontaneous labor (15.4%), and the rest underwent C-sections (84.6%). Mittal et al. showed that the possibility of HIV transmission from mother to child is around 87% lower with C-section.9 This is also following Tin Mei's research (2017). The majority of delivery methods for pregnant women with

HIV/AIDS is Sectio Caesarea (SC). It was performed because it may have an important effect in reducing the incidence of vertical transmission. Most pregnant women with HIV/AIDS at the HAM RSUP underwent a C-section because they had had C-section before.

There were two infants (15,4%) born with LBW (weight < 2500gr) and the rest (84,6%) had normal weight (weight ³ 2500 gr). There was one (7,7 %) preterm baby (GA <37 weeks), and the rest (92%) were normal (GA ³ 37 weeks). The condition is not following the research Jao et al stated—babies who are born from infected mothers have a higher risk to experience LBW and premature birth. The infection tends to affect the healthiness and ability to survive.[10]

There were two people (15,4%) with risk factors of PROM (Premature Rupture of Membrane). In Fachriza's research, it was found that there were 5 (4.2%) cases of HIV-positive cases, while HIV-negative cases were not found in PROM cases. In patients who did not experience PROM, 11 (9.2%) cases were found, while 104 (86.7) HIV-negative cases were found. This shows that there is a significant relationship between PROM and the vertical transmission of HIV. The analysis also found a PR value of 1.96. This shows that the incidence of PROM over 4 hours increases the transmission of HIV from mother to baby by 1.96 times.[16]

One baby (7.7%) had an APGAR score <7 while the rest had it >7 (92%). This result is not following Anyanwu's which showed that infected mothers tended to deliver babies with low APGAR scores. Maternal HIV infection has been associated with the birth of babies in poor conditions, i.e. premature birth, low birth weight, and intrauterine growth restriction. HIV-positive pregnant women have the potentials to give birth to babies with low APGAR due to asphyxia which causes decreased synthesis and secretion of fetal lung surfactants. Differences in the result of the research are because our hospital had already set prevention strategies, such as carrying out C-sections in patients with HIV. After all, it can reduce the risk of transmission. This also happened due to the size differences of the sample.[17]

## Conclusions

The characteristic of babies born from the HIV mother was 53,8% male infants, 92% babies born with APGAR score of 7-8-9, 84.6% babies born with normal weight, and 92% were term. According to the methods of delivery, the majority was carried out via C-section (84.6%). Cooperation among various fields of study is required to reach optimal and comprehensive results for the babies born from infected mothers so early intervention can be given according to the needs of the infant.

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