Congenital syphilis in neonates: a case report

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ABSTRACT

Background: Congenital syphilis (CS) in neonates is diagnosed when Treponema pallidum was identified in a laboratory test of neonates infected by mothers with syphilis. Recently, CS is still a significant and growing health problem worldwide despite being preventable. This case report will provide an overview of CS management conducted at our center, Sanjiwani Hospital, Gianyar, Bali-Indonesia.

Case presentation: We report a case of CS in a newborn female neonate with the positive result of TPHA and VDRL titer 1/128 from a mother diagnosed with the latent phase of syphilis infection. On physical examination found subcostal retraction of the chest, grunting on auscultation, and jaundice. The treatments given include oxygen via cannula nasal with 2 liters per minute, intravenous access with dextrose 10%, the antibiotic combination of cefotaxime 125 mg every 12 hours and gentamicin 12.5 mg every 24 hours. For the management of CS, the patient was given Benzathine Penicillin G at a dose of 125,000 IU single dose intramuscularly. Phototherapy was assisted the patient for 48 hours to manage the hyperbilirubinemia. The patient was discharged on the eighth day of treatment with oral antibiotic cefixime 12.5 mg every twelve hours for three days.

Conclusion: The entity of CS is a disease suffered by infants with clinical manifestations or examination supporting the diagnosis of syphilis. The mother should do a screening during her pregnancy to prevent untreated syphilis and its complications for her babies.

Keywords: Congenital syphilis, laboratory test, newborn, Treponema pallidum


INTRODUCTION

Congenital syphilis (CS) occurs when a subspecies of Treponema Pallidum, such as pallidum, infects the fetus of a woman who has previously been infected by syphilis either in the primary or secondary phase.1–2 Entity of CS is a syphilis disease suffered by infants with the clinical manifestations supporting the diagnosis of CS; or the discovery of T. pallidum in lesions, placenta, umbilical cord or tissue autopsy.1–3 The symptoms and clinical manifestation of this disease may not become apparent until several weeks or months after birth and, in some cases, may take years to appear.2–3 Neonatal period will give early manifestation of syphilis, including aseptic meningitis, seizures, skin rash, and neonatal death.1–4 The CS may also manifest as latent infection leading to later sequelae.2–4

Even though CS is a rare disease, over 90% of the cases of congenital syphilis occur in low-income countries.5 Optimizing the screening for syphilis among pregnant mothers during antenatal care and treating those found CS positive would be cost-effective and avert the global situation.6 Maternal syphilis screening and treatment have been recognized as part of essential antenatal care globally. However, the coverage rates remain low because of poor availability of screening tests in health facilities and pregnant mothers reporting late in pregnancy for their 1st antenatal visit.7 The treatment failure risk is increased in fetuses of mothers who are diagnosed and have treatment initiated late.1–3 The newborns whose mothers have syphilis but have not been treated tend to have worse adverse outcomes than those born to mothers who received proper treatment.3,4 This case report will provide an overview of CS management conducted at our center, Sanjiwani Hospital, Gianyar, Bali-Indonesia.

CASE PRESENTATION

A baby girl was born through cesarean delivery from a mother diagnosed with G2P0100 at 38 weeks one day, rupture of membrane over 12 hours, and syphilis infection in latent phase with ongoing treatment status. The delivery process was assisted by an obstetrician at the Sanjiwani Hospital, Gianyar. The baby was born with a weight of 2500 grams, did not cry immediately, body length was 50 cm, head circumference was 34 cm, chest circumference was 32 cm, there was an anus, with an Apgar score of 3-5. The patient’s mother was diagnosed with latent syphilis infection and received treatment eight times (as found in the injection...
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therapy form by the patient) but had not finished. There were no complaints related to the mother's illness.

On initial physical examination in the neonatal intensive care unit (NICU) room, vital signs were found within normal limits, oxygen saturation was 100% using cannula oxygen, with subcostal retraction of the chest, grunting on auscultation, and jaundice. The patient underwent several supporting examinations, such as a complete blood count found leucocytosis 37.56 x 103/μL and neutrophilia 78.2%, measurement of IT Ratio found 0.27, VDRL titer 1/128 and positive TPHA, as well as the examination of bilirubin levels with result hyperbilirubinemia.

From the history taking, the patient became the first child. The patient's mother had a history of fetal death with a gestational age of approximately seven months in February 2020 due to an undeveloped fetus. The patient's mother had routine pregnancy checks with an obstetrician for this patient's pregnancy. Moreover, the patient's mother had a syphilis titer examination, and it was stated that the last result (March 2021) was positive with a titer of VDRL 1/64 and had been given an explanation regarding the risk of giving birth to her baby.

The treatments given include oxygen via cannula nasal with 2 liters per minute, intravenous access with dextrose 10%, the intravenous antibiotic combination of cefotaxime 125 mg (50mg/kg/time) every 12 hours and gentamicin 12.5 (5mg/kg/time) every 24 hours. For the management of CS, the patient was given an injection of Benzathine Penicillin G at a dose of 50,000 IU/kg/times the single dose, equal to 125,000 IU single dose intramuscularly. Phototherapy was assisted the patient for 48 hours to manage the hyperbilirubinemia. The baby gram examination was postponed due to a sepsis issue.

On the sixth day of hospitalization, the patient showed a clinical improvement with the absence of icterus, good feeding tolerance without symptoms of vomiting, and a stopper for antibiotic injection. The patient was discharged on the eight days of treatment with oral antibiotic cefixime 12.5 mg (5mg/kg/time) every twelve hours for three days.

DISCUSSION

The CS occurs when syphilis in pregnancy is untreated, treated but delayed (<4 weeks before delivery), or inadequately treated (incomplete according to the prescribed dose regimen or treated with medication other than penicillin).\(^1\)\(^3\) It can cause the death of 6.5% of the total cases, and the remaining 80% of patients can still be saved, where premature birth and low birth weight significantly affect the mortality of neonates born from CS cases.\(^8\)\(^9\)

In this case, the patient's mother knew she was infected with syphilis began during her second pregnancy. Previously, the patient's mother had a history of miscarriage, and then a curettage was performed in her first pregnancy. In her second pregnancy with the baby as the patient, the patient's mother found out that she was diagnosed with syphilis based on screening tests during her pregnancy. The patient's mother has received injection therapy for syphilis drugs eight times, but the mother said she does not routinely do injections every day. It was clear that the mother did not know the syphilis infection status in the first pregnancy, which worsened by inadequate treatment later in the second pregnancy. The CS is differentiated into two phases, namely early and late. The severity of the disease varies and can range from asymptomatic with normal infant clinical findings or minimal congenital symptoms to life-threatening with multiple organ failure. The signs and symptoms of CS in infants depend on the mother's onset of treatment and prevention during pregnancy. Symptoms of early CS in infants appear maximum at two years. As much as 60% of babies show asymptomatic symptoms at birth. In comparison, 15% of babies born to mothers infected with syphilis will show skin lesions, jaundice, and hepatosplenomegaly symptoms, with a characteristic of lesions appearing in redness of the skin that will peel later. The clinical diagnosis of CS also has rhinitis, lymphadenopathy, and bone abnormalities.\(^10\)\(^11\) Meanwhile, symptoms of the late phase of CS appear over the age of two years after birth. Patients will experience disturbances in tooth growth in the form of Hutchinson teeth (a jagged formation and will usually be clearly visible in the middle incisors), interstitial keratitis which leads to glaucoma or corneal injury, and progressive hearing loss due to disorders of the vestibulocochlear nerve. Liu et al. explain that a child not treated for syphilis can cause intellectual function disorders to seizures.\(^9\) As a result of ossification disorders in early CS, the manifestation may appear in late CS in the form of Saddle Nose, caused by damage to Os Vomer.\(^8\)\(^12\)

Not all neonates born to mothers infected with syphilis will develop CS. The risk of CS is related to the stage of maternal syphilis during pregnancy and the duration of exposure to the fetus in utero. The risk is higher in the early stages of infection. T. pallidum infection is very high during the first four years after infection and then decreases during the late stage of syphilis.\(^13\) Pregnant women with early primary and secondary syphilis infection who do not receive adequate treatment may transmit the infection to the fetus by 50-60%, while in late (latent or tertiary) infection it is only 10-20%.\(^13\)\(^14\) Treponema pallidum bacteria can cross the placenta from 10-12 weeks of gestation, causing the risk of fetal infection to increase with gestational age. Syphilis infection can occur transplacentally during pregnancy or at birth through contact of the newborn with genital lesions.\(^9\)\(^12\) Lactation cannot cause transmission of infection unless there is a lesion in the breast. It is currently believed that the transmission of syphilis from pregnant women to the fetus can occur until the fetus has an adequate immune response, namely in the first trimester, with the risk of fetal infection increasing with gestational age.\(^15\)

The examiner did not find the typical symptoms of early onset of CS in the case presented, only a yellow appearance with Kramer's Jaundice 3-4 found in the patient on the third day of admission to the NICU. During the monitoring until the patient was discharged, clinical manifestations were no longer typical of CS. In this case, the patient was not given a baby gram because the patient was still having a nasal oxygen cannula installed and there were symptoms of respiratory distress. The patient’s mother was diagnosed with latent syphilis on treatment, with a history of eight injections but not yet completed until
birth. There is no information obtained regarding the results of previous VDRL and TPHA from the patient’s mother. However, when the patient was born and a set of laboratory tests performed showed that the complete blood counts were within normal limits, VDRL titer of 1/128 and TPHA was positive. The patient did not have proper time to undergo a baby gram examination due to the condition of sepsis and the patient’s dependence on oxygen. The patient was then given Benzathine Penicillin G injection at a dose of 50,000 IU/kg/time for one time with no allergic reaction to the injection of this antibiotic.

CONCLUSION
We have presented a case of CS of a female neonate patient. The VDRL and TPHA showed increasing in value of 1/128 titer VDRL and positive TPHA. The patient is also treated for severe asphyxia and neonatal sepsis using Benzathine G Penicillin and a combination of cefotaxime and gentamicin. After some period, the patient improved during therapy and managed outpatient therapy. The mother should do a screening during her pregnancy to prevent untreated syphilis and its complications for her babies.

CONFLICT OF INTEREST
There is no competing interest regarding the manuscript.

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AUTHOR CONTRIBUTIONS
All authors are responsible for the study from the conceptual framework, literature/data gathering, analysis, and implementation of scientific publication.

REFERENCES