Case Report

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Neonatal dengue

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ABSTRACT

Dengue infection is possible in all three trimesters of pregnancy. Dengue during pregnancy is associated with several neonatal complications such as perinatal death, miscarriage, low birth weight and preterm delivery. This is a case report of perinatal transmission of dengue in a baby who was born by an emergency caesarean section. The female baby was diagnosed with dengue fever as her dengue NS1 and ELISA tests were positive like her mother. Early recognition of congenital dengue will significantly reduce maternal and infant mortality. Proper management and supportive treatment is required for thrombocytopenia and hemorrhagic manifestations in dengue fever.

Keywords: Dengue, Neonate, Platelet count, Perinatal transmission

INTRODUCTION

Dengue is one of the fastest emerging pandemic-prone viral diseases which thrives mainly in urban poor areas and the countryside. *Aedes aegypti* mosquito is the main vector of dengue that transmits the virus flavivirus belonging to the family flaviviridae. World Health Organization (WHO) defines dengue as an acute febrile illness associated with two or more of the following signs or symptoms: intense headache, retro-orbital pain, myalgia, arthhralgia, skin rash, leucopenia and hemorrhagic manifestations. It was in Philippine and Thailand severe dengue was first identified (1950s). Since then the incidence of dengue has increased to 30-fold.

A recent estimate indicates 390 million dengue infections occur every year, and only 96 million experiences clinical manifestations. WHO estimates 3.9 billion people worldwide are at risk of dengue infection. 2

Although early reports were describing dengue fever mainly in children current epidemiological data shows the infection is affecting older age group in a rapid manner, including pregnant women. Modes of dengue virus could be said through mosquito bites, blood, mucocutaneous and maternal-fetal routes.³ Dengue during pregnancy is associated with several neonatal complications such as perinatal death, miscarriage, low birth weight and preterm delivery. Majority of reported cases demonstrate dengue in neonates whose mothers were infected very late in pregnancy.

Dengue in late pregnancy predispose the fetus into great risk as less maternal specific antibodies are passed through the placenta. This is a major possibility of neonatal dengue infection. Today fetal or cord blood samples are considered as a better source of qualifying intrauterine dengue infection.⁴ In neonates, vertical transmission of dengue produce varying symptoms, from fever with thrombocytopenia to cerebral hemorrhage.⁵

Due to lack of resources and capacity to survey dengue effectively and also reporting of vertical transmission of the virus is infrequent, very little is known about neonatal dengue. Here we report a case of perinatal transmission of dengue in a baby who was born by an emergency caesarean section.

CASE REPORT

A 23-year-old pregnant woman at 36 weeks of gestational age was referred to our hospital from outside with complaints of fever, cough, headache and vomiting for three days. She was diagnosed with dengue as her outside dengue NS1 was positive. On admission she was afebrile with a heart rate of 90 bpm and a blood pressure of 100/60 mmHg. Her complete blood count showed decreased platelet count (55000 cells/cumm) with normal total count and hemoglobin level. Dengue IgM was found as positive.

An ultrasound of pelvis was done immediately to confirm the health status of fetus and it was perfectly normal. She had only one temperature spike (100°F) on the first day and completely afebrile during the rest of the days. There was no evidence of other complications of dengue fever. An emergency LSCS was done on the 5th day. She delivered a live female baby and did not have postpartum hemorrhage. Platelet count which was 84000 cells/cumm on day 3 began to increase from the next day without any drop. No platelet transfusion was required for the mother and her post-partum period was uneventful.

The baby was a female infant born with an APGAR score 9 at one minute and a birth weight of 2.1 kg. The baby was shifted to neonatal ICU as she was late preterm and hypoglycemic. Hypoglycemia was managed with IV fluids and the baby was active with no respiratory distress.

Her platelet count was checked on the day 1 and it was 27000 cells/cumm. Her liver enzymes were elevated too (SGPT-229 unit/L, SGOT-1079 unit/L) and her total count was 15000 cells/cumm. The platelet count raised to 40000 cells/cumm after platelet transfusion. Petechial rashes were seen on the first day, yet she was afebrile. The platelet count decreased to 30000 cells/cumm in the evening and increased to 60000 cells/cumm in the next day morning after second platelet transfusion. A blood smear conducted on the next day showed marked thrombocytopenia. Antibiotics (ampicillin gentamicin) were initiated prophylactically for neonatal sepsis. She was investigated for dengue infection and confirmed vertical transmission of dengue as Dengue IgM and Dengue NS1 Elisa tests came as positive.

Platelet count was being checked daily. On day 6 liver enzymes were found to be decreasing. She was progressing well and the rashes slowly disappeared. Antibiotic therapy was stopped after 5 days and blood culture reports were negative of bacterial infections. She received multiple platelet transfusions as her platelet count was fluctuating. The platelet count came to normal on the day of discharge (127000 cells/cumm). Cranial USG did not show evidence of intracranial hemorrhage. She was discharged well on day 12 with a body weight of 1.810 kg.

DISCUSSION

Vertical transmission of dengue is not so uncommon rather its misdiagnosis causes healthcare system in a state of negligence to report. This underreporting could also be due to asymptomatic infection as the symptoms are almost similar to other viral infections.⁶

Dengue infection is possible in all three trimesters of pregnancy. Waduge et al reports the incidence rate as 3.8% in the first, 7.7% in second and 77% in third trimester and 11.5% during the immediate postpartum period. Cases of neonatal dengue from early pregnancy infections have not reported to date and the reason could be explained as insufficient time to produce maternal specific antibodies in late pregnancy which are transferred to the neonate. In short, viremia from mother is transferred to the unprotected neonate.

The incubation period of dengue virus in humans is 3-10 days and its half-life in neonate is 40 days. ^{9,10} Pregnant women and newborn symptoms may vary. In the current case the mother experienced fever, vomiting and headache while the infected infant was afebrile with few petechial rashes. Few cases of asymptomatic newborns with dengue positive serologies were reported in the Cuban epidemic of 1981 and in Brazil in 1991. ¹¹ A review made by Sirinavin in 2004 finds the onset of fever in congenital dengue fever varies from day 1 to 11 after birth and the signs and symptoms lasting for 1-5 days. ¹²

Diagnosis can be confirmed by laboratory tests like dengue virus isolation, dengue virus nucleic acid detection, NS1 antigen detection and by checking other serological tests. Here both dengue NS1 and dengue IgM were positive for the mother as well as infant. A published case report puts insight into perinatal transmission of dengue through breast milk.³ It is important to note that the infant in this case report had thrombocytopenia from the very first day emphasizing the possibility of intrauterine transmission of dengue virus. In spite of that ICU care provides expsoure to minimum vectors.

A systematic review conducted by Sawyer et al indicates higher incidence of caesarean deliveries, pre-eclampsia and pre-term births.¹³ All the three finding are consistent with our case report.

Several factors are involved in the pathogenesis of dengue in newborns such as age of the mother, age of gestation and time of pregnancy. It has been proposed maternal age less than 20 years have high amount of circulating anti-dengue antibodies than those older than 20 years. Children with lower weights are at higher risk of severe dengue. Dengue virus infection in early pregnancy during organogenesis is capable of spontaneous abortion or neural tube alterations. If present later, the virus could even pass through the placenta producing serious alterations in the neonate.

The mechanism of thrombocytopenia is a complex process involving the activation of platelets, procoagulants and anticoagulants, various complement, cytokines and endothelial cells. Thrombocytopenia and platelet destruction are common in dengue fever and it might be due to suppression of bone marrow and the peripheral destruction of platelets, the latter induced by platelet antibodies. It is not yet clear if platelets play a role in the viral spread. Platelet count need not correlate well with clinical bleeding, but patients should be monitored for hemorrhagic manifestations thrombocytopenia. In this case cranial ultrasound of the infant was performed which showed no evidence of intracranial haemorrhage. 15,16

CONCLUSION

It is inevitable to highlight the significance of perinatal dengue transmission in neonates especially in endemic areas. Taking into account of dengue complications, early recognition of congenital dengue will significantly reduce maternal and infant mortality. Vigilant monitoring and proper hydration along with appropriate laboratory investigations indeed lead to uneventful recovery.

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