

Case Report

VERTICAL TRANSMISSION OF DENGUE INFECTION.

Nida Aslam¹, Usama Masoomi², Sadia Akram³, Sidra Ashraf⁴, Maryam Murtaza⁵, Agha Shabbir Ali⁶

ABSTRACT:

Dengue is a significant health concern in adults and children in many regions worldwide. Dengue infection is rarely reported in newborn babies. Here, we report a case of a 4-day-old neonate with dengue infection transmitted likely by maternofetal transmission. Mother developed fever, headache, vomiting, and generalized body aches at 38 weeks of gestation—her blood reports, including serology, confirmed dengue fever. Emergency cesarean section was carried out, and a healthy baby was born. At 4 days of life, the baby developed a fever and generalized petechial rash. The baby was admitted to the NICU of Farooq Hospital Lahore. His initial CBC revealed thrombocytopenia, dengue NS1 antigen, and anti-dengue IgM antibodies were also positive. Serial CBC showed a decreasing trend in platelet count in the next 4 days. On the 5th day of admission, the patient improved clinically and his CBC showed a rising trend in platelet count. In conclusion, vertical transmission of dengue virus is possible if infection occurs late in pregnancy. Further studies and evidence are required.

Key Words: Vertical Transmission, Dengue Fever, Thrombocytopenia

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INTRODUCTION

Dengue fever, also known as break bone fever is a viral infection precisely, female Aedes Aegypti mosquito¹. It is more common in tropical and subtropical climates. Nowadays it is at its peak in Pakistan. The first outbreak in Pakistan was reported in 1994 with a dramatic rise in cases in 2005 particularly in Karachi. Later on, the epidemic occurred in areas of Punjab². According to WHO data collected from January-September 2022, the total number of reported cases was 25932, with 62 deaths. The incidence varied in different provinces with the highest cases seen in Sindh (29%) followed by Punjab (29%), Khyber

Pakhtunkhwa (25%), and Baluchistan (14%).

Dengue is defined as a viral systemic disease with signs and symptoms including severe headache, retro-orbital pain, myalgia, arthralgia, skin rash, leucopenia, and hemorrhagic manifestations³. Dengue virus constituents 4 serotypes (DENV1, DENV2, DENV3, and DENV4). The transmission of dengue fever is through mosquito bites, blood & and maternal-fetal routes.

Vertical transmission of dengue has an impact on both mother and child. Neonatal complications include miscarriage, perinatal death, low birth weight and preterm delivery. Management is mainly supportive and symptomatic in the form of oral rehydration, antipyretics and IV fluids⁴. Vigilant Monitoring of Blood pressure, Pulse pressure, Urine output and capillary refill time is needed. It will also help in the early detection of complications and the initiation of interventions to prevent

¹Senior Registrar of Pediatrics, AMDC, Lahore

²⁻⁵House Officer of Pediatrics, AMDC, Lahore

⁶Professor and HOD of Pediatrics, AMDC, Lahore

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associated morbidity and mortality. The main objective of this report is to increase the awareness of vertical transmission of dengue and its effects on newborns.

CASE DESCRIPTION:

We report a case of newborn baby with dengue infection, likely infected by vertical transmission from his mother. Mother suffered from high grade fever at 38 weeks of gestation. She also had severe headaches, vomiting and generalized body aches and pain. Her initial CBC revealed leucopenia and thrombocytopenia. The result of dengue serology confirmed positive IgM and IgG using the ELISA method. Elective cesarean section was planned and carried out with stabilization of hemodynamic status. A 3.5 kg baby boy was delivered with an immediate cry and APGAR score was 8/10 and 9/10 at 1 minute and 5 minutes subsequently. The baby was handed over to the mother. Baby remained well for 4 days following discharge from hospital. On 4th day of life, he developed high grade fever noted to be 102° maximum. Fever was not associated with cough, diarrhoea or vomiting. Milk intake decreased initially. He was admitted in the NICU of Farooq hospital Lahore. On examination patient had high grade fever with generalized petechial rash all over the body, neonatal reflexes were intact, normal vesicular breathing with no added sounds, and cardiovascular and abdominal examination were unremarkable.

Laboratory workup was carried out on the line of early-onset sepsis but the only significant finding was marked thrombocytopenia, platelet count as:

Day of Admission	Platelet Count	Hematocrit	WBCs
1	108x10 ⁹ /l	50.5%	8.6 x10 ⁹ /l
2	100x10 ⁹ /l	48.7%	8.69 x10 ⁹ /l
3	85x10 ⁹ /l	50.1%	8.3 x10 ⁹ /l
4	60x10 ⁹ /l	49.2%	10.1 x10 ⁹ /l
5	130x10 ⁹ /l	43.9%	10.9 x10 ⁹ /l

The complete serial blood count shows a decreasing trend in platelet count. Dengue virus antigen NS1 was positive and dengue virus serology IgM was also positive. Strict input and output monitoring was done, and urine output remained within the normal range. Chest X-ray showed right-sided pleural effusion. The baby remained distress-free and maintained saturation up to 95% in the room air. Ultrasound abdomen showed gall bladder wall edema with minimal ascetic fluid. The patient remained oral-free. Platelets showed a decreasing trend in the next 4 days of hospitalization. The patient improved clinically on the 5th day, the fever settled and the rash improved. The platelet counts also started to rise and the patient was discharged home.

DISCUSSION:

Dengue is a systemic viral infection transmitted amongst human beings via the Aedes Aegypti mosquito. The number and burden of dengue infection is progressively increasing. WHO estimates 50-100 million new cases of dengue anomaly worldwide⁵. Out of these 25000 patients die due to various complications of dengue infection. Transmission of dengue virus from pregnant mother to newborn (vertical transmission) is not very common. Because of the infrequent cases of neonatal dengue infection, very few original studies about vertical transmission of dengue infection have been published⁶. Most of the reported cases are published as case reports from different regions. Severe form of dengue infection during pregnancy can lead to miscarriage, perinatal death, or low birth weight babies while few survivals need neonatal intensive care admission for their stability⁷.

We report a case of vertical transmission of dengue infection in a 4-day-old neonate who was born to a 38-year-old mother. This case report correlates with reported cases of vertical transmission. Important highlights are dengue in neonates common in mothers who are infected very late in pregnancy⁸. In our case, the mother was infected at 38 weeks of gestation; secondly, a latent period in newborns who are

infected by vertical transmission is 1-11 days after birth. In our index case, the dengue infection manifested on the 4th day of life with high-grade fever. The duration of symptoms in neonatal dengue fever is 1-5 days. In our case report, the baby started improving with the decline of fever, improving oral intake, and a rise in platelet count after 4th day of illness.

In conclusion, vertical transmission may be the probable mode of dengue infection in early neonatal dengue infection. Suppose a mother suffers from dengue infection late in pregnancy. In that case, delivery should be carried out in a tertiary care hospital that is well-equipped to diagnose and manage neonatal infection in a neonatal intensive care unit. Last but not least, in endemic areas, mothers and children should take preventive measures to avoid mosquito bites.

AUTHOR'S CONTRIBUTION

NA: Introduction and Review

UM: Case Description

SA: Introduction

SA: Abstract

MM: References

ASA: Review and Discussion

REFERENCES:

1. Basurko C, Matheus S, Hildéral H, Everhard S, Restrepo M, Cuadro-Alvarez E, Lambert V, Boukhari R, Duvernois JP, Favre A, Nacher M. Estimating the risk of vertical transmission of dengue: a prospective study. *ASTMH*. 2018 Jun;98(6): 1826.
2. <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON414>
3. Thomas J, Thomas P, Reeba George C, George CR. Neonatal dengue. *Int J Contemp Pediatrics*. 2017 Nov;4(6):2234-6. DOI: <http://dx.doi.org/10.18203/2349-3291.ijcp20174765>.
4. Levin, M.J., Austurias, E.J. and Adriana Weinberg (2016) 'Infections:Viral & Rickettsial', in *CURRENT Diagnosis & Treatment*. 23rd Edition. Colorado, United states of America: Mc Graw Hill Education, pp. 1201–1202.
5. Liu C, Liu Q, Lin H, Xin B, Nie J. Spatial analysis of dengue fever in Guangdong Province, China, 2001-2006. *APACPH*. 2014 Jan;26(1):58-66. <https://doi.org/10.1177/1010539512472356>
6. Maroun SL, Marliere RC, Barcellus RC, Barbosa CN, Ramos JR, Moreira ME. Relato de caso: transmissão vertical de dengue. *Jornal de Pediatria*. 2008; 84:556-9. <https://doi.org/10.1590/S0021-75572008000700014>.
7. Carles G, Peiffer H, Talarmin A. Effects of dengue fever during pregnancy in French Guiana. *Clin. Infect. Dis*. 1999 Mar 1;28(3):637-40. <https://doi.org/10.1086/515144>.
8. Sirinavin S, Nuntnarumit P, Supapannachart S, Boonkasidecha S, Techasaensiri C, Yoksarn S. Vertical dengue infection: case reports and review. *Pediatr. Infect. Dis. J*. 2004 Nov 1;23(11):1042-7. doi: 10.1097/01.inf.0000143644.95692.0e.