

Presence of Dengue Antibody in a Newborn with Maternal Peripartum Dengue Fever

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Abstract:

In Bangladesh, the incidence of dengue infection continues to rise, and it has been related to severe maternal and infant morbidity during pregnancy. After presenting with an initial onset of fever at 37 weeks' gestation, an 18-year-old pregnant woman ended up being diagnosed with dengue fever. The rapidly declining platelet count, 18,000/mm³ on the third day, necessitated a blood transfusion. On day six of her illness, while her platelet count was 23,000/mm³, she developed pre-labor rupture of membranes with labor pain. The labor became prolonged, with signs of obstruction. A prompt caesarian section was carried out under general anesthesia. She was discharged from the hospital on the 4th

post-operative day without any negative sequelae. After birth, the newborn was diagnosed with dengue IgG by potential vertical transmission. Early detection and treatment are necessary for dengue during pregnancy. However, physicians must exercise extra caution when treating a pregnant dengue-infected patient by maintaining their physiological state, preventing shock, and, at the same time, taking care of the fetus, which may develop distress.

Keywords: Dengue, pregnancy, blood transfusion, vertical transmission, Bangladesh

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Background

Dengue is an endemic disease in Bangladesh and is a mosquito-borne flavivirus infection. The country is currently struggling with the worst dengue outbreak on record. Despite having one-third of the year left, about 1000 deaths from dengue have already been reported, the highest ever annual death toll to date [1].

Preterm births, the most severe type of miscarriage, maternal death, fetal deformities, and newborn fatalities are only a few of the maternal and neonatal consequences related to dengue infection [2, 3]. More cases of dengue illness arising during pregnancy have been reported this year. In this article, we reported another instance of dengue fever in pregnancy that had a favorable outcome.

Case presentation

An 18-year-old, 37-week-old pregnant woman weighting 57 kg gets admitted to the hospital. Prior to being

admitted, she had a high fever for two days and several episodes of vomiting. Her past familial and medical histories were regular. On admission, her body temperature was 103°F, her blood pressure (BP) was 110/70 mmHg, and her pulse rate (PR) was 80 beats per minute. The fetal heart rate (FHR) was 166 beats per minute. The following laboratory findings were obtained upon admission: hemoglobin 11.8 g/dl, hematocrit 69%, platelet count (PLT) 134,000/mm³, and C-reactive protein 67.7 mg/l with urinary tract infection.

She was treated in accordance with the most recent national dengue care recommendations after being identified with the NS1 antigen during pregnancy. Her vital signs were closely monitored, and bleeding precautions were taken. The vital indicators were within normal ranges 24 hours later, although PLT was rapidly declining. The PLT was barely 18,000/mm³ with a low BP on the third day. Due to financial constraints, the patient received two units of whole blood instead of one aphaeretic platelet. On that day, the fever subsided, and the FHR remained steady despite intermittent oxygen inhalation.

On the 4th day, the patient developed a sudden gush of fluid per vagina. Her vital signs were normal during the vaginal examination, which revealed a 70% effaced cervix. Fetal distress was visible on the cardiotocography, and the head station was -2. After eight hours, the labor had not advanced, and the caput

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had begun to form. Consequently, the patient underwent a caesarean section under general anesthesia, and her PLT was 23,000/mm³ at that time. The infant was born with a big caput and a cephalic presentation. The wound's edge was bleeding as it was being closed. To preserve hemostasis, several mattress sutures were administered. A peritoneal drain was kept in situ, and the peritoneum was closed. There was oozing from multiple sites of sub-rectal space. A sub-rectal drain was given. After the closure of the rectus sheath, the skin was closed with a subcutaneous drain. In both the subcutaneous and sub-rectal compartments, negative suction was applied. Recovery from surgery went smoothly. The patient was released from the hospital on the fourth post-operation day.

The newborn, who weighed 2.49 kg, cried immediately after birth. The baby had transient tachycardia with respiratory distress. While investigating, the baby had hypocalcaemia and thrombocytopenia. The newborn tested positive for dengue immunoglobulin G (IgG) despite never having been bitten by a mosquito. The baby had no other signs or symptoms of the disease.

Discussion:

The most prevalent disease currently spread by mosquitoes in Bangladesh is dengue. It is spread through the bite of an *Aedes aegypti* mosquito carrying one of the four serotypes: dengue virus serotype 1 (DENV-1), DENV-2, DENV-3, or DENV-4. According to laboratory findings, the predominant circulating strain in this outbreak is DENV-2, despite the fact that DENV-3 was responsible for the prior outbreak in 2019 [4]. The retention of rainwater is attributed to the rise in dengue infections because of the heavy monsoon rains and inept garbage disposal.

Because of the significant physiological changes and other obstetric complications, the clinical assessment, diagnosis, treatment, and monitoring of dengue fever during pregnancy can be exceedingly challenging. In this instance, the clinical features matched those from other reports [5] and non-pregnant patients. She lacked any comparable features that would meet the criteria listed by the World Health Organization aside from an increase in hematocrit (ε" 20%) [6]. Both HELLP syndrome and dengue infection can cause fever with low PLT, increased liver enzymes, and right hypochondriac discomfort. Right upper quadrant pain

may be confused with labor pain. Therefore, the appearance of other obstetric complications may mislead the diagnosis of dengue. So, when making a diagnosis, physicians should have a high degree of suspicion [3]. As in this case, a higher baseline heart rate and a drop in blood pressure triggered by a decrease in systemic vascular resistance may make it difficult to detect the onset of dengue shock syndrome and assess the patient's response to fluid boluses.

Leukocytosis is related to pregnancy, mostly due to the increased influx of neutrophils. Contrarily, the level of thrombocytopenia is related to how severe the dengue fever is, and dengue infection results in leucopenia and thrombocytopenia [5]. During pregnancy, the interpretation of complete blood count and its association with a specific dengue fever stage may not be correct.

For mothers who have a dengue infection, there are still no recommendations regarding the manner and delivery time. A multidisciplinary team approach was only taken into consideration after the mother developed complications. A caesarean section under general anesthesia was scheduled and the delivery was conducted promptly.

The adverse outcomes of dengue during pregnancy have included miscarriages, preterm labor, fetal abnormalities, increased bleeding risk, low birth weight, and, in severe cases, maternal mortality [2]. Dengue virus was found in cord blood samples, confirming incidences of vertical transmission of the infection in some prior reports [7]. Although dengue virus detection in cord blood was not done in this case, the diagnosis of vertical transmission was supported by the detection of IgG without a history of mosquito bites. Due to insufficient time for conferring passive immunity to the fetus, all recorded occurrences of vertical transmission have happened around birth [7].

Conclusion:

Due to the rising prevalence in adults, there are more cases of dengue infection among pregnant women. It appears that a dengue infection during pregnancy may have a number of detrimental impacts on both the mother and the fetus. The successful resolution of this case would have been possible with early diagnosis, attentive monitoring, prompt action, and critical assessment of

the physiological changes of pregnancy. Keeping the index case in mind, it is suggested that neonatal dengue should be kept as a differential diagnosis for neonatal sepsis and neonatal thrombocytopenia in a mother or woman nearing term pregnancy, particularly in an endemic area.

Availability of data and material

All the data used and/or analyzed during case report development have been included in the case presentation.

Disclosure

Written informed consent was obtained from the patient for publication of this case report.

Competing interests

The authors declare that they have no competing interests.

References

1. Directorate General of Health Services, Dengue press release. 2023. Retrieved September 30, 2023, from https://old.dghs.gov.bd/images/docs/vpr/20230930-dengue_all.pdf.

2. Friedman EE, Dallah F, Harville EW, Myers L, Buekens P, Breart G, et al. Symptomatic dengue infection during pregnancy and infant outcomes: a retrospective cohort study. *PLoS neglected tropical diseases*. 2014;8(10):e3226.
3. Phupong V. Dengue fever in pregnancy: a case report. *BMC pregnancy and childbirth*. 2001;1:1-3.
4. World Health Organization, Dengue - Bangladesh. 2023. Retrieved September 30, 2023, from <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON481>.
5. Bopeththa B, Hemapriya S, Gayan Niranga K, Kotigala DS. A case report of dengue haemorrhagic fever during the peripartum period: challenges in management and a case of vertical dengue transmission. *BMC Infectious Diseases*. 2018;18:1-4.
6. World Health Organization, Dengue guidelines, for diagnosis, treatment, prevention and control. 2009. Retrieved September 30, 2023, from https://iris.who.int/bitstream/handle/10665/44188/9789241547871_eng.pdf?sequence=1.
7. Yin X, Zhong X, Pan S. Vertical transmission of dengue infection: the first putative case reported in China. *Revista do Instituto de Medicina Tropical de São Paulo*. 2016;58.