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Neonatal Dengue: A Case Series of Three Patients with a Wide Clinical Spectrum

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Abstract

Neonatal dengue is an uncommon but clinically important condition that can present with diverse symptoms. Maternal dengue infection is critical in the risk of vertical transmission, and early identification allows timely monitoring, serological testing, and management of the newborn. This case series describes three neonates with dengue, highlighting clinical features, laboratory findings, and treatment outcomes. All patients presented with fever accompanied by symptoms such as seizures, jaundice, respiratory distress, and significant thrombocytopenia. In one case, maternal history revealed that the primigravida mother experienced fever two days before delivery, and dengue IgM testing was positive on day five of her illness, suggesting vertical transmission. Diagnostic evaluation included serology, hematological assessment, and imaging when needed. Platelet counts ranged from 10,000 to 14,000 per microliter, though none developed major bleeding or shock. All neonates received supportive care, including fluid management and symptom-targeted therapy, and gradually improved, being discharged in stable condition. These cases emphasize that neonatal dengue may mimic sepsis and require high diagnostic vigilance, particularly in endemic areas or with maternal dengue. Early serological testing in both mother and infant and close monitoring are crucial for timely diagnosis and favorable outcomes.

Keywords**: **neonatal dengue, thrombocytopenia, vertical transmission, seizure

INTRODUCTION

Dengue fever is a mosquito-borne viral infection caused by the dengue virus (DENV), a member of the *Flaviviridae* family (Pourzangiabadi et al., 2025). The disease is transmitted primarily through the bites of *Aedes aegypti* and *Aedes albopictus* mosquitoes and remains highly prevalent in tropical and subtropical regions, including Indonesia, where it represents an ongoing public health challenge. Dengue epidemics are driven by four viral serotypes, DENV-1 to DENV-4, which collectively place nearly 40 percent of the global population at risk (Nguyen et al., 2021).

Although dengue infection is widely recognized in children and adults, neonatal dengue, defined as infection occurring within the first 28 days of life, is uncommon yet clinically significant (Madireddi et al., 2021). Neonatal infection may occur through vertical transmission from the mother during pregnancy or the perinatal period, as well as through horizontal transmission postnatally following mosquito bites. The likelihood of vertical transmission increases when maternal infection occurs close to delivery because transplacental antibody transfer may be insufficient and viral passage across the placenta becomes more likely (Mulyana et al., 2020). Reported vertical transmission rates vary between 1.6 and 10.5 percent (Patlán-Gutiérrez et al., 2025).

The clinical spectrum of neonatal dengue is broad, ranging from mild febrile illness to presentations resembling neonatal sepsis. Common manifestations include fever, lethargy, reduced oral intake, rash, hepatomegaly, respiratory distress, thrombocytopenia, and bleeding tendencies. Less frequently, neurological complications such as seizures or encephalitis may occur, although these are rarely documented in the neonatal period (Yadav & Chandra, 2008; Yin et al., 2016). Given the variability in presentation and the limited number of reported cases,

a high index of suspicion is essential, especially in dengue-endemic regions. Early serological testing in both the mother and the neonate, combined with vigilant monitoring for warning signs, plays a crucial role in ensuring timely diagnosis and preventing complications (Gupta et al., 2021; Dale Carroll et al., 2007).

This case series describes three neonates diagnosed with dengue infection over the past year, each presenting with distinct clinical manifestations. Although dengue is common in Indonesia, reports of neonatal dengue case series remain very limited, highlighting a gap in the literature that this study aims to address. The report emphasizes the importance of early recognition, appropriate diagnostic evaluation, and close monitoring in neonates born to mothers with suspected or confirmed dengue infection.

CASE REPORTS

Case 1

A 24 day old female neonate was referred from a primary care facility after experiencing three episodes of seizures, accompanied by fever beginning one day prior to admission and clinically apparent jaundice. Maternal dengue status during pregnancy was unknown. On admission, her temperature was 38.7 °C, heart rate 151 bpm, respiratory rate 42 breaths per minute, and oxygen saturation 98 percent on room air. She presented with jaundice (Kramer stage III–IV), cold extremities, delayed capillary refill (4 seconds), and mottling.

Initial laboratory evaluation revealed hemoglobin 12.8 g/dL, hematocrit 36.9 percent, platelet count 171,000/µL, leukocyte count 4,700/µL, and total bilirubin 8.52 mg/dL. NS1 antigen was reactive on day two of hospitalization. Cranial ultrasonography showed no structural abnormalities. During hospitalization, the patient developed progressive thrombocytopenia with a nadir of 14,000/µL on day five of fever, accompanied by extensive petechiae. Management included intravenous fluids, antibiotics, phenobarbital, and close monitoring. She was discharged on day six in stable condition, without recurrent seizures, and with platelet count recovered to 79,000/µL.

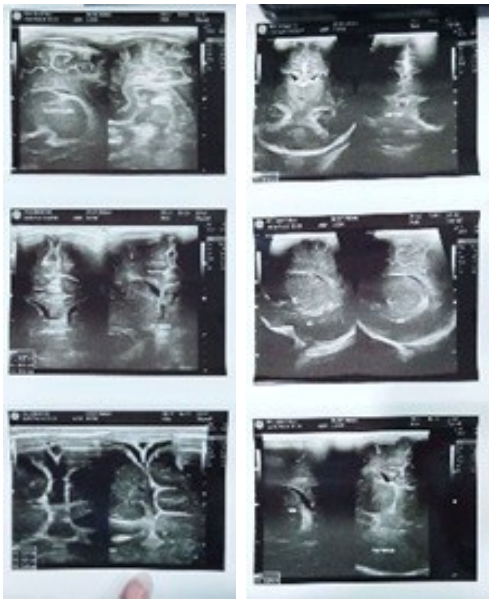


Figure 1. Cranial ultrasonography in Case 1 revealed no structural abnormalities

Case 2

An 8 day old male neonate presented with one day of fever but no additional symptoms. He was born spontaneously with a birth weight of 2,600 g and had been well since birth. Maternal history revealed that the primigravida mother experienced fever two days prior to delivery, and dengue IgM testing was positive on day five of her illness.

On admission, the neonate's temperature was 37.8 °C, heart rate 178 bpm, respiratory rate 45 breaths per minute, capillary refill time less than two seconds, and oxygen saturation 98 percent on room air. Initial laboratory investigations showed reactive NS1 antigen, platelet count 327,000/µL, hematocrit 44.3 percent, and leukocyte count 8,900/µL.

By day three of fever, the infant developed scattered petechiae over the face and abdomen with reduced oral intake. Platelet count decreased significantly to 10,000/µL and hematocrit rose to 47.2 percent on day five of fever. He received supportive care and was discharged on day seven, clinically stable, with platelet count rising to 107,000/µL and hematocrit trending down to 43.5 percent.

Case 3

A male neonate was delivered via cesarean section at 40 weeks' gestation to a G2P1A0 mother with oligohydramnios. The infant demonstrated weak crying at birth, with APGAR scores of 8, 6, and 6. Maternal dengue history was unclear, although her platelet count was 187,000/µL without fever.

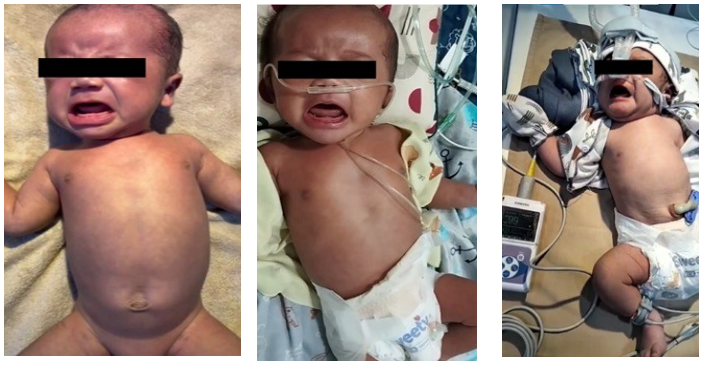
At presentation, the neonate had a temperature of 36.6 °C, heart rate 120 bpm, respiratory rate 32 breaths per minute, oxygen saturation 95 percent on room air, and chest retractions with a Downe score of 2. Jaundice (Kramer III–IV) became apparent on day four of life. Initially managed as neonatal sepsis with respiratory distress, he developed progressive thrombocytopenia, reaching 63,000/µL by day three.

Laboratory evaluation showed hemoglobin 13.3 g/dL, hematocrit 40 percent, and leukocytes 13,400/µL. Dengue IgM and IgG were positive on day six. Chest radiography was unremarkable. Supportive treatment included intravenous fluids, CPAP, antibiotics, corticosteroids, phototherapy, and breastfeeding on demand. The infant was discharged on day ten in stable condition, feeding well, with resolution of jaundice and platelet count increasing to 189,000/µL.

Figure 2. Chest radiograph in Case 3 was normal
Figure 3. (From left to right) Clinical photographs of patients in Case 1, Case 2, and Case 3

Table 1. Demographic and Clinical Characteristics of Neonatal Dengue Cases

Case	Age	Sex	Maternal Dengue History	Main symptomps	Lowest Platelet Count (/µL)	Length of stay
1	24 days	Female	No	Fever, seizures, jaundice, extensive petechiae	14.000	6 days
2	8 days	Female	Yes	Fever, petechiae, decreased oral intake	10.000	7 days
3	0 days	Male	No	Respiratory distress, sepsis-like, jaundice	63.000	10 days



RESULTS AND DISCUSSION

Neonatal dengue remains an uncommon but clinically important entity. Transmission may occur vertically during pregnancy or the peripartum period, or horizontally following mosquito exposure after birth. Vertical transmission is possible when maternal infection occurs within approximately ten days before delivery or within ten hours postpartum (Gupta et al., 2021). In the second case, maternal fever shortly before delivery and positive dengue serology supported vertical transmission. Previous studies have shown higher dengue incidence among women infected during late pregnancy, with Waduge et al. reporting rates of 3.8 percent in the first trimester, 7.7 percent in the second, 77 percent in the third, and 11.5 percent immediately postpartum. Early maternal infection allows passive antibody transfer to the fetus, whereas late pregnancy infection increases the likelihood of neonatal disease (Dale Carroll et al., 2007; Dat et al., 2018).

Dengue during pregnancy tends to be more severe than in the general population (Brar et al., 2021). A meta-analysis by Rathore et al. demonstrated increased risks of maternal mortality, stillbirth, and neonatal mortality in dengue-affected pregnancies. Endothelial dysfunction and increased vascular permeability in severe dengue may facilitate viral passage across the placenta, contributing to fetal infection, particularly with DENV-2, which is more frequently associated with vertical transmission (Rathore et al., 2022; Mounica et al., 2021).

The typical incubation period in humans ranges from three to ten days, but may be prolonged in neonates due to reduced viral clearance (Chan & Johansson, 2012). Onset of neonatal symptoms varies based on the interval between maternal fever and delivery. Reported onset ranges from 16 hours to 11 days of life, consistent with the clinical timeline observed in the present cases (Gitari et al., 2024).

Clinical manifestations of neonatal dengue are diverse. A review of 144 cases identified thrombocytopenia as the most common finding, followed by fever, rash, and organomegaly

(Pathak et al., 2025). Severe complications such as hemodynamic instability or third spacing are less frequent but clinically significant.

In the first case, seizures were the presenting feature. Although uncommon in neonatal dengue, seizures may result from high fever or dengue-associated neurological involvement. Several case reports, including those from Kalane et al., describe similar presentations with favorable outcomes following supportive management (Kalane et al., 2021). Dengue-related neurological manifestations are linked more frequently to DENV-2 and DENV-3 and may involve direct viral neuroinvasion, immune-mediated injury, or metabolic disturbances (Vides-Rosales et al., 2025; Murthy, 2010). Murthy categorized neurological complications into neurotropic, systemic, and postinfectious groups, providing a useful framework for assessment and diagnosis.

The second and third cases highlight the diagnostic overlap between neonatal dengue and neonatal sepsis. Dengue often mimics bacterial sepsis due to overlapping clinical and laboratory features, including fever, hepatomegaly, thrombocytopenia, and coagulopathy. Misdiagnosis is common; Nguyen et al. reported that more than one-third of neonatal dengue cases were initially classified as sepsis (Nguyen et al., 2021). In such contexts, maternal dengue history becomes a key diagnostic clue. Distinguishing dengue-associated thrombocytopenia from other neonatal causes, such as sepsis, DIC, necrotizing enterocolitis, or alloimmune thrombocytopenia, is essential in guiding management (Yadav & Chandra, 2008).

Despite neonates being immunologically immature, several authors suggest they may have lower rates of severe complications due to reduced inflammatory mediator production (Dalugama et al., 2023). In the present series, all neonates recovered well with supportive therapy alone and experienced no mortality.

CONCLUSION

Neonatal dengue is rare but clinically significant and should be considered in any neonate presenting with fever, leukopenia, or thrombocytopenia, particularly in endemic regions or when maternal dengue history is present. Clinical manifestations range from mild febrile illness to severe complications such as profound thrombocytopenia, bleeding, or neurological involvement. Early diagnosis using serological testing in both the mother and infant, combined with careful clinical monitoring, is critical for preventing severe outcomes. Supportive management remains the cornerstone of therapy, and with timely recognition and intervention, prognosis is generally favorable. However, this case series is limited by its small sample size, single-center setting, and lack of PCR-based dengue serotyping, which may affect generalizability and detailed virological characterization.

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