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Case Report

Neonatology Section

Thrombocytopenia in an Apparently Healthy Neonate: An Unusual Report of Postnatally Acquired Dengue Infection

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ABSTRACT

Dengue is one of the commonest viral infections affecting general population in endemic zones every year. However, dengue is usually not reported in newborn period as it is widely believed that infants are protected from serious viral infections in the first six months of life by presence of maternal antibodies. Here, a unique case of an apparently healthy newborn with dengue fever is reported where transmission of the infection occurred postnatally. A 10-day-old male child, born to a primigravida mother with normal antenatal history, presented with complaints of fever for four days along with full body macular rash. Examination findings revealed red coloured, pin-point macular rash while rest of general and systemic examination were unremarkable. Routine Sepsis work-up was negative except presence of thrombocytopenia. Keeping in mind the endemicity and season of dengue, NS1 antigen of the baby was tested by a rapid antigen test which was positive, which was further confirmed by IgM ELISA for dengue. However, the mother was asymptomatic and platelet count as well as NS1 antigen and IgM, IgG ELISA for dengue of the mother was negative.

Keywords: Horizontal transmission, Neonatal dengue, Neonatal thrombocytopenia

CASE REPORT

A 10-day-old male, full term, appropriate for gestational age newborn, with no adverse antenatal and postnatal history, delivered vaginally at a private hospital and was subsequently admitted to a tertiary care centre with complaints of fever for four days and macular rash for four days with no complaints of lethargy, decreased oral acceptance, loose stools, vomiting, fast or noisy breathing [Table/Fig-1]. The baby was feeding well and passing frequent urine. Parents did not give a history of bleeding from any site. At admission, the baby had a fever of 102°F, Heart Rate (HR) 130/min, Respiratory Rate (RR) 46/min, Capillary Filling Time (CFT) <3 seconds and good peripheral pulses. Considering the age, neonatal sepsis work-up was done [Table/Fig-2] which revealed thrombocytopenia. Liver function tests, kidney function tests [Table/Fig-3] which was performed were within normal limits. Cerebrospinal Fluid (CSF) analysis was acellular. No microorganisms were seen, culture was sterile, protein were 84 mg/dL and sugar was 64 mg/dL. Ultrasound of abdomen and Kidney Ureter Bladder (KUB) was also performed which was normal. Blood culture, CSF Polymerase Chain Reaction (PCR) for virological panel and fungal blood culture and urine for fungal hyphae of the newborn was negative on day 1. After admission baby was allowed to breastfeed and was managed with intravenous (i.v.) cefotaxime and amikacin for five days and syrup paracetamol was prescribed for fever.

[Table/Fig-1]: Macular rash on body of patient.

In view of dengue season, dengue was suspected and dengue Non Structural protein 1 (NS1) antigen was done by immune chromatographic method which was positive on day 4 of illness. Immunoglobulin M (IgM) Enzyme Linked Immunosorbent Assay (ELISA) for dengue was positive however Immunoglobulin G (IgG) was negative. Mother was investigated on lines of dengue, keeping in mind vertical transmission, however mother had no thrombocytopenia and was negative for NS1 antigen, IgM, IgG dengue antibodies as well. Hence, a diagnosis of postnatally acquired dengue was made.

Platelet count of the newborn were monitored twice daily. There was no mucosal bleeding as well as bleeding from deeper sites. There was no requirement of platelet transfusion. Baby was afebrile after day 2 of admission and was discharged after five days, once thrombocytopenia had settled.

Investigations	Day 1 (Morning)	Day 1 (Evening)	Day 2 (Morning)	Day 2 (Evening)	Day 3 (Morning)	Day 3 (Evening)	Day 4 (Morning)	Day 4 (Evening)
Haemoglobin (g/dL)	12.3	12	11.7	12	13	12.6	12.3	12.5
Total leucocyte count (cells/mm^3)	6200	7000	7400	7200	6800	7000	6700	7200
Differential leucocyte count (Polymorphonuclear neutrophils/lymphocytes/ monocytes/eosinophils) (%)	28/64/5/3	23/72/2/2	15/74/9/2	14/68/2/1	22/64/2/2	25/72/3/1	19/67/4/2	24/50/2/1
Platelet count (cells/mm^3)	70,000	90,000	50,000	30,000	80,000	1,00,000	1,50,000	1,70,000
Peripheral smear	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C-Reactive protien (mg/L)	<0.50		<0.50					

[Table/Fig-2]: Complete blood count.

Blood tests	Values
Blood urea	16 mg/dL
Serum creatinine	0.6 mg/dL
Serum aspartate aminotransferase	20 U/L
Serum alanine aminotransferase	40 U/L
Serum alkaline phosphatase	297 U/L
Serum proteins	4.7 g/dL
Albumin	3.3 g/dL
Albumin: Globulin ratio	2:4
Serum bilirubin	0.9 mg/dL

[Table/Fig-3]: Liver and renal function test.

DISCUSSION

Dengue is one of the commonest viral illness encountered in the country and is a common public health problem. The current epidemiological data shows a rapid increasing trend in the infection rates among children and adults, including pregnant women. In pregnant females, it can lead to premature labour [1]. Vertical transmission is known to occur which may cause increased perinatal mortality and morbidity [2].

Dengue is diagnosed by NS1 Rapid Diagnostic Test (RDT) which has 99.2% sensitivity and 96.0% specificity when analysed using Dengue Virus (DENV) NS1 ELISA as standard [3]. NS1 antigen is detectable in blood from first day after the onset of fever up to day nine [4]. The Positive Predictive Value (PPV) is expected to be greater than 85% in most endemic countries, where dengue accounts for over 30% of febrile disease [5]. Infants in the first six months of life are usually protected from dengue infection by maternal antibodies in endemic areas [6]. There are several cases of vertical transmission of dengue in the neonatal period reported in the literature [7-10]. However, reports of postnatally acquired dengue in the neonatal age group are very few and those reports in literature usually present clinical picture of very sick bleeding neonates [11-13].

Dengue is caused by DENV of the family Flaviviridae which is transmitted by aedes aegypti mosquito. Dengue has an incubation period of 3-8 days but in the newborn period, neonates can become symptomatic as late as 11 days after birth [14]. DENV has four serotypes. The first episode of dengue leads to the development of both, protective antibodies against the current serotype causing the illness and cross reactive, non neutralising antibodies against the other serotypes that lead to Dengue Haemorrhagic Fever (DHF)/ Dengue Shock Syndrome (DSS) [11].

Dengue usually is a disease of young children. However, resurgence of dengue in the recent decades is associated with an increase in the number of infected adult population, including pregnant women. This in turn can be responsible for the increase in number of neonatal infections due to transplacental transmission during the last trimester. In cases of vertical transmission, maternal infection can lead to viremia and IgM positivity in both mother and the neonate [15,16]. The risk of DSS/DHF in the neonatal period, though rare, does exist when the protective antibody titer reduces due to catabolism and the cross reacting, enhancing antibody titer rises [14].

In literature, previously, there have been reports of neonates developing haemorrhagic manifestations like blood in vomitus, rash as well as presenting in shock despite no maternal infection hereby indicating postnatal transmission [11-13].

However, in the index case, the newborn was apparently well, which makes it an unusual case and authors could not find similar reports in literature.

CONCLUSION(S)

Keeping the index case in mind, it is recommended that neonatal dengue should be kept as a differential diagnosis for neonatal sepsis and thrombocytopenia even if the mother reports no febrile illness or any symptoms of dengue near term of her pregnancy particularly in endemic zones. The awareness about possibility of dengue, occurring postnatally in the newborn period, as a differential diagnosis of neonatal thrombocytopenia and septicemia is required for its proper management and more so in apparently healthy neonate.

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