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TEACHING FILES (GRAND ROUNDS)

CONGENITAL CHIKUNGUNYA IN NEWBORN ALONG WITH EARLY ONSET SEPSIS: HOW TO INTERPRET?

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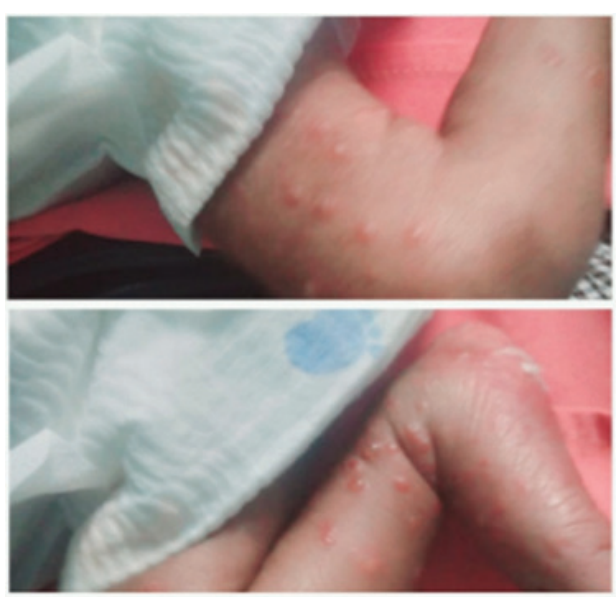
Clinical Problem:

A male baby was born at 37 weeks 5 days of gestation via normal vaginal delivery, with the birth weight of 2.45 kg. Amniotic fluid was clear and the APGAR at 1, 5 and 10 minutes were 8, 10 respectively. The mother 27 years old 2nd gravida, had an uneventful pregnancy and received regular prenatal care at attached hospital. Serological tests during first trimester for Hep B, HIV and syphilis were negative. Two days before delivery, mother experienced flu like symptoms and fever (38.5°c). Upon admission she was afebrile, with insignificant fever profiles. She was treated for unspecified sepsis during labour with antipyretics and antibiotics for 3 days. There was no history of PROM. The delivery was spontaneous and uneventful. In the first two days of life, the infant was active, pink and accepted feed well. On the 4th day of life, he began showing signs of decreased activity and refusal to feed, along with yellowish discolouration of sclera, suggestive of neonatal jaundice. He was transferred to the NICU for further management. Physical examination was largely unremarkable. Given the risk of perinatal infections, a sepsis workup was performed, revealing a total leucocyte count of 6790/L, a platelet count of 71000/L and a lymphocyte count of 53%. The Hb was normal (18.1/dL) with raised CRP level of 21.4 mg/L. Total Bilirubin was 15.28 mg/dL (direct 0.42 mg/dl). Blood culture and sensitivity tests were sent and IV antibiotics (Meropenem and Colistin) were initiated with double surface phototherapy. On day 7 of life, the infant developed vesicular rashes, primarily on the back and limbs, along with intermittent fever (101°F). In view of these signs and symptoms antibodies test was done for dengue and chikungunya, which was insignificant. Vitals remained stable with no signs of neurological involvement. Blood tests showed further decreasing platelet count (41000/L). A heart ultrasound revealed a small Atrial septal defect with left- to- right shunt. Due to persistent fever along with thrombocytopenia repeat blood culture was sent and plan for FFP and RDP transfusion were made with intravenous immunoglobulin. The baby later gone through multisystem involvement, had convulsion episodes. Appropriate anti-Seizure drugs were given to tackle the convulsions. MRI brain showed signs of encephalitis. After two sterile blood cultures, third was positive had growth of *Enterococcus faecium*; appropriate antibiotic therapy was given. Lumbar puncture showed no any growth hence plan of antibiotics continued till 14 days. In between mother's history was reviewed. She reported fever, rashes and persistent joint pain for three days after delivery. Hence, decided to rule out vertical transmission if any. Congenital chikungunya was confirmed on 30th day of life through ELISA method. This problem indicates the perinatal infections of congenital chikungunya along with early onset sepsis

Figure 1. Images of rashes on 7th day of life.



Should this infant be treated for congenital Chikungunya infection along with early onset sepsis?

Discussion

Chikungunya virus is an arthropod-borne virus that shares the same vectors, namely Aedes albopictus and Aedes aegypti with dengue. Clinical

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features of the disease mostly include acute febrile arthralgia and maculopapular rashes on the body.[1] Clinical manifestation in the neonatal period is reported to be variable and nonspecific. At the acute stage, the treatment is only supportive and antivirals have not been proven to be effective.[2] We have reported a rare case of serologically confirmed chikungunya infection in 30 days old male neonate, born to mother having intrapartum flu-like symptoms. Mother-to-child transmission of the chikungunya virus was first documented during the 2005–2006 outbreak in La Réunion. Neonates born to mothers with intrapartum viremia showed transmission rate of 48.7%. Maternal infections were classified as intrapartum if symptoms appeared two days before delivery or up to three days after.[3]

Most infected newborns are generally asymptomatic at birth, with symptoms typically developing after three days of life.[4] A French study reported that infected neonates exhibited fever, poor feeding and pain, while petechiae and rubella-like rashes were observed in 47.3% and 52.6% of cases, respectively. Common laboratory findings included thrombocytopenia with lymphopenia, mild transaminitis and hypocalcaemia. A similar study found that fever, poor feeding and irritability were the most common symptoms in neonates with chikungunya.[4] Chikungunya virus diagnosis can be confirmed serologically using IgM antibodies, but this method poses challenges in neonates as the virus is typically detectable only from five days after symptom onset (range: 1-12 days). Treatment during the neonatal period is primarily supportive, focusing on close monitoring of body temperature, feeding, hydration, pain and skin condition, along with antipyretics and fluid management. Antiviral medications are not indicated for this condition.[4] RT-PCR is the gold standard for early-stage diagnosis, recommended by the Centre for Disease Control and Prevention (CDC)[5,6], with sensitivity and specificity rates of 100% and 98.4% respectively, within the first eight days of illness. In La Réunion, 52.6% of infected neonates had severe disease. The two primary complications observed were encephalopathy with cerebral oedema and haemorrhagic fever. While all the affected infants' survived, persistent neurological disabilities were reported in 45% of those with complications.[6] Present neonate was asymptomatic at birth with normal CBC and raised CRP. On day 7 of life developed intermittent fever, rash, petechiae and moderate thrombocytopenia. Vertical mosquito-borne infection was initially overlooked due to the mother's negative dengue serology and the local prevalence of bacterial early-onset sepsis. The diagnosis of congenital chikungunya was confirmed via RT-PCR.[7] The infant was discharged on day 45 of life with normal neurological findings and was thriving on breastfeeding with satisfactory weight gain. The placental barrier is typically impermeable to the virus during the antepartum period and the vertical transmission is rare if maternal infection occurs more than seven days before delivery.[8] Transmission primarily occurs trans-placental during labour due to contact between maternal viremia and placental barrier gaps. Consequently, most affected newborns are asymptomatic at birth. Delivery by caesarean section does not prevent transmission. Although chikungunya is not inherently neurotrophic, perinatal transmission can lead to encephalitis in neonates. Thrombocytopenia and elevated C-reactive protein levels, as seen in this case, are almost universally reported. Similar findings were documented in a case series by Mangalgi et al.[8] Chikungunya should be considered in the differential diagnosis of neonates presenting with high-grade fever and hyperpigmentation, especially in endemic regions.[9] Thus careful maternal history plays a leading role in suspecting the possible perinatal infection. Thus, this clinical problem explained about vertical transmission of congenital chikungunya virus infection[10]

Compliance with ethical standards
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