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# Neonatal Chikungunya – A Case Series

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## Abstract:

**Background:** After 32 years, the reemergence of Chikungunya infection was reported in India in the year 2006. During this phase, vertical transmission of the disease was also noted. **Methodology:** A prospective study of neonatal chikungunya was done and the presentation and biochemical parameters were studied. **Results:** We had a total of 8 cases of vertically transmitted disease. Majority presented with features of encephalopathy and during the course of the disease all developed perioral hyperpigmentation which later spread to other parts of the body. **Conclusion:** Vertical transmission of chikungunya should be among the differential diagnosis when a newborn presents with features of encephalopathy and perioral hyperpigmentation, especially in an endemic area. Perioral hyperpigmentation can be considered as the hallmark of vertically transmitted chikungunya infection.

**Keywords:** neonatal chikungunya; hyperpigmentation; encephalopathy

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## Introduction

Chikungunya infection is known to affect a wide range of population including all age and sectors of the society. Vertical transmission of chikungunya infection was first reported in La Reunion Island in 2005[1]. We hereby present a series of 8 cases of vertically transmitted chikungunya infection which presented to our NICU over a period of 4 years.

## Material and methods

A descriptive analysis of newborns diagnosed with chikungunya by serum serology and PCR analysis, presenting within two weeks of birth was done. Vertical transmission was confirmed by serology and PCR analysis in the mother and the newborn. We noted the details of the antenatal history, maternal fever or other illness prior to delivery, period of gestation and mode of delivery and neonatal age of presentation, symptomatology, examination findings, biochemical abnormalities and response to treatment.

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## Results

During the last 4 years from 2006 to September 2010 we have had 8 cases of vertically transmitted neonatal chikungunya out of which 5 cases were male and 3 were female. Seven (87.5%) out of 8 were term newborns and one was 32 weeks preterm. The mean period of gestation was 37 weeks 2 days. Maternal history of fever one day prior to delivery was present in 7 of the 8 cases. The mean age of presentation was 5 days. The presenting symptoms were lethargy (75%), convulsions (62.5%) and fever (37.5%) (Table I). The examination findings at the time of admission were features of encephalopathy (75%) and hepatomegaly (50%). During the course of stay all 8 (100%) newborns developed hyperpigmentation.

The hyperpigmentation classically started over the perioral area spreading in a patchy fashion over to the trunk and limbs.

**Table I. Clinical Features (n=8)**

Symptoms	%
Hyperpigmentation	8(100)
Lethargy	6(75)
Feed refusal	6(75)
Convulsions	5(62.5)
Fever	3(37.5)

Investigations showed thrombocytopenia (50%), elevated CRP (50%), hypoproteinemia (37.5%), hyperbilirubinemia (37.5%), hyponatremia (25%) and hypoglycemia (12.5%) (Table 2). Only one newborn required ventilatory support in view of poor efforts and frequent convulsive apnea. Other causes of encephalopathy were ruled out by doing relevant investigations [CSF analysis, CT scan and metabolic work up (Ca, Mg, and Na)].

**Table II. Laboratory Investigations (n=8)**

Parameters	%
Thrombocytopenia	4(50)
Hypoglycemia	1(12.5)
Hypoproteinemia	3(37.5)
Hyponatremia	2(25)
Hyperbilirubinemia	3(37.5)
Elevated CRP	4(50)
Serum IgM and PCR for chikungunya (Mother & Baby)	8(100)

In all the newborns and their mothers serum for IgM and PCR for chikungunya was positive. On follow up at 3 months the hyperpigmentation had disappeared in all the babies.

## Discussion

India reported Chikungunya epidemic in 2006, 32 years after the last case in the country with present attack rate reaching 45% in some states [2]. Large numbers of cases are being reported from Karnataka and few other states in India [3]. Vertically transmitted neonatal chikungunya was first reported in La Réunion Island during the outbreak of the infection in the Island during 2005-2006 [1, 4]. Similar cases have also been documented in India [5, 6].

We had a series of 8 cases of neonatal chikungunya admitted in our hospital. Chikungunya was suspected in view of the maternal history of fever and endemicity of the disease. The incubation period of the virus is 2-12 days, more commonly being 3-7 days and hence only those babies who were symptomatic within first 2 weeks of life were included. We

demonstrated vertical transmission by doing serum IgM and PCR in both the mother and newborn. The serum half life of IgM antibodies is 5 days and within 2 weeks they are replaced by IgG antibodies [7].

We found that most of the neonates presented with features of encephalopathy. By end of the second week, all neonates developed the typical hyperpigmentation. Similar dermatological presentation of the infection has been reported in Kerala by Nair [6] and Valampampil et al [8] in infants and by Prashnath et al [9] and Inamdar et al [10] in adults. Couderc et al [11] has shown in experimental studies that the virus targets the skin closely resembling the tissue tropism observed in biopsy samples of chikungunya infected humans. In contrast, the common clinical signs of neonatal chikungunya infection in La Réunion were fever and rash [12]. All newborns were treated symptomatically and responded well to treatment.

In conclusion, chikungunya infection should be on high priority among the differential diagnosis when a newborn presents with features of encephalopathy and perioral hyperpigmentation, especially in an endemic area.

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