

Cutaneous Manifestations of Chikungunya Fever

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Chikungunya fever, a re-emerging RNA viral infection produces different cutaneous manifestations in children compared to adults. 52 children with chikungunya fever, confirmed by positive IgM antibody test were seen during 2009-2010. Pigmentary lesions were common (27/52) followed by vesiculobullous lesions (16/52) and maculopapular lesions (14/52). Vesiculobullous lesions were most common in infants, although rarely reported in adults. Psoriasis was exacerbated in 4 children resulting in more severe forms. In 2 children, guttate psoriasis was observed for the first time.

Key words: Chikungunya, Cutaneous Manifestations, India, Skin, Viral infection.

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Chikungunya fever is a re-emerging viral infection characterized by abrupt onset of fever, severe arthralgia, constitutional symptoms and rash lasting for 1-7 days [1-4]. Cutaneous manifestations in children differ from adults. We report various cutaneous lesions observed in children in the recent epidemic in Andhra Pradesh.

METHODS

Children affected with chikungunya infection attending our out-patient department during the recent epidemic of 2009 and 2010 were observed for cutaneous manifestations. Diagnosis was based on the criteria suggested by the National Institute of Communicable Diseases [5]. The disease was confirmed by positive IgM antibody against the virus. Skin biopsy was done in selected lesions.

RESULTS

Fifty two children (28 females) with confirmed chikungunya infection were seen. Twenty two were infants, the youngest being 22 days. Cutaneous lesions observed are listed in **Table I**. Pigmentary lesions were generalized, brownish black and predominantly involved face and extremities (**Fig. 1a** and **1b**). Nine children showed discrete scattered pigmented macules without any background or surrounding erythema (**Fig. 1c**). Vesiculobullous lesions were seen mostly in infants. They were symmetrical, flaccid, and containing clear serous fluid without any perilesional erythema (**Fig. 2**). Histopathology of bullous lesions showed intra

epidermal cleavage and periappendageal infiltrate containing lymphocytes and neutrophils. Generalized maculopapular eruption or erythema with islands of normal skin were noted, mostly 2-3 days after onset of fever. It started on trunk and then spread centrifugally involving face, palms and soles. Mucosal regions were spared. Mostly it subsided in 4-5 days, but in 5 cases there was peeling of the skin over body, palms and soles, resembling staphylococcal scalded skin syndrome (SSSS). However, these children were not irritable and not toxic and there was no tenderness in the lesions. Mild edema of hands and feet were observed in 6 children. Existing psoriasis exacerbated in 4 children and 2 children developed guttate psoriasis. Systemic features

TABLE I CUTANEOUS MANIFESTATIONS OF CHIKUNGUNYA (N=52)

Pigmentation	27 (51.9%)
Diffuse	18 (34.6%)
Macular	9 (17.3%)
Maculopapular	14 (26.9%)
Morbiliform	8 (15.4%)
Generalized erythema with islands of normal skin	6 (11.5%)
Vesiculobullous	16 (30.7%)
Petechiae	4 (7.6%)
Acrocyanosis	3 (5.7%)
Exacerbation of existing diseases	6 (11.5%)
Psoriasis	4 (7.6%)
Lichen planus	2 (3.8%)
Guttate psoriasis	2 (3.8%)



Fig.1 (a) Hyperpigmentation on face, (b) Hyperpigmentation on extremities and (c) Macular pigmentation on trunk.

observed were fever, arthralgia, loose stools, and seizures (3/52); and one child developed meningoencephalitis but recovered uneventfully. Lymphopenia was observed in 5 children.

DISCUSSION

We observed that cutaneous manifestations of chikungunya are different compared to adults. Generalized pigmentary changes were the commonest in our series whereas it was localized in adults in the form of centrofacial or melasma like pigmentation. The exact mechanism of pigmentation is not known. Inamdar, *et al.* [6] proposed virus triggered increased intraepidermal dispersion/retention of melanin. Maculopapular eruption was another common feature and did not differ significantly from adults except that in children it developed early, 1-2 days after fever compared to 4-6 days in adults. It may be in the form of erythematous macules, morbiliform rash or generalized erythema with islands of normal skin. Dengue also can produce similar clinical picture but associated features differentiate the two. Dengue may coexist with chikungunya infection and a serological exclusion is always desirable [7]. Hemorrhagic manifestations are rare in chikungunya infection. Ecchymoses and subungual hemorrhages are reported [1], and thrombocytopenia is occasional and not significant. Four of our patients showed few petechiae and none showed significant thrombocytopenia. Conditions like rubella, measles, infectious mononucleosis, scarlet fever, Kawasaki disease, acute retroviral syndrome, leptospirosis, rheumatic fever, and drug reactions have to be differentiated by appropriate clinical and laboratory features [8].

Vesiculobullous lesions were most commonly seen in infants and rarely reported in adults. These were

commonly seen on extremities with more frequent involvement of lower extremities, including buttocks and thighs [9,10]. They developed 2-3 days after fever and subsided in 6-10 days. Valampampil, *et al.* [9] reported symmetrical superficial vesiculobullous lesions and acrocyanosis without any hemodynamic alterations. Riyaz, *et al.* [3] reported charring, vesicles and bullae, followed by peeling, clinically mimicking toxic epidermal necrolysis but without mucosal involvement. Absence of perilesional erythema and crusting, Gram stain and cultures from the bullae exclude impetigo. Biopsy from the bullae showed intraepidermal cleavage in our cases and by Robin, *et al.* [10], but Riyaz, *et al.* [3] reported both intraepidermal and sub-epidermal cleavage along with periadnexal infiltrate. Vesicles and bullae were probably caused by viral replication in the



FIG.2 Multiple flaccid bullae on both legs.

WHAT THIS STUDY ADDS?

- Vesiculobullous lesions were common cutaneous manifestation of chikungunya fever in infants.

epidermis causing focal necrosis, ballooning degeneration, or nuclear disruption followed by an immune response and infiltration by leucocytes [3].

Exacerbation of existing skin diseases has previously also been documented with chikungunya infection [3,6]. Aphthous like ulcers, erythema multiforme like lesions, and lymphedema, which were seen in adults with this infection were not seen in our patients.

The cutaneous lesions of chikungunya need reassurance and symptomatic treatment. The maculopapular eruption was treated with antihistamines and topical soothing applications like calamine lotion. Hypermelanosis was managed with a short course of mild topical steroids along with emollients. Vesiculobullous lesions were treated with local cleaning and topical antibiotics.

Contributors: KAS conceived and designed the study. He revised the manuscript for important intellectual content and will act as guarantor of the study. KS and PV collected data conducted the laboratory tests, interpreted them and drafted the paper. The final revised manuscript was approved by all authors.

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