

## Study of varied cutaneous manifestations of chikungunya fever

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### Abstract

**Introduction:** Chikungunya fever is an arboviral disease transmitted by infected Aedes mosquitoes. It is characterized by acute onset of fever, associated with severe disabling arthralgia. Mucocutaneous manifestations occur in about half of these patients.

**Aim:** To study the mucocutaneous manifestations in suspected cases of chikungunya.

**Materials and Methods:** Patients attending dermatology outpatient department with fever and rash were screened for chikungunya. Clinical examination was done and mucocutaneous manifestations recorded. Diagnosis was confirmed by serological testing. A total of 50 patients were enrolled in the study.

**Results:** Generalized erythematous maculopapular rash was the most common cutaneous manifestation. Multiple ulcers with erythema over genital region in males was the second most common presentation. Centro facial pigmentation and discrete hyperpigmented macules on trunk and face, urticarial rash, crusted lesions near angle of mouth, erythema/edema over hands and feet were other findings. Generalized erythema multiforme like lesions were also observed in two patients. Vesiculobullous eruptions, which have been reported commonly only in infants, were found in one adult patient in our study. Exacerbation of pre-existing skin lesions and Erythema nodosum like lesions reported in literature were not seen in our study.

**Conclusion:** Vesiculobullous lesions have been reported as a common cutaneous manifestation of chikungunya fever in infants. Vesiculobullous lesions occurring in an adult, however, have not been reported previously, to the best of our knowledge.

**Keywords:** Chikungunya, Cutaneous manifestations, Vesiculobullous lesions.

### Introduction

Chikungunya fever (CF) is an arboviral infection, which typically presents with acute onset fever, accompanied by severe arthralgia, myalgia, and skin rash. It is transmitted by the bites of infected mosquitoes of the Aedes genus.<sup>1</sup> It is caused by the Chikungunya virus, which belongs to the genus alpha virus, and family togaviridae.<sup>2</sup> The name "Chikungunya" is derived from the Makonde language and its meaning is "that which bends up". This is a reference to the stooped posture in which the patient walks, due to severe joint pain. The first case of chikungunya was reported in 1952 in Africa at a place called Makonde Plateau.<sup>3, 4</sup>

Since then, many epidemics of CF have been reported, mainly from Africa and different Asian countries. The first reported outbreak of CF in India was from Calcutta in 1963.<sup>5</sup> After a quiescent period of 32 years, India had witnessed a massive epidemic in 2005, which is still ongoing in different parts of the country.<sup>6</sup>

People of all age groups and both sexes are equally affected by Chikungunya fever. After an incubation period of 3 to 12 days there is sudden onset of fever frequently accompanied by joint pain. The patient may also have other symptoms like muscle pain, headache, nausea, fatigue and rash. The pain in the joints is often very severe and disabling, but usually resolves after a few days or weeks. In some cases, however, the arthralgia may persist for several months, or even years. Occasionally the patient may also suffer from gastrointestinal complaints; ocular, neurological and cardiac complications have been reported in few cases.<sup>6</sup> <sup>7</sup> Wide varieties of mucocutaneous manifestations have also been known to occur in a significant proportion of cases.

Cutaneous manifestations reported previously in literature include Morbilliform eruption, Hyperpigmentation, Xerosis with scaling, Desquamation of palms, Excoriated papules, Generalized urticarial lesions, Penoscrotal and perineal ulcer, Generalized erythema, Transient nasal erythema, Vesiculobullous lesions, Ecchymoses, Lymphedema, Vasculitic lesions, Lichenoid eruptions, Erythema nodosum, Erythema multiforme-like lesions, Peripheral cyanosis, Exacerbation of preexisting dermatoses, etc. Mucosal lesions like aphthous ulcers, crusted lesions on lips and angles of mouth, pigmentation, and also nail changes like subungual hemorrhage have been found in association with CF.<sup>8</sup>

We have reviewed some of the common mucocutaneous manifestations associated with chikungunya fever and also report some atypical findings.

### Study Design

This was a prospective study carried out during outbreaks of CF seen in Aurangabad district of Maharashtra in recent years. Patients who attended dermatology OPD were included in the study if they had symptoms of CF as per the 'case definition' of the chikungunya.<sup>9</sup> The criteria were an acute illness with abrupt onset of fever and associated symptoms like joint pain, headache, backache, photophobia, and skin eruptions.

50 patients were enrolled in the study. Confirmatory tests were done from NIV Pune. Symptomatic management was given to all patients for fever and joint pain and vector control measures were advised. Mucocutaneous manifestations were treated appropriately. Oral antihistamines and soothing agents were given for pruritus,

topical emollients for scaling or xerosis, topical and/or systemic antibiotics for ulcerative lesions and hypopigmenting agents for hypermelanosis.

**Observations**

All patients enrolled in the study were adults; among them 26 were males and 24 females. Cutaneous lesions observed in these patients were recorded. (Table 1)

**Table 1: Cutaneous manifestations in chikungunya fever**

Manifestation type	Number of patients affected
Maculopapular rash	20
Genital area ulcers	15
Centrofacial pigmentation and discrete hyperpigmented macules trunk, face	14
Erythema/edema of hands and feet	13
Erythema nodosum	00
Targetoid lesions	01
Urticarial rash	01
Flare up of pre existing skin disease	00
Lichenoid lesions	01
Hemorrhagic lesions	01
Crusted lesions near angle of mouth	01
Erythema multiforme like lesion	01
Vesiculo bullous lesions	01

Morbilliform eruptions was the most common cutaneous finding in our cases (40%) (Fig.1). Multiple, painful ulcers primarily over the scrotum and medial thighs in males was the second most common presentation (30%) (Fig. 2). The third most common observation was hyperpigmented macular lesions distributed typically over the nose and cheeks (28%) (Fig. 3). This was followed by edema and erythema of palms and soles, seen in 26% cases. Hemorrhagic generalized lesions were seen in two patients (Fig. 4). Crusted lesions near angle of mouth were observed in 1 patient (Fig. 5). Erythema multiforme like lesions were observed in one patient.

**Fig. 1: Morbilliform eruptions**



**Fig. 2: Scrotal ulceration**



**Fig. 3: Pigmentation over nose**



**Fig. 4: Generalized hemorrhagic lesions**



**Fig. 5: Crusted lesions near angle of mouth**

Exacerbation of pre-existing skin lesions and Erythema nodosum like lesions reported in literature were not seen in our study.

One possibly new finding in diagnosed case of chikungunya fever was the vesiculobullous lesions on wrist and fore arm in adult male (Fig. 6). The patient was non diabetic and non hypertensive not on any medication. The fluid was sterile on gram staining and culture. It started 2 days after fever and recovered in two weeks.



**Fig. 6: Vesiculobullous lesions seen on hand of adult patient**

## Discussion

Chikungunya fever (CF) is a re-emerging, acute, febrile, arboviral infection, transmitted by bite of infected *Aedes* mosquitoes. Epidemics of chikungunya occur cyclically, with an interval of many years to decades in between the epidemics.<sup>6</sup> Since it was first reported in Tanzania in 1952,<sup>3,4</sup> multiple outbreaks of chikungunya fever have been reported in various parts of the world. An outbreak of the fever started in India in 2005. The reason behind the re-emergence of CF is not clear, but it could relate to a number of factors including a plethora of potential vectors, inefficient vector control, absence of herd immunity, viral mutations, globalization and increased international travel, and also the emergence of another potential vector, *Aedes albopictus*, in addition to *Aedes aegyptii*, as a transmitter of the chikungunya virus.<sup>9</sup>

CF may affect people of any age group and both sexes. In the present study, the number of males affected slightly outnumbered the females. Similar male gender predilection profile was also observed in other studies.<sup>10, 11</sup> while both sexes were seen to be equally affected in another study.<sup>12</sup> After an incubation period of 3-12 days, the disease onset is characterized by high fever along with severe arthralgia, myalgia and a cutaneous rash. Other clinical manifestations in the form of conjunctivitis, headache, vomiting, photophobia etc may be seen during the course of the fever.<sup>7</sup> Cutaneous manifestations in CF occur in about 40-50% cases.<sup>13</sup>

The most common cutaneous feature observed in CF is a generalized erythematous maculopapular rash involving mainly the face, trunk and limbs.<sup>14</sup> Similar findings were

noted in our study. The rash usually appears 3 to 5 days after the onset of fever, and resolution is seen in another 3 to 4 days. The rash was asymptomatic in most of our patients, although it is reported to be associated with a mild pruritus in 80.8% cases.<sup>15</sup> The lesions are commonly seen to appear on the upper limbs initially, followed by the face and trunk.<sup>12</sup> Recurrent crops of lesions may occur, due to intermittent bouts of viremia.<sup>13</sup>

Ulcers in the intertriginous regions are other findings seen in CF. Numerous, painful ulcers mostly located over the medial part of thighs and scrotum in males was the second most common presentation seen in our study. These ulcers started to appear 3-4 days after the fever and showed improvement within 1-2 weeks. The ulcers are usually deep, having undermined edges and punched-out margins, showing healthy granulation tissue in the floor with surrounding erythema. The ulcers are round to oval or asymmetrical in shape, with diameter ranging from 0.5 to 1 cm. Multiple aphthous-like ulcers have been reported to occur on axillae, tongue, palate, and other areas of oral mucosa.<sup>16</sup> these were, however, not found in our studies. In contrast to this, oral aphthae were seen to be commoner than the genital ulcers in other studies by Bandyopadhyay and Ghosh, Riyaz et al.<sup>10,12</sup>

Centro facial pigmentation and discrete hyperpigmented macules over trunk were also commonly seen in our patients. The predominant sites were on nose and cheeks, as noticed in others studies.<sup>17,18</sup> The lesions were observed a few days after the appearance of fever and arthralgia, and improved in about 3-4 weeks in most of the patients, but in some patients it persisted for up to three months. The pigmentary changes were seen as the commonest cutaneous lesions in some studies conducted by Seetharam et al, Inamadar et al.<sup>11,19</sup> but this was not the case in our study. A number of patterns of hyperpigmentation have been described in chikungunya fever, like freckle-like and centro facial, pinpoint confetti like macules, melasma like patches over face, diffuse, irregular and flagellate patterns over trunk and extremities. The mechanism behind the pigmentation seen in CF can be post inflammatory.<sup>14</sup> The predilection for pigmentation over exposed areas, as seen in our study, can be attributed to the ultraviolet exposure. Inamadar et al have put forward the theory of virus triggered increased intraepidermal retention/dispersion of melanin.<sup>11</sup>

Edema and erythema, mainly over acral distribution, was another finding observed in our patients, lasting for duration of 3-4 weeks.

Erythema nodosum like lesions and vasculitic lesions may also be seen in CF.<sup>18</sup> These were not seen in our study. Worsening of pre-existing dermatological diseases, for example, flare up of pre-existing psoriasis lesions, exacerbation of lesions of melasma and lichen planus, unmasking of lepra reactions etc.<sup>11,18</sup> These features, however, were not observed in our study.

Apart from the above mentioned cutaneous manifestations, other findings noted in our study include

crusted lesions on lips and angle of mouth, hemorrhagic lesions, lichenoid eruptions and targetoid lesions.

Flaccid vesiculobullous lesions have been documented previously in infants.<sup>14</sup> But similar lesions in adults have not been reported so far, to the best of our knowledge. This seems to be a possibly new cutaneous finding observed in one of the patients in our study. Vesiculobullous lesions were seen on wrist and fore arm in an adult male. They appeared 2 days after fever and recovered in two weeks. The patient was non diabetic and non hypertensive, not on any medication. The fluid was sterile on gram staining and culture.

### Conclusion

A wide variety of cutaneous manifestations have been described in literature previously, but they seem to be ever expanding, with newer and varied manifestations being described with each successive epidemic. This study aims to bring forward an atypical finding seen in CF in the form of vesiculobullous lesions in the adult age group, which has not been reported previously to the best of our knowledge.

**Conflicts of Interest:** None.

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