DOI: 10.7860/JCDR/2024/70377.19493

Case Series

Dermatology Section

Chik Sign: A Clinical Clue to Chikungunya Infection- A Case Series

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ABSTRACT

Chikungunya, transmitted by Aedes mosquitoes, manifests with fever, joint pain, and a distinctive cutaneous feature known as the "Chik sign" or "Brownie nose." The Chik sign is an asymptomatic freckled hyperpigmentation of the tip and ala of the nose and may persist in the post-infective period. This nasal pigmentation can aid in diagnosing this viral infection, especially in resource-poor settings where serological confirmation is not feasible. Pigmentary changes, though asymptomatic, can persist for months and can be managed conservatively with sun protection, topical moisturisers, and depigmenting creams. The present case series describes three patients with nasal pigmentation that developed after an episode of chikungunya fever. The first patient was a one-month-old female neonate who developed fever at 15 days of age, followed by nasal hyperpigmentation, with a positive maternal history of chikungunya. The second case was a 29-year-old female patient, who developed fever and joint pain, followed by nasal hyperpigmentation one week later, and was diagnosed as a case of chikungunya based on clinical and serological evidence. The third case involved a 62-year-old male patient, who developed fever and joint pain two months ago, followed by nasal hyperpigmentation one week later, and was diagnosed as a case of chikungunya based on clinical and serological evidence.

Keywords: *Aedes* mosquitoes, Brownie nose, Nasal pigmentation

INTRODUCTION

Chikungunya, a re-emerging arboviral infection, belongs to the alphavirus genus of the Togaviridae family and is primarily transmitted through the bites of Aedes mosquitoes, particularly *Aedes aegypti* and *Aedes albopictus* [1]. The virus infects susceptible skin cells such as macrophages and endothelial cells within the subcutaneous capillaries, leading to replication and potential dissemination to secondary lymphoid organs through the bloodstream. The "Chik sign" or "Brownie nose" represents a benign hyperpigmentation of the nose that can occur during or after a fever episode [1-3]. Pigmentary changes associated with chikungunya are generally asymptomatic, with potential causes including post-inflammatory hyperpigmentation, increased intraepidermal melanin dispersion/retention triggered by the virus, and exposure to ultraviolet radiation [1]. While these changes typically resolve spontaneously, they can persist for up to six months after the infective episode. Although these changes may cause cosmetic concerns for the patient, they eventually resolve with treatment using topical depigmenting agents [1,2]. This case series emphasises that nasal pigmentation can aid in the clinical diagnosis of chikungunya, especially in resource-poor settings where serological testing may not always be feasible.

Case 1

A one-month-old female neonate presented at the skin outpatient department exhibiting hyperpigmentation on the face, particularly concentrated around the nose and extending upto the alar region. The mother was clinically diagnosed with chikungunya infection one week prior to giving birth, during which she experienced fever and joint pain for a week. The infection was confirmed with a positive serum IgM test for chikungunya. The neonate developed fever and irritability at 15 days of age, followed by asymptomatic nasal hyperpigmentation a week later. Cutaneous examination revealed speckled hyperpigmentation over the tip and ala of the nose [Table/Fig-1]. Based on the clinical presentation, the clinical diagnosis for the infant was post-chikungunya hyperpigmentation.

[Table/Fig-1]: Freckled hyperpigmentation over the tip and ala of the nose.

Laboratory diagnosis was not performed for the baby as she was clinically asymptomatic, and the mother did not consent to a blood draw. Re-assurance was provided, and she was treated with topical liquid paraffin.

Case 2

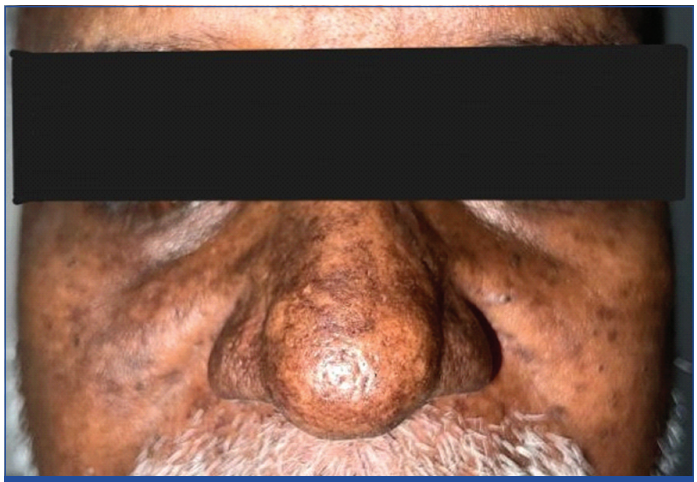
A 29-year-old female patient, presented to the skin outpatient department with complaints of hyperpigmentation on her face, specifically over the nasal and periorbital regions. This pigmentation developed one week after the onset of fever, joint pain, and joint swelling. No other significant history pertaining to the development of hyperpigmentation was reported. Upon examination, diffuse macular hyperpigmentation was observed over the tip and ala of the nose, as well as the periorbital area, with the mucosa remaining unaffected [Table/Fig-2]. The patient was diagnosed with chikungunya based on clinical and laboratory findings, as

[Table/Fig-2]: Diffuse freckled pigmentation noted over the tip and ala of the nose with periorbital hypermelanosis.

chikungunya IgM was positive. The patient was advised to use sun protection, topical liquid paraffin, and a topical kojic acid. Since the patient was completely asymptomatic and the benign nature of the condition was explained, she did not return for follow-up.

Case 3

A 62-year-old male patient presented to the skin outpatient department with complaints of hyperpigmentation on his nose persisting for the past two months. He reported a history of fever and joint pain one week before the onset of hyperpigmentation. Dengue serology was negative, and platelet counts were normal. Clinically, he was diagnosed with chikungunya and received symptomatic management such as anti-pyretics and anti-inflammatory agents. On skin examination, diffuse macular hyperpigmentation was observed over the tip and ala of the nose, extending onto the right cheek [Table/Fig-3]. The patient was advised to use sun protection and was prescribed topical liquid paraffin and kojic acid for treatment.



[Table/Fig-3]: Diffuse hyperpigmentation noted over the tip and ala of the nose extending till the right cheek.

DISCUSSION

Patients infected with chikungunya typically exhibit symptoms like fever and joint pain 3-7 days after initial inoculation, often associated with occasional rigors. A characteristic morbilliform rash, the most common cutaneous manifestation, tends to appear three days after the onset of fever, usually resolving without any sequelae.

A distinctive feature of chikungunya is the development of pigmentary changes, including the classical finding-nasal pigmentation referred to as “Chik sign” or “Brownie nose”, which may develop during or after the occurrence of fever [1].

Other patterns of pigmentary changes noted include centro-facial pigmentation, diffuse facial pigmentation which can also affect the pinna, melasma-like pattern over the face, periorbital hypermelanosis, macular pigmentation Addisonian-type over palms, mucosal-type over the tongue and palate, and pigmentation over the extremities [1].

In addition to pigmentation, patients may present with a range of cutaneous findings, including a generalised maculopapular rash, vesiculobullous lesions, acrocyanosis, petechial rash, purpura, and vasculitis-like lesions. Chik sign proves beneficial in identifying chikungunya and serves as a valuable clinical aid, especially in resource-poor settings where traditional serological confirmation methods are limited [2]. This is particularly relevant in patients who develop the pigmentation during the course of the infection.

Chik sign has been reported as being specific for chikungunya fever, and studies by Kumar R et al., Shivakumar V et al., and Prashant S et al., confirm the same [3-5]. However, it should be noted that recently Chik sign has been reported in dengue and post-coronavirus infection as well, expanding its relevance beyond chikungunya [6,7].

Vertical transmission of the infection occurs in 27.2%-48.29% of cases, with the highest risk observed at the time of delivery [8]. The pathogenesis behind maternal transmission is not fully understood yet, but it is found that maternal infection within 16 weeks of gestation can lead to abortion, while infection after 22 weeks increases the risk of neonatal transmission [9].

Differential diagnosis for Chik sign include conditions like melasma, congenital lupus, drug rash (caused by drugs such as imipenem), and various infections caused by bacteria (*Listeria monocytogenes, Staphylococcus epidermidis*), fungi (Candida), and viruses (human herpes virus 6, enteroviruses) [10].

Diagnosis of chikungunya is primarily clinical, with additional testing options such as Chikungunya virus-specific IgM antibody, RT-PCR, and viral culture in doubtful cases. The disease is generally self-limiting, and treatment involves oral anti-inflammatory drugs for fever and joint pain, oral antihistamines, and moisturisers for mucocutaneous lesions. Sun protection measures, along with depigmenting creams, are recommended for managing pigmentary changes.

CONCLUSION(S)

This case series on Chik sign has been reported to emphasise the benign, self-limiting nature of the associated nasal pigmentation, which in resource-poor settings can play a significant role in the clinical diagnosis of chikungunya infection.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Feb 27, 2024
- Manual Googling: Mar 30, 2024
- iThenticate Software: Apr 11, 2024 (7%)

ETYMOLOGY: Author Origin

EMENDATIONS: 5

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Feb 27, 2024**
Date of Peer Review: **Mar 27, 2024**
Date of Acceptance: **Apr 13, 2024**
Date of Publishing: **Jun 01, 2024**