

# Clinical Characteristics of Acute Chikungunya Cases at IAHS Hospital

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## ABSTRACT

**Background:** Between April and September 2017, Bangladesh experienced a major outbreak of acute Chikungunya Virus (CHIKV) infection. Since then, Chikungunya has become a common cause of acute febrile illness associated with joint pain in the country. During outbreaks, dengue infection frequently co-circulates and presents with overlapping clinical features, creating diagnostic challenges. To describe the clinical and laboratory characteristics of acute Chikungunya virus infection among patients attending IAHS Hospital.

**Materials and methods:** This cross-sectional descriptive study was conducted in the Outpatient Department of Medicine at IAHS Hospital from March 2025 to August 2025 on 50 patients. Cases presenting with acute febrile illness and joint symptoms were evaluated clinically and investigated serologically. Anti-Chikungunya IgM antibody testing was performed for laboratory confirmation.

**Results:** Fever and joint swelling were present in 100% of patients. Rash and generalized weakness were observed in 80% and 90% of cases, respectively. Male patients constituted 60% of the study population. Lymphadenopathy was noted in 40% of patients. An oligoarticular pattern of joint involvement (60%) was more common than a polyarticular pattern (40%). Large joint involvement predominated, with ankle joint involvement seen in 80% of cases. All patients were positive for anti-Chikungunya IgM antibodies. Dengue–Chikungunya co-infection was identified in four patients.

**Conclusion:** Chikungunya virus infection is an important cause of acute febrile illness with joint pain in Bangladesh. Given its clinical overlap with dengue and other febrile illnesses, accurate laboratory confirmation is essential for appropriate diagnosis and management.

**Key words:** Chikungunya; Fever; Lymphadenopathy; Swelling.

## Introduction

Chikungunya virus (CHIKV) is an arthropod-borne virus transmitted primarily by Aedes (Ae.) mosquitoes. The virus was first isolated in 1952 from the Makonde Plateau in the southern province of Tanzania (Formerly Tanganyika). Transmission occurs when female mosquitoes acquire the virus through a viraemic blood

meal from a susceptible vertebrate host; following an appropriate extrinsic incubation period, the virus is subsequently transmitted to another vertebrate host during later feeding cycles.<sup>1</sup>

In Bangladesh, the first confirmed outbreak of chikungunya occurred in December 2008 in the Rajshahi and Chapai Nawabganj districts.<sup>2</sup> A subsequent outbreak was reported in 2011 in the Dohar subdistrict of Dhaka, where several hundred individuals were affected.<sup>2</sup> Since then, chikungunya virus infection has been increasingly recognized as an important cause of acute febrile illness among adults in Bangladesh, supported by anecdotal evidence and multiple case reports.<sup>2-7</sup> More than 138 cases reported in 2017 and 2700 cases in 2025, mainly in Dhaka and Chattogram.

The classical clinical manifestations of chikungunya fever include high-grade fever, maculopapular rash and severe joint pain or arthralgia<sup>8</sup>. Patients may develop a spectrum of rheumatological complications, most notably chronic and disabling arthritis involving various joints.<sup>9,10</sup> In addition, a wide range of systemic manifestations has been documented, including gastrointestinal symptoms (Diarrhea, vomiting and abdominal pain) ocular involvement (Conjunctivitis,

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optic neuritis, iridocyclitis, episcleritis, retinitis and uveitis) and neurological complications such as encephalitis, myelitis, Guillain–Barré Syndrome (GBS) and other neuroinflammatory conditions.<sup>11-13</sup>

The increasing prevalence of CHIKV infection has resulted in substantial morbidity and economic burden. Loss of productivity due to prolonged illness and disability, along with increased healthcare expenditures required for diagnosis and management, pose significant challenges for both affected individuals and society at large. From April to September 2017, Bangladesh experienced a major outbreak of acute chikungunya virus infection, particularly affecting the capital city, Dhaka. Against this background, the objective of the present study is to describe the clinical and laboratory characteristics of acute chikungunya cases presenting at IAHS Hospital.

### Materials and methods

This cross-sectional descriptive study was conducted in the Outpatient Department of Medicine IAHS-Hospital. The study duration was from March 2025 to August 2025. Informed consent were obtained from each patient.

Samples from 50 patients with evidence of Fever and Arthralgia were obtained. Patients fulfilling the inclusion criteria and clinically diagnosed as a case of chikungunya as per World Health Organization guidelines 14 were enrolled in this study. After sample collection of Chikungunya virus infection was confirmed by anti-chikungunya IgM/IgG serologic test, complete blood count, Dengue non-structural protein 1 (NS1), Dengue IgM Ab to exclude the dengue.

### Case definitions

*Possible case* : A patient meeting clinical criteria (Acute onset of fever > 38.5°C and severe arthralgia/arthritis not explained by other medical conditions).<sup>14</sup>

*Laboratory criteria* : At least one of the following tests in the acute phase<sup>14</sup>:

- i) ☐ Virus isolation
- ii) ☐ Presence of viral RNA by RT-PCR
- iii) ☐ Presence of virus-specific IgM antibodies in a single serum sample collected in an acute or convalescent stage
- iv) ☐ A 4-fold increase in IgG values in samples collected at least 3 weeks apart.

### Inclusion criteria

- Age >18 years.
- Patients who fulfill the criteria of case definition.

### Exclusion criteria

- Patient refused to participate in the study.

Data were entered into Microsoft Excel data sheet to generate a master sheet. After completion of the data entry, the master sheet was fed into Statistical package for social science (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp) for processing and analysis.'

### Results

**Table I** Clinical characteristics of acute Chikungunya cases (n = 50)

| Variables <input type="checkbox"/>                                                              | Number (%) |
|-------------------------------------------------------------------------------------------------|------------|
| Male <input type="checkbox"/>                                                                   | 30 (60)    |
| Female <input type="checkbox"/>                                                                 | 20 (40)    |
| Fever <input type="checkbox"/>                                                                  | 50 (100)   |
| Joint swelling <input type="checkbox"/>                                                         | 50 (100)   |
| Rash <input type="checkbox"/>                                                                   | 40 (80)    |
| Headache <input type="checkbox"/>                                                               | 40 (80)    |
| Lymph node<br>anterior cervical and posterior<br>cervical and inguinal <input type="checkbox"/> | 20 (40)    |
| Weakness <input type="checkbox"/>                                                               | 45 (90)    |
| Vomiting <input type="checkbox"/>                                                               | 30 (60)    |
| Others * <input type="checkbox"/>                                                               | 20 (40)    |

\*Includes aphthous-like ulceration, skin excoriation and blister.

Table I reflects that among the 50 cases male were 60% and female were 40%, fever and joint swelling in almost all patients 100%, rash and weakness also involve 80 % and 90% patients. Lymph node 40% were most commonly anterior, posterior cervical and inguinal lymph node, others include oral ulceration, blister in 40% patient.

**Table II** Pattern of joint involvement in acute chikungunya cases (n=50)

| Pattern of joint involvement <input type="checkbox"/> | Number (%) |
|-------------------------------------------------------|------------|
| Morning stiffness <input type="checkbox"/>            | 50 (100)   |
| Oligo- articular <input type="checkbox"/>             | 30 (60)    |
| Poly- articular <input type="checkbox"/>              | 20 (40)    |
| Small joints of hand <input type="checkbox"/>         | 20 (40)    |
| Ankle <input type="checkbox"/>                        | 40 (80)    |
| Shoulder <input type="checkbox"/>                     | 10 (20)    |
| Knee <input type="checkbox"/>                         | 20 (40)    |

Table II shows joint involvement with morning stiffness was present in all patients, oligo articular pattern 60% were more predominant than poly articular 40% pattern, large joint involvement was more than small joint 40%, most predominantly ankle joint 80%.

**Table III** Diagnostic and other common positive laboratory findings of the cases (n=50)

| □ Positive serological test □            | Number (%) |
|------------------------------------------|------------|
| Anti-chikungunya IgM/IgG antibodies □    | 50 (100)   |
| Complete blood count                     |            |
| □ Leukopenia □                           | 20 (40%)   |
| □ Thrombocytopenia □                     | 20 (40%)   |
| Dengue IgM antibodies □                  | 4 (8%)     |
| Negative serological test □              |            |
| Dengue non-structural protein 1 (NS 1) □ | 0 (0%)     |

The above Table shows that Chikungunya antibodies positive in all patients, among patients other finding 8% patients were dengue antibodies positive which indicate dengue and chikungunya co- infections. Dengue NS1 were done to exclude dengue fever. All patient had done complete blood count, leukopenia and thrombocytopenia were detected in 40% of cases.

### Discussion

Among the 50 confirmed cases, males constituted 60% and females 40% of the study population. Male predominance in this study was higher than that reported from most countries, except Colombia, while a similar male predominance has also been documented in Singapore.<sup>15</sup> This observation may be attributed to greater involvement of males in outdoor activities compared with females in developing countries such as Bangladesh, Sri Lanka and India, leading to increased exposure to mosquito bites.<sup>16</sup> Additionally, access to healthcare services for women remains limited in Bangladesh due to multiple factors, including cultural norms and socioeconomic constraints.<sup>17-19</sup>

All patients in this study were enrolled according to the World Health Organization diagnostic criteria, which include fever, arthralgia and rash. Fever and joint pain were present in all of cases. These clinical features are consistent with findings from recent chikungunya outbreaks reported in India, Singapore and Reunion Island.<sup>15,20-23</sup>

Rash developed in 80% of patients, typically within 3–4 days of illness onset. This proportion is comparable to reports from La Reunion (50%) Gabon (41.8%) and Colombia (56%).<sup>24,26,27</sup> In contrast, studies from Sri Lanka reported rash in only 11% of cases, whereas a previous study from rural Bangladesh documented rash in more than 70% of patients.<sup>25</sup>

Headache was another common manifestation observed in the present study out of 50, 40(80%) had this complaints. However, its frequency was lower compared with reports from Puerto Rico (83.7%) in Sri Lanka (75%) and Colombia (64%) features were noted.<sup>9,24,25</sup>

Lymphadenopathy was observed in 40% of patients in this series, which is comparable to findings from Mexico (42%) but higher than those reported from Sri Lanka (18%) and Colombia (8%).<sup>24,25,28</sup> Cutaneous manifestations of chikungunya have been described in a case series of 145 patients from India, where pigmentary changes were the most common finding (42%), followed by maculopapular eruptions (33%) intertriginous aphthous-like ulcers (21.3%) and generalized vesiculobullous eruptions (2.75%).<sup>29</sup> In the present study, aphthous-like ulceration was observed in 40% of patients and one patient developed blistering with excoriation.

Chikungunya viral arthritis classically presents as a symmetrical polyarthritis, frequently involving peripheral joints such as the small joints of the hands and feet, wrists and larger joints including knees, ankles and shoulders.<sup>10,30</sup> Less commonly, the sternoclavicular and temporomandibular joints may be affected, while hip involvement is relatively rare.<sup>30</sup> The arthritic manifestations may persist in up to 80% of patients and progress to a chronic phase<sup>10</sup>. In the present study, 60% of patients presented with oligoarthritis and 40% with polyarthritis. Large joint involvement (80%) was more frequent than small joint involvement.

Chikungunya fever is generally a self-limiting illness with very low mortality; however, fatalities have been reported in several cases.<sup>31,32</sup> Acute infection is often associated with biochemical and hematological abnormalities, including leukopenia, lymphopenia and thrombocytopenia.<sup>20</sup> Similar laboratory abnormalities were observed in this study. The reported frequency of thrombocytopenia in studies from La Reunion ranged from 9.5% to 24%.<sup>20</sup> In the present series, all confirmed cases (100%) were enrolled based on anti-Chikungunya IgM antibody positivity. Among these, 8% were also positive for dengue antibodies, indicating chikungunya–dengue co-infection. Acute dengue infection was excluded in all cases using the dengue NS1 antigen test.

### Limitation

The confirmed cases were enrolled based on Anti Chikungunya antibody IgM test and the tests were not repeated after 3 weeks.

### Conclusion

In this study, all the confirmed cases had typical characteristics features of Chikungunya fever which is now spread all over the country with significant morbidity. Though it is self limiting disease, it can be turned into chronic illness like rheumatoid arthritis. The findings of this study help to make another large cohort study during the next epidemic. This study will be

pivotal in giving direction to our public health experts, clinicians and other policymakers to construct the future strategy for effective vector control, treatment and formulation of community and hospital-based case management guideline in Bangladesh.

### Recommendations

For early detection of chikungunya virus infection, RT PCR need to be more available and cost effective.

### Disclosure

The authors declare no conflict of interest.

### References

1. Solignat M, Gay B, Higgs S, Briant L, Devaux C. Replication cycle of chikungunya: A re-emerging arbovirus. *Virology*. 2009;393:183–197.
2. Khatun S, Chakraborty A, Rahman M, Nasreen Banu N, Rahman MM, Hasan SM, Luby SP, Gurley ES, 2015. An outbreak of chikungunya in rural Bangladesh, 2011. *PLoS Negl Trop Dis* 9: e0003907.
3. Faruque LI et al. Prevalence and clinical presentation of Rickettsia, Coxiella, Leptospira, Bartonella and chikungunya virus infections among hospital-based febrile patients from December 2008 to November 2009 in Bangladesh. *BMC Infect Dis*. 2017; 17: 141.
4. Hassan R, Rahman MM, Moniruzzaman M, Rahim A, Barua S, Biswas R, Biswas P, Mowla SG, Chowdhury MJ. Chikungunya—an emerging infection in Bangladesh: A case series. *J Med Case Rep*. 2014; 8: 67.
5. Martinez-Pulgarin DF, Chowdhury FR, Villamil-Gomez WE, Rodriguez-Morales AJ, Blohm GM, Paniz-Mondolfi AE. Ophthalmologic aspects of chikungunya infection. *Travel Med Infect Dis* , 2016; 14: 451–457.
6. Rahim MA, Uddin KN. Chikungunya: an emerging viral infection with varied clinical presentations in Bangladesh: reports of seven cases. *BMC Res Notes*. 2017;10: 410.
7. Rahim MA, Zaman S, Sultana N, Islam A, Uddin KN. Chikungunya-dengue co-infection during pregnancy requiring preterm Caesarean section: First case report from Bangladesh. *Trop Doct*. 2018;48: 234–235.
8. Pialoux G, Gauzere B, Jaureguiberry S. Chikungunya, an epidemic arbovirolos. *Lancet Infect Dis* 2007;7: 319–327.
9. Arroyo-Avila M, Caban A, Garcia-Rivera EJ, Irizarry-Perez M, Torres H, Gorbea H, Vila LM. Clinical manifestations associated with peripheral joint involvement in patients with acute chikungunya virus infection. *Am J Trop Med Hyg*. 2017;96: 916–921.
10. Arroyo-Avila M, Vila LM. Rheumatic manifestations in patients with chikungunya infection. *P R Health Sci J*. 2015;34: 71–77.
11. Martinez-Pulgarin DF, Chowdhury FR, Villamil-Gomez WE, Rodriguez-Morales AJ, Blohm GM, Paniz-Mondolfi AE. Ophthalmologic aspects of chikungunya infection. *Travel Med Infect Dis*. 2016;14: 451–457.
12. Brizzi K, 2017. Neurologic manifestation of chikungunya virus. *Curr Infect Dis Rep* 19: 6. 16. Khoury VJ, Camilo PR. Chikungunya virus (CHIKV): What can be expected after the acute phase? *Reumatol Clin*. 2016;12: 1–3.
13. Mehta R, Gerardin P, de Brito CAA, Soares CN, Ferreira MLB, Solomon T. The neurological complications of chikungunya virus: A systematic review. *Rev Med Virol*. 2018;28: e1978.
14. WHO. Guidelines on Clinical Management of Chikungunya Fever. New Delhi, India: World Health Organization, Regional Office for South-East Asia. 2008;1–26.
15. Win MK, Chow A, Dimatatac F, Go CJ, Leo YS. Chikungunya fever in Singapore: Acute clinical and laboratory features and factors associated with persistent arthralgia. *J Clin Virol*. 2010;49: 111–114.
16. Chowdhury FR, Ibrahim QSU, Bari MS, Alam MMJ, Dunachie SJ, Rodriguez-Morales AJ, Patwary MI. The association between temperature, rainfall and humidity with common climate-sensitive infectious diseases in Bangladesh. *PLoS One*. 2018;13: e0199579.
17. Ahsan G, Ahmed J, Singhasivanon P, Kaewkungwal J, Okanurak K, Suwannapong N, Akarasewi P, Majid MA, Begum V, Belayetali K. Gender difference in treatment seeking behaviors of tuberculosis cases in rural communities of Bangladesh. *Southeast Asian J Trop Med Public Health*. 2004;35: 126–135.
18. Chowdhury FR et al. Melioidosis in Bangladesh: A clinical and epidemiological analysis of culture-confirmed cases. *Trop Med Infect Dis* 3 pii. 2018; E40.
19. Hossen MA, Westhues A. Rural women's access to health care in Bangladesh: swimming against the tide? *Soc Work Public Health*. 2011;26: 278–293.
20. Borgherini G, Poubeau P, Staikowsky F, Lory M, Le Moullec N, Becquart JP, Wengling C, Michault A, Paganin F. Outbreak of Chikungunya on Reunion Island: Early clinical and laboratory features in 157 adult patients. *Clin Infect Dis*. 2007;44: 1401–1407.



21. Staikowsky F, Talarmin F, Grivard P, Souab A, Schuffenecker I, Le Roux K, Lecuit M, Michault A. Prospective study of Chikungunya virus acute infection in the Island of La Reunion during the 2005–2006 outbreak. *PLoS ONE* 2009;4: e7603.
22. Kannan M, Rajendran R, Sunish IP, Balasubramaniam R, Arunachalam N, Paramsivan R, Tewari SC, Samuel PP, Tyagi BK. A study on Chikungunya outbreak during 2007 in Kerala, south India. *Indian J Med Res.* 2009;129: 311–315.
23. Ray P, Ratagiri VH, Kabra SK, Lodha R, Sharma S, Sharma BS, Kalaivani M, Wig N. Chikungunya infection in India: results of a prospective hospital based multi-centric study. *PLoS ONE* .2012;7: e30025.
24. Mattar S et al. Outbreak of chikungunya virus in the north Caribbean area of Colombia: clinical presentation and phylogenetic analysis. *J Infect Dev Ctries.* 2015;9: 1126–1132.
25. Reller ME et al. Chikungunya as a cause of acute febrile illness in southern Sri Lanka. *PLoS One.* 2013;8: e82259.
26. Thiberville S-D, Boisson V, Gaudart J, Simon F, Flahault A, de Lamballerie X. Chikungunya fever: A clinical and virological investigation of outpatients on Reunion Island, SouthWest Indian Ocean. *PLoS Negl Trop Dis.* 2013;7: e2004.
27. Nkoghe D, Kassa RF, Caron M, Grard G, Mombo I, Biki 'e B, Paupy C, Becquart P, Bisvigou U, Leroy EM. Clinical forms of chikungunya in Gabon, 2010. *PLoS Negl Trop Dis.* 2012;6: e1517.
28. Danis-Lozano R et al. Clinical characterization of acute and convalescent illness of confirmed chikungunya cases from Chiapas, S. Mexico: a cross sectional study. *PLoS One.* 2017;12: e0186923.
29. Inamadar AC, Palit A, Sampagavi VV, Raghunath S, Deshmukh NS. Cutaneous manifestations of chikungunya fever: observations made during a recent outbreak in south India. *Int J Dermatol.* 2008;47: 154–159.
30. Simon F et al. Chikungunya infection: an emerging rheumatism among travelers returned from Indian Ocean islands. Report of 47 cases. *Medicine (Baltimore).* 2007;86: 123–137.
31. Alvarez MF, Bolivar-Mejia A, Rodriguez-Morales AJ, RamirezVallejo E. Cardiovascular involvement and manifestations of systemic chikungunya virus infection: A systematic review. Version 2. *F1000Res.* 2017;6: 390.
32. Mavalankar D, Shastri P, Bandyopadhyay T, Parmar J, Ramani KV. Increased mortality rate associated with chikungunya epidemic, Ahmedabad, India. *Emerg Infect Dis.* 2008;14: 412–415.