

# Atypical Complications of Chikungunya Virus Infection: A Case Report

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## ABSTRACT

**Background:** Chikungunya is a viral pathology mainly transmitted by Aedes mosquitoes, and the most important symptom is fever accompanied with severe arthralgia. Although the majority of the patients have mild self-limited course of the disease, serious complications may occur especially in some demographic groups.

**Case Presentation:** We report here the case of a 53-year-old male businessman from Baluchistan who presented with 10-day history of fever with myalgia and shortness of breath. His emergency investigations revealed elevated urea and creatinine with positive serology to Chikungunya virus. He subsequently developed acute axonal sensorimotor

polyneuropathy, viral-induced pancreatitis, coagulopathy, and acute kidney injury during his hospital course. He was managed with intravenous corticosteroids, supportive care, and hemodialysis as indicated. He improved symptomatically and tolerates orally diet with normalization of renal function before discharge.

**Conclusion:** This case demonstrates the capacity for uncommon and impactful disease sequelae secondary to Chikungunya virus infections. This highlights the necessity for a high index of clinical suspicion and a multi-disciplinary approach to the diagnosis of patients presenting with atypical symptoms.

**Keywords:** Atypical complications, Acute polyneuropathy, Chikungunya virus, Coagulopathy, Pancreatitis

## INTRODUCTION

Chikungunya is an arthralgic febrile viral disease spread by Chikungunya virus (CHIKV) strains, an alphavirus mainly belonging to groups 1 and 2, and transmitted primarily by Aedes mosquitoes, typically Aedes aegypti and other Aedes albopictus species<sup>1</sup>. Chikungunya, first discovered in Tanzania in 1952<sup>1</sup>, has since re-emerged as a significant human pathogen in Africa, Asia, Europe and, more recently, the Americas<sup>2</sup>. Chikungunya is characterized by a sudden onset of fever, debilitating polyarthralgia, myalgia and a typical rash<sup>3</sup>. Most people, however, recover within a week; a few patients develop long-lasting arthralgia and other frail, chronic symptoms lasting months to years<sup>3</sup>. Infections of Chikungunya are mostly self-limiting, however, severe complications might occur within particular populations<sup>4</sup>. Severe but less common forms of the disease can cross multiple organ systems and be associated with complications including respiratory distress, neurological injury and acute kidney injury<sup>5</sup>. In this case report we outline the clinical course of a 53-year-old man who developed the rare combination of chikungunya acute pancreatitis, coagulopathy and acute renal failure following an uncomplicated chikungunya infection. This highlights the need for a high index of suspicion and a broader view of the management of both typical and atypical or severe clinical manifestations.

## CASE REPORT

A 53-year-old male businessman from Baluchistan came to the emergency department with a 10-day history of high-grade fever, myalgia, and shortness of breath. The fever was sudden

onset 102°F, associated with coldness, rigor, rhinorrhea, and diffuse myalgia. No previous history of chest pain, dyspnea at usual activities of daily living or paroxysmal nocturnal dyspnea was present. His medical history was not remarkable except for well-controlled hypertension; surgical history was not documented; and his family and social histories were all unremarkable.

Upon comprehensive evaluation, the subject demonstrated indicators of obesity and exhibited mild psychological distress; nevertheless, he was situated in a state of comfort. The vital parameters recorded included a pulse rate of 95 beats per minute, blood pressure measurements of 132/90 mm Hg, a respiratory rate of 21 breaths per minute and an oxygen saturation level of 93 percent while receiving 3 liters of supplemental oxygen.

He was afebrile, and no signs of jaundice, pallor, clubbing, koilonychia, or peripheral edema were noted. Cardiovascular, respiratory, and abdominal examinations were unremarkable. Laboratory investigations revealed elevated blood urea and creatinine levels, a normal anion gap metabolic acidosis, and a complete blood count within normal limits. Serology for chikungunya virus returned positive, while dengue and Zika virus serologies were negative.

After a few hours of admission, the patient experienced worsening shortness of breath despite stable oxygen saturation levels. Arterial blood gas analysis confirmed nonrespiratory failure, but noninvasive ventilation was added to reduce work of breathing while maintaining the patient's oxygenation. In light of the patient's symptoms and the clinical setting, a ventilation-perfusion scan was performed to exclude pulmonary embolus, which was found to be within normal limits. High-resolution CT of the chest also confirmed an absence of pleural or pulmonary abnormalities. However, as the cause of his neurology-related complaint was still unclear, the patient underwent electromyography and nerve conduction studies, which revealed an acute axonal sensorimotor polyneuropathy, a form of chikungunya-related viral radiculitis that is an uncommon, but a known complication.

The patient was treated with intravenous methylprednisolone (500 mg per day for a duration of three days), with the objective

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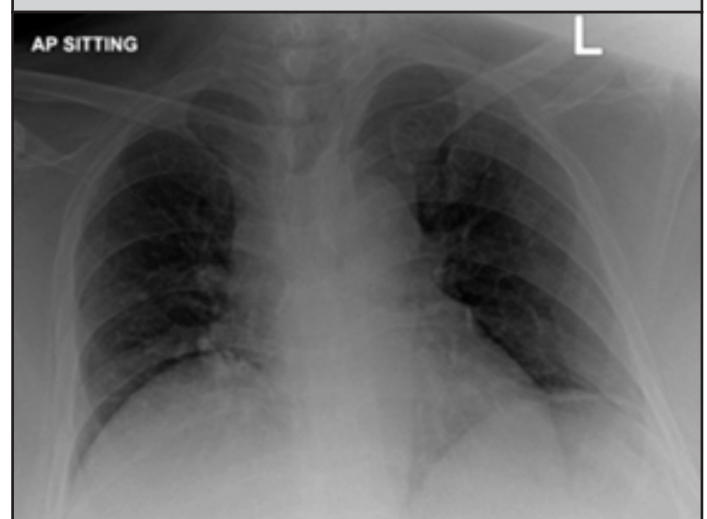
of attenuating the immune-mediated reaction to the viral pathogen. He was subsequently transitioned to an oral steroid regimen, resulting in significant clinical enhancement. Non-invasive ventilation was progressively reduced, and he successfully maintained normal oxygen saturation while breathing ambient air.

During the hospital stay, he developed several complications. Viral-induced pancreatitis was suggested by elevated serum amylase and lipase levels and managed conservatively with temporary bowel rest followed by gradual reintroduction of oral intake. Viral-induced coagulopathy manifested as an INR of 6.8, which was corrected using fresh frozen plasma and intramuscular vitamin K, normalizing the INR within three days. He also developed melena, indicating upper gastrointestinal bleeding, which was treated with a continuous somatostatin infusion. As hemoglobin levels remained stable and symptoms resolved, endoscopy was not deemed necessary. Worsening renal function, indicated by rising urea and creatinine, suggested acute kidney injury likely secondary to the viral illness. A right internal jugular double-lumen catheter was placed, and intermittent hemodialysis was initiated, resulting in improved renal function.

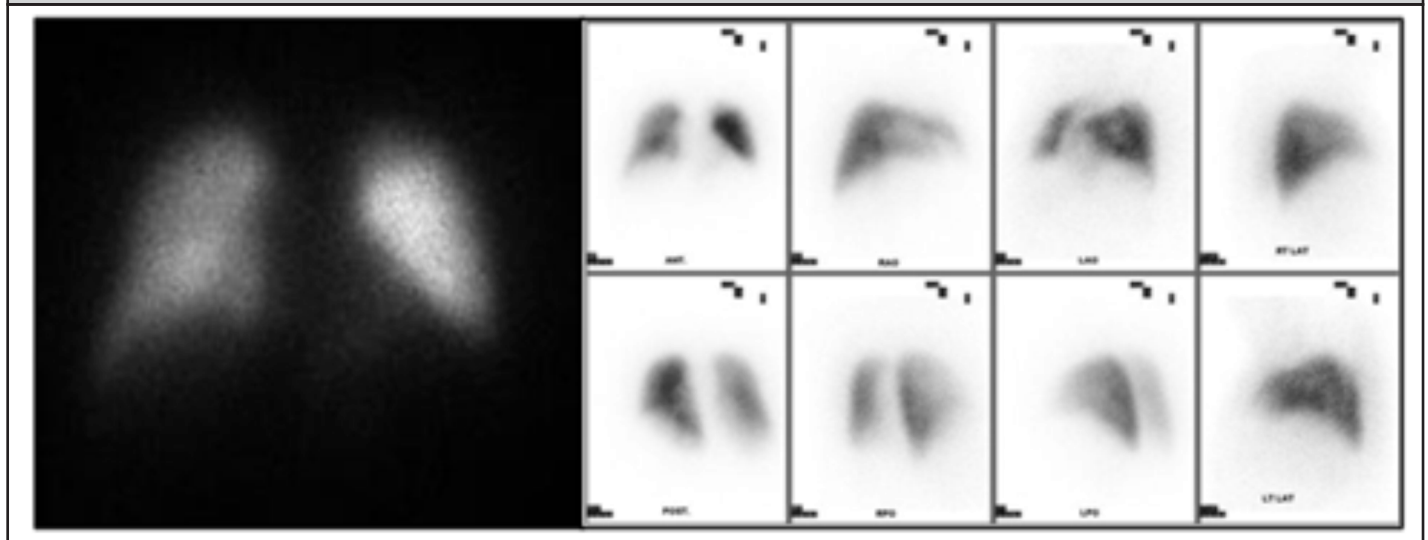
Over the subsequent days, the patient made significant clinical progress. He tolerated an oral diet, maintained oxygen saturation on room air, and achieved normalization of renal function. He was discharged in a stable condition. The clinical course progressed as follows: symptoms began on Day 0,

hospitalization and supportive care were initiated on Day 9, and from Days 10 to 12, he received non-invasive ventilation, corticosteroids, and diagnostic evaluations. The clinical assessments between Days 13 and 15 revealed diagnoses of neuropathy, pancreatitis, coagulopathy, and renal failure. Interventions of hemodialysis and medical stabilization were performed between Days 16 and 18, leading to a degree of clinical improvement that allowed for discharge on the next day.

**Figure I:** Chest X-ray showed no acute changes



**Figure II:** Lung perfusion scintigraphy shows symmetrical normal perfusion in both lung parenchyma.



## DISCUSSION

Chikungunya fever is a viral disease caused by a species of alphavirus and is spread by infected *Aedes* mosquitoes<sup>1</sup>. At first, the disease course is typically mild and self-resolving. On the other hand, Chikungunya fever has been associated with diverse unusual clinical appearances.

The most prevalent manifestations upon initial presentation include fever and arthralgia<sup>6-7</sup>. In the case under discussion, our patient exhibited fever accompanied by myalgias, which are indicative of a potential chikungunya virus infection. It could, however, also present with serious complications of the nervous, gastrointestinal, liver, and renal systems.

His complaint of fever, myalgias, and shortness of breath for 9 days put up the suspicion for systemic failure. Clinical

manifestations associated with chikungunya virus (CHIKV) infection have been documented, with Japan and India reporting the most frequent occurrence involving encephalitis or encephalopathy<sup>8</sup>. That said, there are multi-component nervous system diseases too. Here, a 52-year-old patient presented with recent-onset high-grade fever and then developed acute axonal sensorimotor polyneuropathy, 10 days after infection, which is more likely a post-infectious immune-mediated etiology. This begs the question of whether the viral infection affects respiratory muscle function, or causes central respiratory depression due to inflammation<sup>9</sup>. Previous studies have proposed that the cause of ARDS seen in Chikungunya patients is a severe type I inflammatory response to the CHIKV antigen<sup>9</sup>.

It is hypothesized that the respiratory involvement pathophysiology occurs through immune mechanisms rather than direct infection of muscle tissue. Chikungunya induces host PTPN6 gene expression<sup>8</sup>, which, in turn, may cause a reduced pro-inflammatory immune response in the host. Moreover, other studies have also implicated direct targeting of muscle tissue by the virus<sup>9</sup>.

Although the association of pancreatitis in the setting of chikungunya virus is not frequently reported, the pathogenesis of pancreatitis in relation to the inflammatory response to CHIKV can be critical<sup>10</sup>. Melena in this patient indicated when they were diagnosed that they were having gastrointestinal (GI) bleeding most likely from coagulopathy (coagulation profile was also disordered). Disturbance of coagulation profiles in patients with viral infections, which could lead to serious gastrointestinal manifestations, highlights the need for close monitoring<sup>11</sup>.

Additionally, the renal failure in this patient could be due to several mechanisms such as a systemic inflammatory response that may lead to acute tubular injury<sup>12</sup>, dehydration related to fever, or direct viral invasion of renal tissue. Due to the interaction of these factors, similar cases demand a well-sustained evaluation and follow-up of renal function<sup>13-14</sup>.

Importantly, this case highlights the need for clinicians to maintain a high index of suspicion for possible systemic complications of the chikungunya virus, especially in patients presenting with atypical symptoms. Due to the complexity of these kinds of cases, multidisciplinary care is necessary, and multiple experts, including infectious disease specialists, nephrologists, and gastroenterologists, should be engaged in case management.

## CONCLUSION:

This case demonstrates the capacity for uncommon and impactful disease sequelae secondary to Chikungunya virus infections. This highlights the necessity for a high index of clinical suspicion and a multi-disciplinary approach to the diagnosis of patients presenting with atypical symptoms.

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