ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Multimed 2024; 28:e3257

Brief communication

Chikungunya virus fever and complications: what the intensivist should know

Virus feverChicungunya and complications: what the intensivist should know

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SUMMARY

Although Chikungunya virus infection typically presents as a self-limiting fever with debilitating arthralgia, a subgroup of patients develops severe forms requiring intensive care. This communication aims to describe the key aspects of severe Chikungunya disease, its treatment in intensive care, and the strengths and

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

limitations of the current literature, in order to guide timely and evidence-based care.

Keywords: Chikungunya virus; Intensive care unit; Mortality; Prognostic factors.

ABSTRACT

Although Chikungunya virus infection is typically a self-limited febrile illness with debilitating arthralgia, a subset of patients develops severe forms that require management in intensive care units. This communication aims to describe the key aspects of severe Chikungunya disease, its treatment in intensive care, and the strengths and limitations of the current literature, in order to guide timely and evidence-based care.

Keywords: Chikungunya virus; Intensive care unit; Mortality; Prognostic factors.

SUMMARY

Infection with the Chikungunya virus generally presents as a self-limited fever with debilitating arthralgias, a subgroup of patients develops severe forms that require care in intensive care units. This communication aims to reveal the key aspects of serious illness caused by Chikungunya, its treatment in intensive therapy and the strengths and limitations of current literature, in order to guide timely and evidence-based care.

Key words: Chikungunya virus; Intensive care unit; Mortality; Prognostic factors.

Received: 20/11/2025

Approved: 15/12/2025

Introduction

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

In recent years, the chikungunya virus (CHIKV) has emerged as a global threat, with outbreaks affecting millions of people in tropical and subtropical regions. Although it typically presents as a self-limiting fever with debilitating joint pain, a subgroup of patients develops severe forms requiring intensive care unit (ICU) management. The authors of this communication consider it essential to highlight what every critical care professional should know about this disease, based on the available evidence from recent studies.

This communication aims to describe the key aspects of severe chikungunya virus disease, therapeutic considerations in intensive care, as well as the main strengths and limitations identified in the literature, with the purpose of guiding timely clinical care based on the available evidence.

Development

Epidemiology in intensive care

CHIKV, transmitted by Aedes aegypti and Aedes albopictus mosquitoes, causes initial symptoms such as fever, myalgia, arthralgia, and rash. However, in vulnerable patients, especially the elderly, with comorbidities such as diabetes mellitus, hypertension, or autoimmune diseases, it can progress to severe manifestations. According to a report by the World Federation of Intensive and Critical Care Societies, (1) a small percentage of cases present with atypical involvement of the nervous, ocular, renal, myocardial, and respiratory systems, requiring admission to the ICU. In outbreaks described in the Caribbean between 2013 and 2014, 83% of patients admitted to the ICU had pre-existing comorbidities, and 41.5% were admitted due to exacerbations of these comorbidities. (2) Similarly, a study in India reported that 85% of 60 ICU patients with CHIKV had comorbidities, with a mean age of 66 years. (3)

An analysis of 7421 hospitalizations for CHIKV in Brazil (from 2014 to 2024) revealed an ICU admission rate of 1.4%, predominantly in children under 5 years of age (3.3%),

and an ICU mortality rate of 21.1%; in 2024, >460,000 suspected cases were reported globally, with a resurgence in 2025. (4)

Critical manifestations include encephalitis, Guillain-Barré syndrome (GBS), myocarditis, acute myocardial infarction (AMI), acute respiratory distress syndrome (ARDS), sepsis, and septic shock. Narrative evidence highlights CHIKV encephalitis as a neurological emergency, with pathogenesis involving direct invasion of the central nervous system or via the immune system, manifesting as fever, altered mental status, and, on imaging, a predilection for the medulla oblongata. (5-7)

In French Polynesia, during the 2014-2015 outbreak, 64 patients were admitted to the ICU, 76% of whom had pre-existing conditions; encephalitis (5 cases), GBS (4 cases), and myocarditis (2 cases with 100% mortality) were observed. (8) Atypical cases included ARDS as an unusual critical presentation, MI in a 24-year-old without coronary atherosclerosis, possibly due to virus-induced vascular inflammation, and septic shock in a 3-month-old infant. (9-11)

Among travelers, two cases in the United Kingdom required ICU admission due to severity, while in coronary artery bypass surgery, perioperative infection complicated the course. An Argentinian report describes atypical presentations in critical care, emphasizing the need for a high index of suspicion. (12-14)

Clinical course

In the ICU, the course can be variable, with high severity scores such as APACHE II (mean 17) and SOFA (mean 7) predicting a worse prognosis. More than 50% require mechanical ventilation, vasopressors, or renal replacement therapy. (3,8)

Treatment focuses primarily on life support: adequate hydration, pain relief, hemodynamic optimization, and organ function monitoring. Steroids and immunoglobulins have been attempted in cases such as GBS or encephalitis. Prevention aims at vector control and traveler education. (5)

There are no specific antivirals or approved vaccines, although Ixchiq (VLA1533/Ixchiq - Valneva) was the first licensed chikungunya vaccine, approved by the US Food and Drug Administration in November 2023, the European Medicines Agency in May

2024, and the Canadian Ministry of Health in June 2024. Currently, five vaccine candidates are under development (BBV87 - BBIL/IVI, MV-CHIK - Themis Bioscience, ChAdOx1 Chik - University of Oxford, PXVX0317/VRC-CHKVLP059-00-VP - Bavarian Nordic, and mRNA-1388 - Moderna). (15)

Forecast

Regarding prognosis, the results are concerning due to ICU mortality rates of 26% to 37%, associated with multi-organ failure, high APACHE II scores, and the need for renal replacement therapy. (2,3,8) Predictive factors include elevated lactate and renal failure. A meta-analysis A recent study (16), which included four studies with 220,215 patients and 908 deaths, confirms and strengthens these findings by identifying age ≥ 60 years (OR: 19.49; 95% CI: 1.98–191.88), male sex (OR: 2.07; 95% CI: 1.71–2.51), diabetes mellitus (OR: 2.86; 95% CI: 1.75–4.69), hypertension (OR: 3.10; 95% CI: 2.02–4.77), and chronic kidney disease (OR: 5.81; 95% CI: 1.30–25.99) as independent predictors of mortality. However, a high clinical suspicion and aggressive management can improve outcomes. (8)

Table 1 summarizes the main case series in the ICU, in relation to severe manifestations and mortality

Table 1. Studies in intensive care on CHIKV complications.

Study	Country/ Outbreak	Population	Average age (years)	Comorbidity (%)	Main serious manifestations	Mechanical ventilation (%)	Mortality predictors	ICU Mortality (%)
Crosby et al. (2)	Caribbean 2013-2014	41	61	83	Encephalitis, myocarditis, ARDS	56	Pre-existing comorbidities, sepsis	37
Gupta et al. (3)	India 2016	60	66	85	Multiple organ failure, shock	53	APACHE II high, need for TRR	26
Pedi et al (4)	Brazil 2025	104	37	Not described	Not described	Not described	< 5 years and > 85 years	1.4
Koeltz et al. (8)	Polynesia 2014-2015	64	63	76	Encephalitis, GBS, myocarditis	64	Sepsis, septic shock	28
Lamberto et al. (14)	Argentina 2024	4	54	75	Encephalitis, atypical myocarditis	75	Not reported (small series)	25

Legend: ICU: Intensive Care Unit. ARDS: Acute respiratory distress syndrome. GBS: Guillain-Barré syndrome.
Source: Medical records, Celia Sánchez Manduley Hospital

ONLINE VERSION: ISSN 1028-4818

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ICU care

Intensivists must be familiar with current evidence-based management, as there is no specific antiviral or universal vaccine; criteria include immediate admission if: (8,17)

- Encephalitis, Guillain-Barré syndrome (GBS), myocarditis, ARDS, septic shock, or multiple organ failure.
- SOFA >7 or APACHE II >17 (mortality predictors).
- Lactate >2 mmol/L or need for advanced life support.

Table 2 presents a practical guide to treatment in the ICU, synthesized from the most recent recommendations of the World Health Organization (WHO), the Pan American Health Organization (PAHO) and reviews of current literature.

Table 2. Recommendations for the treatment of complicated CHIKV in the ICU.

Therapeutic / complication	Main recommendation
Hydration (17, 18)	IV hydration: Crystalloids 20–30 mL/kg if in shock Lactate measurement or capillary refill time to guide IV fluid therapy Passive trial of leg augmentation in patients with shock, when the physician is unsure whether further IV fluid administration is warranted
Analgesia (18)	Oral or EV Paracetamol or Metamizole Avoid NSAIDs if dengue is not ruled out
Steroids (17)	Not recommended as a treatment for severe illness
Respiratory (ARDS/GBS) (9, 14, 17, 19, 20)	Protective VMA (Vt 6 mL/kg, PEEP 5–15 cmH_2O). Prone if PaO_2 / FiO_2 <150. Intacglobin or plasmapheresis in progressive SGB. Guide VMA according to lung ultrasound
Cardiovascular (myocarditis/MI) (10, 13, 21)	Noradrenaline as a first-line vasopressor. Serial echocardiogram.
Neurological (encephalitis) (5, 17, 22,23)	PIC Monitoring Steroids (methylprednisolone 1 g/day for 3-5 days) or Immunoglobulins (10 mg/kg every 8 hours for 7 days) Protective VMA, normocapnic and PaO2 ≥80 mmHg if there is impaired consciousness Limit therapeutic hyperventilation to states of intracranial hypertension refractory to other therapies, as well as the subsequent use of PEEP.
Prevention (17, 18, 21)	Vector control, early enteral nutrition, physiotherapy for chronic arthralgia, IXCHIQ vaccination if eligible

Legend: IV: intravenous. NSAIDs: nonsteroidal anti-inflammatory drugs. ARDS: acute respiratory distress syndrome. GBS: Guillain-Barré syndrome. MV: mechanical ventilation. Vt: tidal volume. PEEP: positive end-expiratory pressure. ICP: intracranial pressure. PaO2: partial pressure of oxygen. ICH: intracranial hypertension. RRT: renal replacement therapy.

Source: Medical records. Celia Sánchez Manduley Hospital.

Strengths and limitations of the available evidence

Current evidence has notable strengths, such as its origin in real outbreaks across diverse regions (Caribbean, Polynesia, India, Latin America), providing crucial observational data on clinical course and prognostic factors in the ICU. Studies like that of Gupta et al. (3) offer multivariate analyses that identify evidence-based predictors of mortality. Furthermore, narrative reviews integrate pathogenesis and diagnosis, facilitating practical application. (5) Finally, the meta-analysis by Cassemiro Micheleto et al. (16) represents a key strength by recording data from a robust patient population and providing robust risk estimates.

However, the limitations of the studies should be noted: most are retrospective case series or isolated reports, with small sample sizes ranging from 2 to 65 patients, which limits generalizability. There is a scarcity of randomized controlled trials for specific therapies, and the exact pathogenesis (such as the inflammatory implications in cardiac, pulmonary, renal, or cerebral damage) requires further investigation. (10,24-26)

The presence of coinfections such as dengue or leptospirosis complicates record-keeping by attributing symptoms solely to CHIKV. (8) Finally, pediatric data are rare, such as the case of shock in an infant, or pulmonary hemorrhage as an atypical presentation in a healthy young adult, (11,24) highlighting the need for studies in vulnerable populations. Although recent meta-analyses expand the available evidence, their potential heterogeneity (not detailed) and focus on overall mortality (not exclusive to the ICU) suggest caution in their direct application to critical care. (16,27)

This work represents the first review focused exclusively on the intensivist's perspective regarding severe CHIKV infection published in Spanish in recent years. Its scientific novelty lies in the integration of the most recent meta-analyses, updated epidemiological data on hospitalizations and mortality in the ICU at an international level, and the inclusion of emerging critical manifestations such as myocarditis,

encephalitis, and primary ARDS, which were not previously systematized from the perspective of critical care.

On a practical level, it offers explicit criteria for admission to the ICU, a synthesized and updated treatment guide, and the first practical table in Spanish that includes specific recommendations for protective ventilation, cautious use of vaccines, and care for concurrent arbovirus coinfections.

The social impact is particularly relevant in Latin America and the Caribbean, regions that between 2024 and 2025 face the greatest historical resurgence of the virus. By providing accessible diagnostic and therapeutic tools based on recent evidence, this communication can contribute to reducing the high mortality reported in ICUs through early detection and aggressive treatment in vulnerable populations.

Finally, the scope consists of identifying limitations in the knowledge on the subject, and lays the foundation for the design of prospective studies that will allow, in the near future, the development of specific guidelines for action in intensive care for this re-emerging arbovirus.

Conclusions

Severe Chikungunya virus disease presents a clinical challenge due to its potential to cause multiple organ dysfunction and severe complications. The literature highlights the importance of early recognition of severity and timely intensive treatment, despite the lack of specific antiviral therapies.

Although consistent descriptions of clinical manifestations and risk factors exist, the evidence has methodological limitations that hinder standardized treatment. Strengthening research and developing clinical guidelines to optimize evidence-based care are needed.

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Conflict of interest

The authors declare that there is no conflict of interest

Authorship Contribution

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ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Writing, review and editing: Ariel Sosa Remón, Jhossmar Cristians Auza-Santivañez, Yuniel José Baldor Illanas and Ana Esperanza Jeréz Alvarez