

# Guillain-Barré Syndrome associated with Chikungunya virus infection: a case report

*Síndrome de Guillain-Barré associada com infecção por Chikungunya vírus: relato de case*

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## Resumo

**Objetivo.** A epidemia de infecção pelo vírus Chikungunya atualmente representa uma das maiores ocorrências epidemiológicas da América do Sul e Central, sendo considerada um grave problema de saúde pública, uma vez que, além da sintomatologia clínica típica, há relatos de doenças neurológicas associadas, como a síndrome de Guillain-Barré. A síndrome de Guillain-Barré é uma polineuropatia desmielinizante inflamatória aguda que leva a várias deficiências funcionais, como paralisia flácida, areflexia e fraqueza muscular. **Método.** Um caso de Síndrome de Guillain-Barré foi relatado após a infecção pelo vírus chikungunya. **Resultados.** O caso apresentou graves complicações funcionais, com quadro de tetraparesia flácida, com comprometimento motor e sensorial, principalmente no hemicorpo esquerdo. **Conclusão.** Nessa perspectiva, neste relato e em relatos de casos anteriores, considera-se que a infecção pelo vírus chikungunya pode causar a Síndrome de Guillain-Barré, entre outras complicações neurológicas graves, de maneira aguda e progressiva, principalmente em áreas consideradas endêmicas. **Unitermos.** Síndrome de Guillain-Barré; Virus Chykungunya; Infecção; Relato de Caso

## Abstract

**Objective.** The epidemic of infection by the Chikungunya virus currently represents one of the largest epidemiological occurrences in south and Central America, being considered a serious public health problem, since, in addition to the typical clinical symptomatology, there are reports of Associated neurological diseases, such as Guillain-Barré Syndrome. Guillain-Barré Syndrome is an acute inflammatory demyelinating polyneuropathy that leads to various functional impairments, such as flaccid paralysis, areflexia and muscular weakness. **Method.** A case of Guillain-Barré Syndrome was reported after infection by the chikungunya virus. **Results.**

The case presented severe functional complications, with a picture of flaccid tetraparesis, with motor and sensory impairment, mainly in the left hemibody. **Conclusion.** From this perspective, from this report, and from reports of previous cases, it is considered that chikungunya virus infection may cause Guillain-Barré Syndrome, among other severe neurological complications, in an acute and progressive way, especially in areas considered endemic.

**Keywords.** Guillain-Barré Syndrome; Chikungunya Virus; Infection; Case Report

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## INTRODUCTION

The Chikungunya virus pandemic (CHIKV) and the Zika virus (ZIKV) is the most relevant epidemiological occurrence nowadays in all of South and Central America, with the most frequent arboviruses affecting human beings that can result in serious complications<sup>1,2</sup>. The CHIKV virus is an RNA alphavirus (Group A arbovirus) in the family of Togaviridae. It has an incubation period of 2 to 10 days. The known vectors are the mosquitoes *Aedes aegypti* and *Aedes albopictus*. Clinical features consist of severe arthralgia, which may persist for several weeks or months. In addition to fever, arthralgia and rash, rare complications have been reported in the form of mild hemorrhage, myocarditis and hepatitis, neurological complications are also rare, and however, in regions of Latin America and the South Pacific, there have been several reports. CHIKV virus infection is confirmed by the identification of genomic products in acute phase blood samples, transcription – PCR [RT-PCR]) and/or serum immunoglobulin antibodies<sup>3,4</sup>.

Studies report the presence of some neurological conditions that cause death and functional limitations after CHIKV infection, such as myeloneuropathies, Encephaly, flayed paralysis and neuropathies, with emphasis on Guillain-Barré Syndrome (GBS), which is the most frequently associated neurological manifestation of these arboviruses. GBS is an acute inflammatory demyelinating polyneuropathy, being the most frequent type of flaccid paralysis in the world. In two-thirds of the affected patients, neuropathic SGB occurs after an infection<sup>5-7</sup>. The GBS is characterized by rapid ascending evolution of limb weakness, almost always symmetrical, hypo or areflexia and celluloproteic dissociation in cerebrospinal fluid (CSF), and is also characterized by the presence of sensory abnormalities and Autonomic dysfunction due to nerve injury or nervous root<sup>8,9</sup>. This case report suggests an association between GBS and outbreaks of CHIKV infection in Brazil, an area considered endemic. The case presents severe neurological complications, even after a long period of infection.

## **METHOD**

### **Case report**

CSS, 45 years old, female, domestic, reported that about two years ago was infected by the CHIKV virus. After serological confirmation, clinical signs and symptoms such as low fever, osteomyoarticular pain and prostration were

already exuberant. About two weeks after the initial infection, an acute picture of ascending flaccid paresis was triggered in the four limbs, areflexia and muscular fatigue. The same was admitted to a hospital in the northern part of Rio de Janeiro, Brazil, with suspicion of Guillain-Barré Syndrome, the same confirmed after the Albumine-cytological dissociation in the CSF and electroneuromyography (prolonged distal latency, slow Motor conduction velocity, abnormal disfercion or prolongation of the F-wave latency), after initiating treatment with intravenous immunoglobulin (IVIG), 04g/kg/day for five days. The patient remained hospitalized for 10 days. Currently, the patient has a picture of flaccid tetraparesis, with a more compromised left hemibody (motor and sensory). Activities such as handgrip and walking on the tibiotarsal joint are compromised, as well as other everyday skills. Normal deep reflexes in the upper limbs and hyporeflexia of the patellar and bilateral Achilles. The superficial sensitivity analysis presents tactile, thermal and painful hypoesthesia in the left hemibody. Proprioceptive Hypoesthesia and Hypopalestesia are also present in the left Hemibody. The pain of the Mio-articular character still lasts. Normal cranial nerves. Normal sphincter control. It shows no signs of pyramidal involvement. Magnetic Resonance Imaging scans of the skull, cervical and thoracic spine, normal. Using: Gabapentin 300mg, twice a day. Motor rehabilitation three times a week.

## RESULTS AND DISCUSSION

The reported case of GBS after CHIKV virus infection demonstrates the growth of this type of neurological complication associated with arbovirus infection in endemic areas such as Brazil, a fact already described in previous studies<sup>6,10,11</sup>. In Brazil, neurological complications account for up to 25% of atypical cases and up to 60% of severe atypical cases of chikv infection. The reported cases range from encephalitis, optic neuritis or Myelorradiculitis to GBS. However, there is certainly a greater association with the genesis of GBS, as previously described<sup>12,13</sup>.

Moreover, even with the growth of described cases of patients infected with CHIKV who develop GBS, there are also reports with infection of the zika and dengue, indicating, therefore, that the GBS is associated with Zika virus infections, the Chikungunya virus and dengue also, demonstrating that the CHIKV threat is still less frequent<sup>14-16</sup>.

The present case demonstrates the presence of severe neurological complications, such as a flaccid tetraparesis, with a more compromised left hemibody (motor and sensory deficit), shortly after 15 days of infection. The average time of acute Chikungunya until the onset of GBS may vary, in the report of Balavoine *et al*, 2017, was 9 days. In the world, both in regions with climate that favor the development of arbovirus, as in non-endemic areas, there have been reports of cases that presented similar

clinical picture after CHIKV infection<sup>3,9,17,18</sup>. In Brazil, there are also some reports, mainly in the Northeast region<sup>6,12,13</sup>.

GBS is a severe neurological disease that may occur after arbovirus infection, such as the CHIKV, as described in this report. Here a case was presented, with a clinical picture of rapid progressive evolution, with limitation for ambulation and palmar grip, demanding pharmacological treatment and rehabilitation.

## **CONCLUSÃO**

CHIKV infection may cause GBS, among other severe neurological complications, in an acute and progressive manner, especially in areas considered endemic, guiding the need for rapid diagnostic measures for Arbovirus infections available to the population, with the aim of preventing probable neurological deficits.

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