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Case Report OMICS International

First Brazilian Case of Peripheral Mononeuropathy Secondary to Infection *Chikungunya Virus*

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Abstract

Background: Chikungunya is an infection caused by an RNA-virus and transmitted from primates to humans by *Aedes aegypti* and *Aedes albopictus* mosquitoes. Usually, it causes fever, widespread exanthema, myalgia and severe diffuse joints pain but may present several complications, such as neurological manifestations.

Case presentation: We describe a case of a 38-year-old man with diagnostic confirmation of chikungunya virus infection based on the clinical manifestations of the disease and positivity of the serological tests. He has evolved with peripheral mononeuropathy confirmed by clinical examination and electroneuromyography.

Conclusion: Peripheral neuropathy may be a neurological complication of CHIKV infection and to the best of our knowledge this is the first Brazilian case of peripheral mononeuropathy secondary to CHIKV infection.

Keywords: Chikungunya virus; Neurological complications; Peripheral neuropathy; Electroneuromyography

Introduction

Chikungunya is an infection caused by an RNA-virus belonging to the Alphovirus genes of Togaviridae family and is transmitted from primates to humans by vectors. Among them we identified the *Aedes aegypti* and *Aedes albopictus* mosquitoes, the same vectors that transmit the dengue virus [1]. It causes fever, widespread exanthema, myalgia and severe diffuse joints pain and is also known as chikungunya fever or "that which bends up" [2].

At the end of 2013, the first autochthonous case of chikungunya virus (CHIKV) was reported in the Americas [3]. However, CHIKV was identified in Brazil for the first time in 2014 and its vectors are quite endemic [4,5].

In addition to the classic symptoms of this disease, CHIKV infection can also be associated with severe illness, involving cardiovascular, respiratory, renal, ocular, and neurologic manifestations [2].

Neurological manifestations are rarely present. However, meningoencephalitis, encephalopathy, convulsions, Guillain-Barré syndrome, cerebellar syndrome, cerebral ischemia, and peripheral neuropathy occur in some atypical forms [1,6–14].

We reported a case of CHIKV infection, in which the patient had peripheral mononeuropathy as a complication of this disease. This clinical report was authorized for publication by the patient who completed a signed informed consent form.

Case Report

A 38-year-old man was seen at our neurology outpatient clinic, reporting that 8 days earlier he had fever (39.5°C), myalgia, arthralgia, pruritus and widespread exanthema. After the disappearance of these symptoms, there was the inability to perform both the hand extension movement and the left foot flexion movement. Neurological examination revealed paresis of the muscles innervated by both the left radial nerve and the left fibular nerve. Electroneuromyography showed multiple mononeuropathy, with an acute axonal pattern, with no signs of reinnervation in the fibular and radial nerves, on the left. Serological tests (Enzyme-Linked Immunosorbent Assay, ELISA) were positive for chikungunya (IgM 1:1280 and IgG 1:1280). Cerebrospinal fluid examination was not performed. The patient underwent motor physical therapy treatment and after 5 months he fully recovered.

Discussion

Our patient had diagnostic confirmation of CHIKV infection based on the positivity of the serological tests. In addition to the classical manifestations of the disease, he has evolved with peripheral

mononeuropathy confirmed by clinical examination and electroneuromyography.

In most cases, CHIKV infection is a self-limited disease [15], so our patient no longer had the classic symptoms of the disease after the second week. However, complications in other systems appeared later, especially after the third week of evolution [10,12].

Usually CHIKV infections do not cause neurological complications, as described in some case series [9,16,17], but there has been recently a large increase in reports of neurologic complications in infected people. The most frequent neurological manifestations are meningoencephalitis, encephalopathy, convulsions, Guillain-Barré syndrome, cerebellar syndrome, cerebral ischemia, and peripheral neuropathy [1,6–14].

These complications are probably due to better viral adaptability to its vectors, strain virulence, and new mutations of circulating CHIKV increasing its pathogenicity [15]. Our patient presented a satisfactory evolution of the neurological complication. Possibly, a less virulent strain had affected him. However, other authors have described permanent severe neurological sequelae and even death [13,14,18].

Among the neurological complications, peripheral neuropathy seems to be quite rare. In our review, we have found one study that reported a large series of neurological complications. In this series of 300 patients with CHIKV infection, 49 (16.0%) had neurological complications. Peripheral neuropathy was present in 7 (14.0%) of them [1]. However, there was no description of peripheral mononeuropathy.

CHIKV serum IgM, assessed by enzyme-linked immune-assay (ELISA), was elevated in the second week because there was still viremia present. However, elevated IgG levels indicate seroconversion and they will persist for years. Unfortunately, no specific assay exists for the assessment of chronicity of CHIK disease [15].

Conclusion

Peripheral neuropathy may be a neurological complication of CHIKV infection and to the best of our knowledge this is the first Brazilian case of peripheral mononeuropathy secondary to CHIKV infection.

Ethical Aspects

The patient signed the informed consent form.

Conflict of Interest

There is no conflict of interest.

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