

Chikungunya Encephalitis as the Hidden Face of a Known Foe

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Abstract

Chikungunya fever is a neglected tropical disease that represents a major public health problem in several countries. Even though it is considered a self-limited condition in most cases, atypical and severe presentations have been reported in the literature. Displaying a high prevalence among unusual manifestations, encephalitis may represent a potentially fatal complication. Recent studies suggest that Central Nervous System (CNS) infection may not be as infrequent as previously thought. We report a case of an 85-year-old male presenting with myalgia, muscle weakness, a diffuse rash and significant disorientation. Findings suggestive of viral encephalitis in Cerebrospinal Fluid (CSF) analysis, exclusion of differential diagnoses and positive serological markers for CHIKV concluded to a diagnosis of Chikungunya encephalitis.

Keywords: Encephalitis; Chikungunya; Arbovirus

Introduction

Chikungunya fever is an arbovirus infection caused by Chikungunya virus (CHIKV), a mosquito-borne alphavirus [1]. CHIKV infection commonly presents as a self-limited febrile illness that causes polyarthralgia, maculopapular rash, headaches and myalgia. Chronic arthralgia may occur in up to 78.4% of patients [2], causing debilitating pain that leads to personal, social and economic distress due to disability. The prevalence of Chikungunya fever varies widely depending on geographic location and occurrence of outbreaks. Seroprevalence of CHIKV is especially high in South American, Asian and African populations [3], however, given an increasing global distribution of mosquitoes and their adaptability in urban settings, CHIKV infection is recognized as a global health threat that may become pandemic in the near future [1]. Outbreaks and autochthonous cases have been reported throughout Europe since 2007 [4], prompting further studies about Chikungunya fever and increased awareness about this diagnosis. Chikungunya fever may also present unusual symptoms, with neurologic manifestations being reported in up to 33% of patients [5]. Encephalitis is the most common manifestation among neurologic symptoms [5], and must be considered in patients with compatible clinical presentation, epidemiologic

risk factors and positive serological markers. In this context, we report the case of an 85-year-old male presenting with myalgia, muscle weakness, a diffuse rash and mental disorientation. Findings suggestive of viral encephalitis in Cerebrospinal Fluid (CSF) analysis, exclusion of common differential diagnoses and positive serological markers for CHIKV concluded to a diagnosis of Chikungunya encephalitis.

Case Report

An 85-year-old man from northeastern Brazil presented to the emergency department with acute disorientation and sleepiness as well as fever, diffuse myalgia and skin rash; no neck rigidity nor other meningeal irritation signs were seen on admission. Empiric antibiotic therapy for infectious encephalitis was promptly started with ceftriaxone 2g every 12h and acyclovir 12,5mg/kg/day. Computerized tomography and magnetic resonance imaging of the brain were performed but were noncontributory. CSF analysis revealed 122 cells/cubic millimeter, with 104 lymphocytes, high protein and mildly lowered glucose levels. Bacterioscopy and polymerase chain reaction tests for Herpesviruses were negative. Dengue Virus (DENV) and Zika Virus (ZIKV) detection tests were negative. A positive CHIKV serology test for CHIKV acute infection, with high

IgM titers, the presence of other compatible symptoms, CSF study results consistent with viral encephalitis, epidemiologic factors and exclusion of differential diagnoses lead to a diagnosis of Chikungunya encephalitis. Methylprednisolone pulse therapy (1 gram per day) for 5 days was started and significant improvement of neurological symptoms was achieved. The patient was discharged with no neurological sequelae and remained asymptomatic in outpatient follow-up two weeks after hospital discharge.

Discussion

Once considered simply a self-limited and mild condition, Chikungunya fever has been recently associated with severe complications [6]. In such cases, encephalitis is shown to be the most common neurologic manifestation [5]. Many other neurologic manifestations are reported, and impairment may be seen in peripheral, central nervous system or both (Table 1).

Table 1: Neuropsychiatric manifestations of Chikungunya fever.

Encephalitis
Myelitis
Optic neuropathy
Neuroretinas
Ophthalmoplegia
Crania nerve palsy
Guillain-Barré syndrome
Seizures
Sensorineural hearing loss
Stroke
Depression
Psychosis

Psychiatric symptoms may also occur, mimicking neurologic manifestations [5]. In the reported case, the high morbidity of Chikungunya in the region provided clinical awareness for the hypothesis of an unusual presentation. In endemic areas, coinfections with other arboviruses such as DENV and ZIKAV should also be ruled out [7]. Data on the prevalence of neurological symptoms in Chikungunya is heterogeneous, which may be explained by different strains of CHIKV that circulate throughout the globe [8]. The global spread of mosquitoes, especially *Aedes*, with successful adaptation to Europe [9] must

prompt further studies on prevalence, diagnosis and treatment of Chikungunya encephalitis in order for timely recognition and adequate management of such a severe complication. This is especially important for regions in which CHIKV is not endemic given its potential for outbreaks in the near future.

Conflict of Interest: All the authors declare that they do not have any conflict of interest.

Consent of Publication: Informed consent was taken from the patient.

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