Acute Myocarditis Caused by Chikungunya Virus Assessed by Cardiac Magnetic Resonance Imaging

Eduardo Cavalcanti Lapa Santos,1,2 Eduardo Andrade Figueiredo,1 Renata Ávila Cintra,1 Michel Pompeu Barros de Oliveira Sá,1 George Augusto da Fonseca Carvalho Antunes Lima2

Hospital Dom Helder Câmara (HDH),1 Cabo de Santo Agostinho, PE; Universidade Federal de Pernambuco (UFPE),2 Recife, PE – Brazil

Introduction

Chikungunya infection usually has a benign course characterized by fever, polyarthritis and rashes. Occasionally, cardiac manifestations such as myocarditis can be seen. We report the case of an elderly patient with established myocarditis following Chikungunya infection.

Case Presentation

A 80-year-old female patient with a history of systemic arterial hypertension, heart failure (HF) with preserved left ventricular ejection fraction (EF), mild aortic stenosis, and paroxysmal atrial fibrillation (AF) presented dyspnea and palpitations approximately 4 months after an acute febrile syndrome caused by the Chikungunya virus. On physical examination: blood pressure of 132x80 mmHg, heart rate of 86 bpm, systolic murmur in the aortic area with carotid radiation, absence of pulmonary rales, minimal jugular vein distension at a 30-degree angle, no edema and weighing 83.3 kg. Electrocardiogram (ECG) demonstrated regular sinus rhythm and right bundle branch block (already present in a previous ECG). On cardiovascular complaints (4 months after the acute event), an echocardiogram was requested, which did not show any change compared to the previous year’s examination. Due to the possibility of myocarditis caused by the Chikungunya virus, gadolinium cardiac magnetic resonance imaging (CMR) was performed, which showed normal cardiac chambers, preserved biventricular systolic function (right ventricular EF = 59%; left ventricular EF = 68%), absence of myocardial edema, absence of pericardial effusion and changes in pericardial thickness, presence of mesoepicardial fibrosis in the lower segment of the medial region of the left ventricle, compatible with previous inflammatory cardiomyopathy (Figure 1). The patient was treated with oral diuretics and beta-blockers, with progressive improvement of symptoms.

Discussion

Chikungunya fever is caused by the CHIKV virus, an arbovirus of the A group. In some regions, as in Brazil, the virus is spread through bites from Aedes mosquitoes, and the species Aedes aegypti was identified as the most common vector, although the virus has recently been associated with many other species. Human infection is considered benign in most cases, but even among adults the reported occurrence may be minimal and associated with arrhythmias or small abnormalities on electrocardiography.

Diagnosis of myocardial involvement by CHIKV can be done through imaging tests such as echocardiogram and CMR. The latter allows an adequate myocardial characterization of the lesion, identifying both acute and subacute inflammatory lesions (myocardial edema), and also the cicatricial lesions of the chronic phase. The late enhancement technique allows the identification of necrosis/fibrosis regions with a multifocal distribution pattern characteristic of myocarditis, without correlation with the coronary territory, affecting the epicardium and/or the mesocardium and preserving the subendocardium in general. In the case reported, no evidence of myocardial edema was observed, since the patient was already in the chronic phase of the disease at the moment of the test, which revealed late enhancement with characteristics compatible with a previous inflammatory process. It is important for the diagnosis to rule out any other recent cardiotropic infection.

Etiological diagnosis of CHIKV myocarditis can be done through the IgM-capture ELISA, antigen detection or virus isolation, varying with the availability of the methods. The frequency of myocardial lesions in this scenario is not known, especially because many cases of myocarditis remain undiagnosed, but even among adults the reported occurrence is uncommon. Serial electrocardiographic evaluations seem to be the best guide for the prognosis. With the worldwide resurgence of arboviruses, new clinical patterns may arise. Physicians should be aware of the possible cardiac involvement in the Chikungunya infection to address this potentially lethal complication in infectious disease outbreaks.
Case Report

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Arq Bras Cardiol: Imagem cardiovasc. 2018;31(1):17-18

Figure 1 – Short-axis: left ventricular late gadolinium enhancement on cardiac magnetic resonance imaging. Note epicardial delayed enhancement (arrow).

Authors’ contribution
Research creation and design: Santos ECL; Data acquisition: Lima GAFCA; Data analysis and interpretation: Ávila R; Manuscript drafting: Lima GAFCA; Critical review of the manuscript for important intellectual content: Santos ECL, Figueiredo EA, Sá MPBO; Translation: Santos ECL, Lima GAFCA.

Potential Conflicts of Interests
There are no relevant conflicts of interests.

Funding Sources
This study had no external funding sources.

Academic Association
This study is not associated with any graduate programs.

References