Brief Report

Chikungunya Fever in Clinically Diagnosed Patients: A Brief Report of Comparison Between Laboratory Confirmed and Discarded Cases

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Abstract

Objectives: In 2015, a total of 1607 chikungunya cases were confirmed in Yucatan, Mexico, where they all took place in the second half of the year, meaning a simultaneous occurrence of both chikungunya and dengue outbreaks. This coexistence of both outbreaks posed a challenge to differentiate clinical diagnosis. The current study aimed at identifying signs and symptoms to clinically discriminate chikungunya from dengue fever in ambulatory cases.

Methods: The results of a case series observational, descriptive, retrospective study of suspected ambulatory patients whose samples were referred to the laboratory for polymerase chain reaction (PCR)/serum analysis from August to December 2015 were provided.

Results: The study included 181 cases of which 152 were positive, finding that pruritus was a suggestive symptom of an acute infection caused by chikungunya virus (CHIKV). Polyarthralgia and pruritus were significantly associated with chikungunya confirmed cases, compared with discarded cases.

Conclusions: Polyarthralgia and pruritus are suggestive symptoms of an acute infection caused by CHIKV.

Keywords: Chikungunya Virus Infection, Mexico, Diagnosis, Endemic

1. Background

Due to the abundance of vector Aedes aegypti and the constant circulation of the 1, 2, 4 serotypes, Yucatan, Mexico, is a dengue endemic region. In 2015, chikungunya virus (CHIKV) infection was common because the population was immunologically naive (1). During the CHIKV outbreak in Yucatan, all samples from clinically suspected cases were confirmed and samples from ambulatory patients were randomly selected to be confirmed by laboratory tests.

The occurrence of clinical diagnostic mistakes is described both in endemic areas and during outbreak seasons, in which the agent associated with the outbreak is usually suspected to be the etiologic factor of every similar case. In Yucatan, an unpredicted increase in dengue cases also took place simultaneously with CHIKV outbreak. The characterization of the clinical manifestations of chikungunya and dengue are similar and might represent a diagnostic challenge to clinicians practicing in endemic regions during outbreak seasons. It is important to properly identify the etiologic nature of the disease, since chikungunya and dengue have different clinical spectrum and prognosis, while dengue is more prone to generate hemorrhagic manifestations in the short-term, chikungunya might develop a prolonged arthritis-like pain and disability. In Mexico, since the national standard epidemiologic procedures do not allow an acute sample to be tested for both dengue and chikungunya, clinicians must rely on their experience to define which of those agents should be confirmed or discarded by laboratory (if randomly selected). CHIKV generates a febrile illness in most people with an incubation period of 2 to 4 days after being bitten by Aedes mosquitoes. There is also affectation of the mayor joints such as the knee, shoulder, and vertebral spine. The current case series study compared the clinical manifestations in ambulatory patients whose samples were processed in the laboratory and according to their test results signs and symptoms that might aid during clinical differential diagnosis were identified (2-4).

CHIKV cases can be categorized as confirmed, discarded, and suspected. The confirmed cases are the ones

with a positive result to CHIKV by any of the following laboratory tests: 1, Detection of viral ribonucleic acid (RNA) by reverse transcription polymerase chain reaction (RT-PCR) in serum samples taken in the first 5 days; 2, Detection of IgM antibodies in paired samples. An increase of at least 4 times in the antibody titer for chikungunya fever should be noted with a difference of at least 1 week between the first and second sample; 3, Detection of IgG antibodies in paired serum sample. An increase of at least 4 times in the antibody titers should be noted with a difference of at least 1 week between the first and the second. Discarded cases are the ones in which the presence of virus or specific antibodies (depending on the time elapsed since the onset of symptoms) is not demonstrated. Finally, the suspected cases consist of fever with arthritis and arthralgia reported in the areas where transmission of CHIKV is confirmed (5, 6).

2. Methods

The results of a descriptive observational study on suspected ambulatory patients are presented here whose samples were referred from the ambulatory medical consultation for their confirmation by laboratory from August to December 2015. Every patient included in the current study met the inclusion criteria as a suspected CHIKV. All analyses followed the criteria included in the normative epidemiological reference laboratories, analyzed by RT-PCR detection routinely or IgM antibody, depending on the number of evolution days from the onset of symptoms.

The clinical data and the anonymized laboratory results were provided to the authors in a spreadsheet dataset for further analysis using STATA 12©, using a logistic regression for binary variables (7).

3. Results

The study included 181 cases of which 152 were positive for chikungunya virus (by RT-PCR or IgM) and 29 were negative for chikungunya (1 Newcastle virus, 2 cases of Rickettsia, and the remaining cases were diagnosed as dengue virus).

In terms of general sociodemographic characteristics (Table 1, it was found that most of the patients were from Merida city and the residents were the most at-risk population.

The most frequent symptoms were: headache, rash, pruritus, and chills described in Table 2. Polyarthralgia and pruritus were significantly more frequent in the CHIKV confirmed cases.

The coexistence of both outbreaks posed a challenge to differential clinical diagnosis between Chikv and dengue

Table 1. Sociodemographic Characteristics of the Chikungunya Cases Among Ambulatory Patients in Merida, Yucatan Features

Characteristics	Category	Number	(%)
CHIK cases in the neighborhood	Yes	128	70.7/20.3
Female	Female	92	49/51
Urban community	Yes	111	14.4/38.6
Place of acquisition	Home/work/school	178/2/1	98.3/1.1/0.6
Previous medical evaluation	Yes	32	17.6
Hospitalization	Yes	36	19.8

in Yucatan in 2015. Based on the results of the current case series study, it can be concluded that polyarthalgia and pruritus are the suggestive symptoms of an acute infection caused by CHIKV that could orient the differential diagnosis.

4. Limitations

The results of the current study, due to its misbalanced sample of negative and positive cases and its retrospective nature as a case series, can only be considered as preliminary. Further prospective, comparative studies are needed to confirm the current preliminary findings.

Footnotes

Table 2. Clinical Manifestation in Laboratory Confirmed and Negative Chikungunya Cases

Chikungunya Positive Cases	Number	%	Odds Ratio	P Value	95%CI
Myalgia	151	83	1.408	0.625	0.35 - 5.55
Arthralgia (local)	134	74	0.575	0.341	0.18 - 1.79
Polyarthralgia	132	73	2.098	0.041	0.38 - 0.99
Retro-ocular pain	86	47.5	1.104	0.815	0.48 - 2.53
Arthritis	75	41	0.523	0.129	0.22 - 1.20
Lumbalgia	27	15	0.955	0.933	0.32 - 2.83
Abdominal pain	22	12	0.492	0.204	0.16 - 1.47
Headache	121	67	0.761	0.670	0.21 - 2.84
Exanthema	76	42	1.759	0.203	0.73 - 4.96
Pruritus	87	48	2.864	0.035	1.07 - 7.66
Chills	59/122	32.5	0.590	0.264	0.23 - 1.48
Nausea	35/146	19	1.260	0.653	0.45 - 3.45
Vomiting	42/139	23	1.429	0.532	0.46 - 4.37
Photophobia	31/150	17	0.635	0.432	0.20 - 1.97
Diarrhea	12/169	7	0.278	0.050	0.7 - 1.00
Dysgeusia	10/171	5.5	2.119	0.442	0.313 - 14.337
Conjunctivitis	9/172	5	0.580	0.452	0.141 - 2.395
Pharyngitis	6/175	3	0.290	0.232	0.038 - 2.210
Dyspnea	3/178	2	7.716	0.799	0.054 - 9.408

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