



BRIEF REPORT

Post-chikungunya rheumatic disorders in travelers after return from the Caribbean



Cosmina Zeana ^{a,b}, Paul Kelly ^{a,b}, Wilson Heredia ^c,
Angelica Cifuentes ^b, Giovanni Franchin ^{b,d}, Murli Purswani ^{c,e},
Arlene Tieng ^{b,d}, Stefan H.F. Hagmann ^{c,e,*}

^a Division of Infectious Diseases, Bronx-Lebanon Hospital Center, Bronx, NY, USA

^b Department of Medicine, Bronx-Lebanon Hospital Center, Bronx, NY, USA

^c Department of Pediatrics, Bronx-Lebanon Hospital Center, Bronx, NY, USA

^d Division of Rheumatology, Bronx-Lebanon Hospital Center, Bronx, NY, USA

^e Division of Pediatric Infectious Diseases, Bronx-Lebanon Hospital Center, Bronx, NY, USA

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Summary *Background:* Due to increasing concerns about post-chikungunya (pCHIK) rheumatic disorders in Latin America we aimed to evaluate its occurrence in travelers returning to NYC from the Caribbean.

Method: Patients diagnosed with chikungunya (CHIK) during 2014 at the Bronx-Lebanon Hospital Center (Bronx, New York) were identified by reviewing laboratory and electronic medical records. Patients and caregivers of pediatric patients were interviewed by phone ≥ 9 months after the CHIK diagnosis to survey for chronic symptomatology and current health care needs. Reported chronic musculoskeletal complaints were categorized according to validated criteria. *Results:* A total of 28 patients (54% females, median age [range] of 51.5 [0, 88] years) diagnosed with CHIK at our center were identified. Most (82%) had returned from the Dominican Republic. Nineteen (68%) patients were successfully contacted at a median (range) of 13 (9, 16) months since the acute diagnosis. A third (37%) reported ongoing complaints related to CHIK including joint pain (32%), muscle pain (32%), and joint swelling (26%). A presumptive diagnosis of pCHIK chronic inflammatory arthritis ($n = 4$) and pCHIK musculoskeletal disorder ($n = 3$) was established.

Conclusions: A third of travelers with CHIK acquired in the Caribbean may be at risk for developing persistent symptoms suggestive of pCHIK rheumatic disorder.

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* Corresponding author. Bronx-Lebanon Hospital Center, Division of Pediatric Infectious Diseases, 1685 Morris Ave. Apt 1G, Bronx, NY 10457, USA. Tel.: +1 718 960 1010; fax: +1 718 960 1011.

E-mail address: shagmann@bronxleb.org (S.H.F. Hagmann).

1. Introduction

Chikungunya (CHIK) has emerged as a major public health threat globally and more recently in Latin America, where the disease is now endemic [1,2]. Of increasing concern is the occurrence of persistent rheumatic and general disabling symptoms that can last for several years following acute infection [3]. Due to the large Caribbean population served at our hospital and mounting concerns of post-chikungunya (pCHIK) rheumatic disorders in Latin America [4], we initiated a CHIK performance improvement (CHIK-PI) project consisting of patient education about pCHIK rheumatic disorders, expedited follow-up appointments with the primary medical doctor and coordination of rheumatology referrals in order to identify cases of pCHIK rheumatic disorders and initiation of disease management in a timely fashion [5]. The aim of this report is to describe the observed prevalence of pCHIK rheumatic disorders in travelers with CHIK acquired in the Caribbean.

2. Methods

Bronx-Lebanon Hospital Center (BLHC) is one of the largest ambulatory health care providers in the South and Central Bronx where about a third of the population is foreign-born with most (>70%) originally from the Caribbean and other Latin American countries [6]. As part of the CHIK-PI project we first intended to identify all patients diagnosed with CHIK at BLHC between 1/1/2014 and 12/31/2014. Patients were identified by reviewing laboratory files and by searching electronic medical records with CHIK-specific ICD-9 diagnosis codes. Only patients with confirmed and probable CHIK were included in the analysis. Patients were confirmed to have a diagnosis of CHIK if clinical and epidemiologic criteria (acute onset of fever and severe arthralgia/arthritis not explained by other medical conditions during a sojourn in or within 15 days of departure from a CHIK-endemic region) were fulfilled, and a positive CHIK-specific serology (IgM and/or IgG) or PCR test was found [7]. Patients were considered to have a probable diagnosis of CHIK if clinical and epidemiologic criteria were fulfilled, CHIK-specific testing was not done, but dengue as an important differential diagnosis had been ruled out with specific dengue testing [7].

Secondly, all identified CHIK patients (and caregivers of pediatric patients with CHIK) were called at a median (range) of 13 (9–16) months after the CHIK diagnosis and a 15-item questionnaire (available in English and Spanish) was administered to survey for ongoing musculoskeletal symptoms, and need for health care intervention. Musculoskeletal pCHIK disorders were categorized into pCHIK chronic inflammatory arthritis (CIA) if survey responses and chart review suggest presence of polyarthritis or pCHIK musculoskeletal disorders (MSD) if responses suggested lack of arthritis [5,8]. After obtaining approval by the hospital's institutional review board, medical records including phone notes were subsequently reviewed for retrospective data abstraction. Analysis was primarily descriptive, frequencies of chronic symptomatology were compared between patients with and without pre-existing

rheumatic/musculoskeletal disease (RMD) by using Fisher's exact test. Data were analyzed using Stata version 10.0 statistical software (StataCorp LP, College Station, Texas). Statistical significance was set at $P < 0.05$, 2-tailed.

3. Results

We identified 28 patients (54% female) with a median age (range) of 51.5 (0–88) years diagnosed with CHIK (confirmed, $n = 13$; probable, $n = 15$) at our center in 2014. Most were Hispanic ($n = 27$, 96%) and had traveled (median duration of stay [range] of 30.0 [3–365] days) to the Dominican Republic ($n = 23$, 82%), Puerto Rico ($n = 4$, 14%) or Guyana ($n = 1$, 4%). Preexisting health conditions were noted in 18 (64%) patients with CHIK. The most common medical conditions were hypertension (43%) and dyslipidemia (36%). A pre-existing RMD was reported in 8 (29%) patients. During the acute illness, patients sought care at our center within a median (range) of 4 (1–60) days after onset of symptoms. Most presented with fever (99%), joint pain (89%), myalgia (70%), and joint swelling (68%). Other common reported symptoms included gastrointestinal complaints (59%), headache (48%), and rash (48%). Median (range) pain level on a scale of 10 was 8 (4–10), about half (46%) required inpatient care, and a quarter had distinct complications such as hypotensive episode/syncope/EKG abnormalities requiring telemetry ($n = 4$), electrolyte imbalance ($n = 2$), and thrombocytopenia ($n = 2$). The clinical spectrum of disease in patients with confirmed and probable CHIK was similar without any statistically significant differences noted (data not shown).

Nineteen (68%) patients were successfully contacted at a median (range) of 13 (9–16) months since the acute diagnosis. Of those, a third ($n = 7$, 37%) reported ongoing complaints related to CHIK, specifically joint pain ($n = 6$, 32%), muscle pain ($n = 6$, 32%), and joint swelling ($n = 5$, 26%) (Table 1). Patients with pre-existing RMD had higher point estimates for ongoing complaints that did not reach statistical significance except for current intake of pain medication (67% vs. 8%, $P < 0.05$) (Table 1). Based on the survey responses and chart review a presumptive diagnosis of pCHIK CIA (undifferentiated polyarthritis) ($n = 3$), pCHIK CIA (exacerbation of a preexisting knee osteoarthritis) ($n = 1$), and pCHIK MSD ($n = 3$) was established (Table 2).

4. Discussion

In our experience at least a third (37%) of patients returning from the Caribbean and seeking medical attention at our hospital for symptoms related to CHIK infection report ongoing chronic musculoskeletal symptoms 9 months or more after initial diagnosis. Since widespread transmission of the CHIK virus has been established throughout the Caribbean since 2013 [1], ill travelers with acute CHIK returning from the Caribbean have been described [9,10]. However, post-CHIK rheumatic disorders in travelers returning from the Caribbean have so far only rarely been reported [11], and to our knowledge, this is the first report to assess the frequency of pCHIK rheumatologic disorders occurring in travelers diagnosed with acute CHIK after a trip to the Caribbean.

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