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CASE REPORT

Cutaneous manifestations in six children by CHIKV: a case series

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Abstract

Objectives: To describe a case series of children diagnosed with Chikungunya virus (CHIKV) infection with atypical dermatologic manifestations, in order to broaden the picture of possibilities for differential diagnoses in cases of similar clinical presentations. **Methods:** This is a series of cases in which were included all patients aged between zero and 18 years and who, between January, 2018 and November, 2020, were admitted to the emergency department of a pediatric public hospital, presenting atypical cutaneous manifestations associated with a clinical-epidemiological or laboratory diagnosis of CHIKV. **Results:** A total of six patients were screened from a cohort of 432 patients. Of these, four were female and five were under one year of age. The most reported manifestations were fever of sudden onset, besides exanthema and bullous skin lesions, mainly affecting the limbs. There was hospitalization of five of patients, without deaths. **Conclusion:** Cutaneous presentations are of different magnitude according to the age range affected by CHIKV, especially for children under one year of age, affecting mainly extremity areas of the body surface. It is therefore worth noting that pediatric patients deserve greater attention and early care, in order to reduce complications from the infection and thus also the morbidity of the affected population.

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INTRODUCTION

The word "chikungunya" means "one who bows" in the Makonde language of Tanzanian origin, where the chikungunya virus (CHIKV), transmitted by mosquitoes of the genus Aedes, was first described[1]. The name is justified because chikungunya causes symptoms such as intense polyarthralgia, which leads to an antalgic bending position, in addition to sudden onset fever, edema, rash, bullous dermatitis, nausea, myalgia, and headache during the acute stage of the disease, which lasts between seven and 14 days. In the subacute stage, joint and skin symptoms persist for up to three months. Patients with symptoms for over three months are diagnosed with chronic chikungunya[2,3].

On the other hand, the clinical presentation of chikungunya in pediatric patients is varied and still needs to be explored in scientific literature. It is known, for example, that in around 40% of the cases, the disease is asymptomatic[4]. Other patients may develop acute-onset fever, rash, lymphadenopathy, and lethargy. Arthralgia is associated with high fever in adults, while children have a greater recurrence of fever and flushing followed by skin rash, which can be severe, and myalgia[5-7].

This article describes a series of children diagnosed with chikungunya with atypical skin manifestations and the conditions potentially considered in differential diagnoses with similar clinical presentations.

METHODS

This article describes the cases of patients seen at the Emergency Department of a public pediatric hospital in the metropolitan region of Rio de Janeiro, Brazil. The study included patients aged between zero and 18 treated between January 2018 and November 2020. The patients had symptoms suggestive of arbovirus infection associated with atypical skin manifestations, such as bullous/exfoliative dermatitis. The data were collected from the Emergency Department's medical records.

Tests for specific IgM antibodies (ELISA) were recommended in cases suspected of acute disease with blood samples taken more than two days after the onset of symptoms. Tests for IgG antibodies were performed in patients suspected of infection during the peripartum period or after eight days from the onset of symptoms for serological diagnosis. RT-PCR was indicated in cases where the onset of symptoms was uncertain and for patients under one year of age. Epidemiological diagnosis considered fever and rash associated or not with other symptoms such as abdominal pain, arthritis/arthralgia, nausea, vomiting, and others.

The Research Ethics Committee of the participating institution approved this study under certificate 21286919.8.0000.5243.

RESULTS

During the study period, 432 participants aged between zero and 18 (median age: 9 years; interquartile range: 4-12 years) were seen. The most frequently observed clinical manifestations in this population were fever (100%), rash (62.8%), myalgia (58.6%), and arthralgia (57.1%). Ninety-five patients (22%) with a median age of four years (IIQ: 1-10) were hospitalized.

Six patients diagnosed with vesiculobullous lesions with CHIKV infection were selected based on clinical signs or laboratory tests.

Case 1: A 5-year-old brown female infant weighing 19 kg had symptoms suggestive of arbovirus infection associated with a morbilliform rash on the trunk, with areas of confluence forming erythematous plaques. Three days later, she still had fever, erythema, purulent blisters on the buttocks and back, crusts in the perioral region, and itching. The patient was prescribed benzathine penicillin, and hospitalization was unnecessary.

Case 2: A 10-month-old female infant weighing 8 kg had symptoms suggestive of arbovirus infection for four days. Vesicular lesions had recently appeared on her legs, with limb and facial edema and irritability. She was hospitalized and was treated with oxacillin.

Case 3: A 6-month-old female infant weighing 7.4 kg with symptoms for two days. After her fever subsided, she developed papular and vesicular lesions in her arms and legs. She was hospitalized and treated with oxacillin.

Case 4: A 2-month-old female infant weighing 6.1 kg with symptoms for three days developed a rash associated with blisters and vesicular lesions on the legs and arms. She was hospitalized and treated for symptoms. Antibiotics were not prescribed.

Case 5: A 1-month-old male infant weighing 6.8 kg had a fever that started on the same day he was taken to the hospital associated with vesiculobullous lesions. He was unsuccessfully treated with hydroxyzine and dipyrone at home and was eventually hospitalized.

Case 6: A 2-month-old male infant weighing 5.8 kg had a fever that started on the same day treatment was initiated. The rash on the trunk spread to the arms and face along with vesiculobullous lesions. He was hospitalized and treated with vancomycin and oxacillin for ten days.

Table 1 describes the demographic data, clinical signs, and lab test results of the children included in the study.

Three-quarters of all patients and every female infant were less than one year old when they were infected by CHIKV, and the age range of children with atypical dermatological lesions was lower than that of children treated at the unit during the study period (Figure 1). It is also worth noting that these patients were hospitalized. None died.

The most reported signs and symptoms, besides vesicobullous lesions, were fever and rash, seen in 100% of the cases. All patients had exanthematous

Table 1. Demographic, clinical, and lab test results of six children diagnosed with chikungunya, with atypical skin manifestations, treated in the Emergency department of a public pediatric hospital in 2018.

Case	Sex	Age (months)	Signs and symptoms on admission	Location of vesiculobullous lesions	Lab test results
1	F	64	Fever, otalgia, pain, and oropharyngeal hyperemia, myalgia, and rash. Itching, blisters, and crusts	Buttocks and back e	CHIKV (clinical-epidemiologic signs)
2	F	10	Fever, rash, vesicles, irritability, and edema	Legs	CHIKV (RT-PCR+)
3	F	6	Fever, papules, and vesicles	Legs and arms	CHIKV (RT-PCR+)
4	F	2	Fever, rash, blisters, and vesicles	Legs and arms	CHIKV (RT-PCR+)
5	M	1	Fever, nausea, rash, and vesicles	Diffuse distribution	CHIKV (RT-PCR+)
6	M	2	Fever, rash, vesicles, and blisters	Trunk, arms, and face	CHIKV (IgG+)



Figures 1a and 1b. Show the clinical presentation of a two-month-old male infant (Case 6) seven and ten days after the onset of symptoms, respectively. Caption 1a: Clinical presentation of a two-month-old male infant (Case 6) seven days after the onset of symptoms. The patient presents with purpuric macular lesions on the right arm, trunk, and buttocks, with small erosion areas. Caption 1b: Clinical presentation of a two-month-old male infant (Case 6) ten days after the onset of symptoms. The patient presents with residual hypochromic lesions on the trunk and areas of epidermal detachment in the umbilical region and proximal inner thighs, corresponding to 10% of the body surface.

lesions that evolved into blisters and vesicles, mainly on the extremities, affecting the arms and legs (75% of cases). The young age of the patients precluded the identification of subjective symptoms, such as arthralgia and headache.

DISCUSSION

The signs and symptoms of chikungunya in children are nonspecific and varied. However, some symptoms are typical of CHIKV infection in children, such as sudden fever, irritability, myalgia, rash, and lethargy. In the cases described, we explored atypical occurrences of skin involvement, focusing on vesiculobullous lesions.

According to the literature, skin presentations in children tend to differ from those in adults[5-8]. Robin et al. described 13 cases of children under six months of age with laboratory confirmation of Chikungunya with severe bullous lesions[9]. The authors also found that, although rare, severe skin lesions occurred more frequently in children under one year of age. In the cases analyzed in this study, 66.6% of the children were between two and ten months old, had confirmatory laboratory tests of CHIKV infection, and had rash and vesicles.

The literature[9] does not confirm the predominance of females with the disease seen in our population.

Notably, these atypical manifestations were more prevalent in the extremities, affecting the arms and legs, with lesions present on the buttocks and back of one of the patients. Valamparampil et al. described a possible upward progression of skin lesions, starting in the legs, buttocks, and abdomen and reaching the arms, sparing the neck and face[10]. Limb edema has been described in 19.6% of children with the disease, mainly in the ones aged less than a year, as also seen in this study. However, involvement of the face was observed in our population.

It is common for vesiculobullous lesions to appear between two and four days after the onset of fever, usually the first symptom, whether or not it is associated with rash. The fever may subside, but atypical forms of skin involvement commonly precede defervescence[9,10,11]. All cases analyzed followed this sequence of clinical events, with a third of them experiencing the end of fever after the appearance of lesions.

Other significant findings include otalgia and pharyngitis (Case 1) manifesting in addition to other more typical symptoms. Otalgia may be attributed to neurological involvement, but pain and pharyngitis may occur in cases of chikungunya[2].

CONCLUSIONS

Cutaneous presentations occur at different levels of severity depending on the patient's age. Infants with chikungunya, especially the ones under one year of age, tend to develop more severe forms of disease.

Vesiculobullous lesions, often seen in the patients included in this study, tend to appear 2-4 days after the onset of fever and rash. They generally affect the legs first and then the arms and spread to the abdomen, back, and buttocks. Skin manifestations frequently precede defervescence.

It is essential to consider chikungunya in the differential diagnosis of children with vesiculobullous lesions in new endemic areas where clinicians are not fully familiarized with this emerging arbovirus. Pediatric patients require closer attention and early start of treatment to reduce complications and morbidity resulting from chikungunya.

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