

Case report

Disuse atrophy of small muscles due to effusion of the synovial compartments of the dorsal wrist in CHIKV infection: A case report

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Abstract: Inflammation of the joints is generally considered to be the cause of the severe and prolonged symptoms in CHIKV infection. Disuse atrophy of the muscles due to effusion of the synovial compartments of the dorsal wrist in CHIKV infection has not been reported so far. Studying these atypical cases may shed light on the pathophysiology of CHIKV infection and appropriate individual case management.

Keywords: Night Blood Survey, *W.bancrofti*, filariasis, hydrocele, microfilaria, Filarial Dance Sign

INTRODUCTION

Shunmugapueram, an urban area in Pondicherry, South India was suspected to have suffered CHIKV fever epidemic during June 2006. We followed up a cohort of 585 individuals residing in two streets over a period of 9 months. A total of 159 fever cases were recorded, of which 117 were suspected to be CHIKV infection based on the clinical diagnostic criteria of fever with poly arthralgia. Among these, seven had visible joint swelling even after 90 days. One middle aged female presented with persistent swelling and pain just below the right wrist and inability to carry out routine household activities even 13 weeks after the onset of symptoms.

CASE PRESENTATION

A 40-year-old female who had suffered an attack of febrile illness and arthralgia 12 weeks earlier, reported to a clinician with complaints of pain, swelling of the right wrist joint and difficulties in carrying out routine household activities for 11 weeks. The clinical history revealed that she had suffered high-grade fever, chills and joint pains around the last week of September 2006. Though the fever and chills subsided after three days and malaise in two weeks, she continued to have pain and swelling of the right wrist. A detailed enquiry ruled out trauma or injection of medication at the local site. On examination, the patient was moderately built with mild pallor. No other signs of nutritional

deficiency were seen. On local examination at 12 weeks, when the patient presented to the clinician, a well-defined 4 cm X 3 cm soft tender swelling was found on the dorsum of the right wrist (figure-1). The swelling on the ventral side of the wrist was diffuse and tender. She had restricted supination, pronation of the forearm, dorsi-flexion and extension of the wrist on the ipsilateral side. There was wasting of the thenar and dorsal interossei muscles of the right hand (Figure-2). Serological examination by capture ELISA for

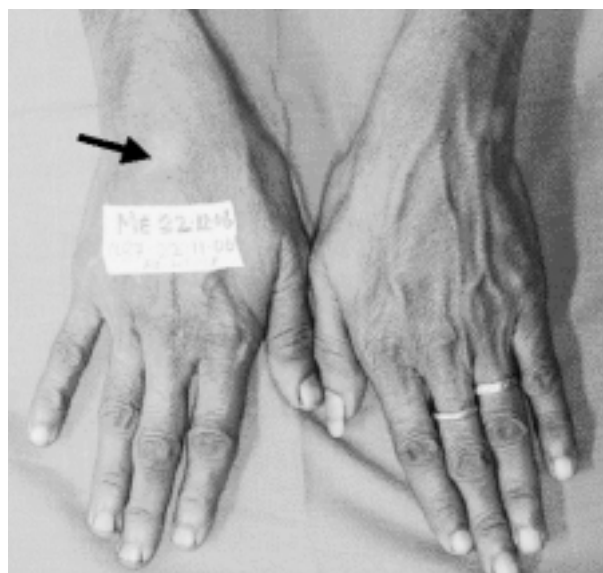


Figure-1: 4 cm × 3 cm soft tender swelling on dorsum of the right wrist in CHIKV infection

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Figure-2: Wasting of thenar and dorsal interossei muscles of the right hand at 12 Weeks in CHIKV infection



Figure-3: Thick fluid in extensor compartment of the right wrist at 14 weeks in CHIKV infection

CHICKV IgM antibodies (supplied by NIV, Pune) was reactive and Dengue IgM antibodies (NOVA-Tech) was negative. Ultrasound examination showed thick fluid surrounding the extensor tendons of the right wrist and the inflammation persisting at 14 weeks (figure-3). There was no effusion in the right wrist joint. The other joints of the upper and lower limbs were found to be normal on ultrasound examination. The patient was treated symptomatically with NSAID and muscle relaxant combination (Myospaz Forte) and firm application of crape bandage for 2 weeks, and moderate relief of the symptoms was achieved. After the relief from pain, the patient required physiotherapy for complete recovery.

DISCUSSION

In typical alpha-virus infection, migratory polyarthralgia or arthritis is seen in the small joints of the hands and feet, wrists, and ankles. Furthermore, diffuse myalgia

and back or shoulder pain have been described. O'nyong-nyong, Chikungunya, and Ross River virus infections are known to cause morning stiffness [1]. In general, the symptoms are of short duration (less than one week) and recovery is complete, although some patients have recurrent episodes of joint swelling and tenderness for months after infection [2]. In chikungunya, the symptomatology was more severe in adults than in children and polyarthritis was persistent even beyond 15 months [3, 4]. It was also noted that persistent joint pain and stiffness was related to high antibody titre [5]. The chikungunya virus that caused epidemics in Africa, southern India, south-east Asia and the Philippine Islands appeared to induce the most severe symptoms; ocular and paediatric neurological complications have also been reported, and an increased mortality has been attributed to the recent CHIKV epidemic in India [6, 7, 8]. The estimated number of individuals affected by the fever epidemic in 2006 is about 1.3 million, and in the present epidemic, severe and unusual forms not previously described in the literature have appeared. Visitors exposed in epidemic zones experienced flu-like symptoms with 69% of the patients suffering persistent arthralgia for >2 months, and 13% for >6 months [9]. A retrospective survey of chikungunya disease in Réunion Island hospital staff showed that, in about 10% of the affected individuals the symptomatology evolved towards chronic form [10]. Moreover, a detailed clinical report of 47 patients prospectively confirmed with chikungunya in Marseilles, France showed that over half the group had tenosynovitis (most commonly involving the wrists and fingers) during the chronic phase [11]. However, none of these reports mentioned small muscle atrophy. In our experience, in a small percentage of individuals the symptomatology was so severe that it hampered the routine household activities for varying periods ranging from 1 to 6 months. Anatomic-pathological data from immunohistochemistry have shown that the CHIK virus selectively infects progenitor cells involved in muscle repair [12]. Perhaps the severity and localization of progenitor cell involvement are responsible for the prolonged symptoms. Therefore, the severity of the symptom complex is likely to vary from individual to individual depending on the localization of anatomical sites. In the present case, the ultrasound examination revealed pathology in the extensor compartment rather than the joint effusion. Severe pain prevented the patient from using the affected limb, leading to disuse atrophy of the small muscles of the hand on the affected side. Treatment with an analgesic-muscle relaxant combination helped the patient to certain extent, and the patient required physiotherapy for recovery.

CONCLUSION

Poly-arthralgia due to joint effusion is the most common presentation in CHIKV infection. However, inflammation at atypical sites is generally missed. Detailed case studies focusing on the pathology of individual cases especially on chronic symptomatics will shed light on both the pathogenesis of the disease and appropriate case management of CHIKV infection. Travellers exposed to the virus should be made aware of the atypical presentation. Patients in the chronic phase may tend to self-medicate over a long period of time and so should be alerted as to the complications of long-term use of these drugs.

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