



Full Length Research Article

MENINGITIS AS SOLE MANIFESTATION OF CHIKUNGUNYA IN A CHILD: CASE REPORT

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ABSTRACT

Background: Chikungunya (CHIK) is an insect-borne acute febrile illness characterised by rash and arthralgia. Neurologic complications though rare has been reported.

Case characteristics: Here we present a case of a 6 years boy who presented with features of meningitis, had no rash, arthralgia but was finally diagnosed as a case of aseptic meningitis caused by CHIKV.

Message: CHIKV should be suspected as an aetiological agent of meningitis in endemic region.

INTRODUCTION

CHIKV, an Old World alpha virus of the family togaviridae is an insect-borne virus, antigenically similar to O-nyongnyong virus which is not known to be neurotropic. Most common symptoms of this virus infection is fever, headache, rash and arthralgia. However neurological complication like meningo-encephalitis, meningoencephalo - myeloradiculitis, myeloradiculitis, myelitis, myeloneuropathy, Guillain - Barre syndrome, external ophthalmoplegia, facial palsy, sensorineural deafness, and optic neuritis has been described in recent epidemics (Wadia, 2007). Outbreaks of meningoencephalitis has been reported from India and Reunion Islands (Quatresous, 2006). We present a case of a child who presented with features of meningitis, had no rash or arthralgia, but ultimately was diagnosed as a case of CHIK.

Case report: A 6 years boy presented with history of high grade fever for last 8 days associated with irritability and neck pain for last 2 days. There was no history of chills, rigor, vomiting, rash, joint pain, altered sensorium and convulsion. Clinical examination revealed neck stiffness. Cranial nerve examination was normal and there was no focal neurodeficit. Blood reports including complete blood count, liver function test, renal function test and electrolytes were all within normal limits.

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Test for malaria, Dengue virus, Herpes simplex virus (HSV), Japanese encephalitis virus (JEV), Human immunodeficiency virus (HIV) and enteric fever was also negative. Cerebrospinal fluid (CSF) obtained on day 8 of illness showed 80 mononuclear cells/mm³, sugar and protein level was 64 and 65 respectively. Culture of CSF was negative for bacteria, fungi and mycobacteria. Result of a CSF polymerase chain reaction (PCR) test for HSV DNA and CSF-IgM assay for dengue virus and JEV were negative. However IgM against Chikungunya was detectable in CSF. His serum CHIK-IgM antibody titre was high (1:320) obtained on day 8 and day 15 of illness. However CHIK-RNA PCR in CSF was negative. Cranial magnetic resonance imaging (MRI) showed no detectable abnormalities. His clinical condition improved within next few days without any neurological sequelae.

DISCUSSION

Chikungunya virus (CHIKV), an alphavirus of family togaviridae is transmitted by Aedes species mosquitoes (World Health Organization, 2008). Symptomatic CHIKV infection results in a self-limiting febrile illness with rash and arthralgia (World Health Organization, 2008; Borgherini *et al.*, 2007). However severe cases with meningoencephalitis and even death has been reported (Borgherini *et al.*, 2007; Renault *et al.*, 2007). Though meningitis is an atypical presentation of CHIK but clinical and laboratory finding confirm diagnosis in our case (Burt *et al.*, 2012). Evaluation of CSF of patients with

CHIKV encephalitis showed elevated protein with rise in leucocytes (<100/ microlitre) with predominance of mononuclear cells (Burt *et al.*, 2012). Our case showed similar results with 80 mononuclear cells in CSF and protein 65 (7). Finally CHIKV-RNA was not detected in CSF of our patient which is consistent with previous studies that documented inconsistent CSF positivity for CHIKV-RNA in CHIKV meningoencephalitis (Schuffenecker *et al.*, 2006).

Review of literature shows a recent increase in neurologic manifestation of CHIKV. Island-wise surveillance in Reunion Island identified 23 (1.4:1000) adult and 30 paediatric (23 boys and 7 girls) patients with neurological manifestation out of 16050 patients with laboratory-confirmed CHIK infection (Renault *et al.*, 2006). In a study of 20 cases, Rampal *et al* had shown affection of CNS at various levels in the form of encephalitis(15 cases), encephalomyelitis (3 cases) and optic neuritis(2 cases) (9). However even after extensive search we could not find any other case presented with isolated meningitis without any feature of rash, arthralgia and encephalitis. It is still unclear whether the neurological manifestation of CHIK is due to direct invasion of the virus to nervous system or due to immunological phenomenon as few autopsies with full virological studies has been reported. Some case study shows a latent period between fever, rash and the onset of neurological manifestation, negative CSF-RNA PCR, evidence of demyelination in MRI and improvement with steroids suggesting autoimmune aetiology. However there are reports where neurological manifestation presented in acute phase of illness, CSF was positive for CHIKV-RNA and improvement of clinical symptoms occurred spontaneously without any immunosuppressive drug administration.

Conclusion

Isolated meningitis can be a manifestation of Chikungunya. Possibility of this infection should be kept in mind in patients presenting with meningoencephalitis in endemic region. Whether neurological manifestation are due to direct invasion or due to immunological phenomenon needs further studies.

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