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Case Report

Sixth Nerve Palsy Post Chikungunya Virus Infection- A Rare Case

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Abstract

Purpose: Ocular involvement in chikungunya fever is uncommon finding. We describe the clinical presentation and management of ocular manifestation in a 60 year old male post chikungunya viral infection.

Observation: 60 years male, normotensive, developed hyperglycemia post chikungunya fever, reported with acute, painless horizontal binocular diplopia mainly in primary gaze and left lateral gaze for distance and near with limitation of abduction in left eye with no neurological deficit. Clinical examination was suggestive of isolated sixth nerve palsy. Chikungunya virus serology was found to be positive.

Conclusion: Delayed Immune mediated reaction to viremia may cause damage to sixth nerve, hence presenting as diplopia months after attack of chikungunya fever. Our case highlights the pathogenesis of chikungunya induced sixth nerve palsy and self-limiting course with good recovery.

Keywords: Sixth Nerve Palsy; Chikungunya Virus Infection

Introduction

Chikungunya fever is a viral infection first described by Robinson [1] and Lumsden [2] in 1955 after an outbreak on the Makonde Plateau, along the border between Tanzania and Mozambique, in 1952. It's a Swahili word meaning "that which bends up," in reference to the stooped posture developed as a result of arthritis.1 It is a single-stranded RNA virus of the genus Alphavirus in the family Togaviridae, spread by the bite of the infected Aedes mosquitoes, primarily A. aegypti and is geographically distributed in Africa, India, and Southeast Asia [3]. Chikungunya causes fever, skin rash, polyarthralgia and Meningoencephalitis [4]. Ocular manifestations include conjunctivitis, episcleritis, iridocyclitis, retinitis, optic neuritis [5,6]. Herein, we report an unusal case of a male presenting to us with ocular complaints of painless and acute onset of horizontal binocular diplopia post Chikungunya fever.

Case report

A 60-year-old male reported with painless acute onset of horizontal binocular diplopia. Past history elicited that four months ago, he had acute fever, headache and polyarthralgia (knee and wrist joints). He was then clinically diagnosed as a case of Chikungunya virus infection and serologically confirmed. He developed hyperglycemia after chikungunya fever, was normotensive and had no significant medical history. Clinical examination revealed best corrected visual acuity of 6/6 with 0.5DS in right eye and 6/6 with 0.75DC at 180 degree axis in left eye for distance and N6 with +2.00 near add. Pupils were equal in size, and reactive to light and accommodation. There was no relative afferent pupillary defect. Anterior segment examination and fundus examination were within normal limits. There was slight face turn to left (Figure 1) and limitation of abduction in left eye (Figure 2). No sensori-neuro deficit was

present. Diplopia and Hess charting was conclusive of sixth nerve palsy in left eye (Figure 3 and 4). Chikungunya virus serology, (immunochromatographic enzyme-linked immunosorbent assay) obtained 9 days after the onset of the symptoms was positive, with both IgM and IgG titers of more than 20 (N < 3 in arbitrary unit). Blood sugar levels were 99mg/dl and 186mg/dl, fasting and Post prandial respectively, and serum glycated hemoglobin was 7.76% on first visit.

Imaging and ancillary exams helped to rule out other causes of sixth nerve palsy including trauma, brain aneurysms, intracranial tumors, intracranial hematoma and raised intracranial tension.

Figure 1

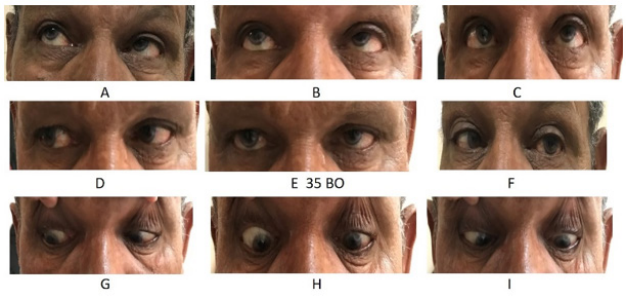

Figure 2: Nine Diagnostic Positions of Gaze. Limitation of Abducation In Left Eye (F). Presence of Esotropia In Primary Position (E).

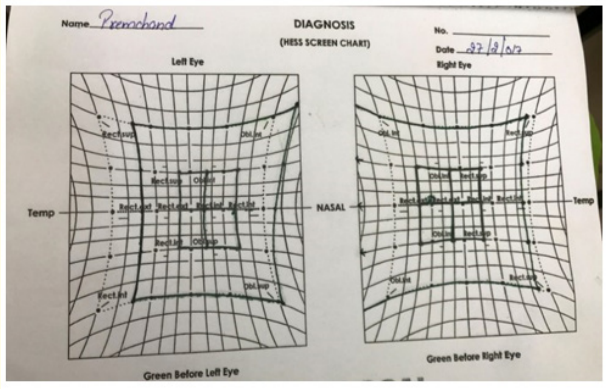

Figure 3

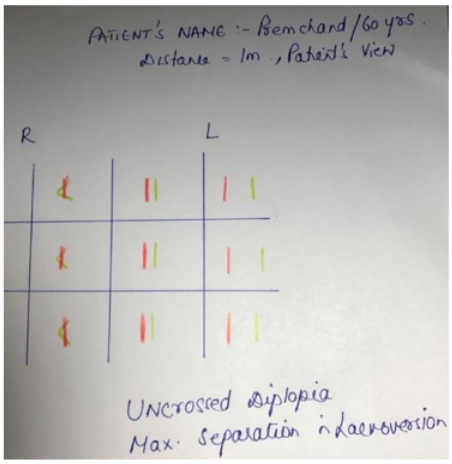

Figure 4

The patient was managed symptomatically for joint pains, referred to endocrinologist for raised blood sugar levels. Close monitoring of blood sugar was done and efforts made to limit levels within normal range. Normal eye was occluded for relief from diplopia. The patient was followed-up at an interval of every 2 weeks for evaluating orthoptics (angle of deviation for distance and near), ocular motility, and face turn for distance and near, diplopia charting and hess charting. 10th week follow-up revealed blood sugar levels to be 104 mg/dl and 128 mg/dl, fasting and post prandial respectively, and serum glycated hemoglobin to be 6.0%. Eyes were orthophoria, there was no limitation of abduction in left eye and his diplopia had resolved (Figure 5).

Figure 5

Discussion

Chikungunya is a self-limiting debilitating viral disease caused by Alphavirus. This virus is transmitted by bite of Aedes aegypti mosquito, however Aedes albopictus has also recently emerged as an important vector. Chikungunya is characterized by fever, joint pain, muscle pain, skin rash, headache, nausea and vomiting. Ocular involvement in chikungunya infection are uncommon and range from conjunctivitis, episcleritis, iridocyclitis, retinitis to optic neuritis.

We report a case of male presenting with delayed onset of ocular involvement in chikungunya which was sixth nerve palsy. A previous report from an epidemic outbreak in India reported ocular manifestations- anterior uveitis, optic neuritis, and dendritic keratitis, with chikungunya virus infection. In this study, three patients were found to develop a sixth nerve palsy associated with lagophthalmos. Pathogenesis in chikungunya associated ocular involvement was found to be an immune-mediated process-like production of autoantibody rather than a direct viral infection [7]. As in our case, patient developed ocular symptoms four months after the chikungunya, this can be explained by delayed immune mediated reaction to chikungunya virus.

Blood sugar level in our patient was found to be high. The exact biological mechanism of the association is not known yet due to the limited available data, the association between chikungunya and diabetes related to the severity of cases, complications and glucose deregulation are well documented [8].

Isolated cranial mononeuropathy in a setting of chikungunya is a rare manifestation. However our case report is in concordance with a similar study which reported involvement of third cranial nerve in a chikungunya case [9].

Since all possible causes of sixth nerve palsy were ruled out, chikungunya associated sixth nerve palsy is a diagnosis of exclusion. We acknowledge this a case of chikungunya associated sixth nerve palsy as patient was seropositive for chikungunya virus which is a neurotropic virus [10].

Conclusion

The main ocular manifestations associated with recent epidemic outbreak of chikungunya virus infection in India included non-granulomatous uveitis, optic neuritis, retinitis, dendrites. Isolated sixth nerve palsy post chikungunya fever has rarely been reported with no detailed case reports published. History of fever, joint pains, and skin rash before the onset of visual symptoms is helpful in the diagnosis of palsy post chikungunya infection particularly in the endemic regions. Delayed Immune mediated reaction to viremia or Diabetogenic stress induced by virus may cause damage to sixth nerve, hence presenting as diplopia months after attack of chikungunya fever. Our case highlights the pathogenesis of chikungunya induced sixth nerve palsy, delayed onset of presentation of visual symptoms and self-limiting course with good recovery.

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