CASE STUDIES

Managing a case of chikungunya-induced chronic arthritis using etanercept

Vikram Haridas[1], Kiran Haridas[2]

[1,2] Arthritis Super Speciality Center, Hubli, Karnataka, India

Abstract

Chikungunya virus or Aedes-borne alpha virus causes infection through an acute viremic phase and can be complicated with a chronic arthritis phase. The present case highlights the benefits of using etanercept for managing chikungunya arthritis, especially in scenarios where NSAIDS and steroids are contraindicated due to multiple comorbidities.

Keywords: chronic arthritis, etanercept, chikungunya

Introduction

Chikungunya virus or Aedes-borne alphavirus causes infection through an acute viremic phase and complicated with a chronic arthritis phase.[1, 2] Chikungunya arthritis has re-emerged in India since 2006, affecting over a million population.[3, 4] As per the WHO fact sheet 2017, around 1.9 million cases of chikungunya infection have been reported since 2005 from countries like India, Indonesia, Maldives, Myanmar and Thailand.[5]

Chikungunya virus attack imposes persistent arthralgia and rare manifestations of neurological diseases. The disease, involving initial symptoms such as joint pain, stiffness, swelling and fever, affects joints of elbows, knees, wrists, ankles, toes and fingers, and the pain lasts for months to years.[6, 7] Data from various studies suggest that 4-75% of the patients infected with chikungunya virus experience musculoskeletal manifestations.[1] The presence of rheumatologic manifestations post chikungunya fever can induce autoimmune rheumatologic compromise.

Chikungunya arthritis is usually treated with anti-inflammatory drugs and steroids, and the treatment may depend on the disease stages. Acetaminophen or NSAIDs are used in the first phase (acute), NSAID and steroids in the subacute phase, and in the chronic phase; NSAID, steroids and occasional DMARDs are needed. Moreover, because of the pathogenetic comparison with rheumatoid arthritis (RA), disease-modifying anti-rheumatic drugs (DMARDs) such as methotrexate are being used for the treatment of the disease.[2, 6] The present study discusses an interesting case of a 72-year-old male with contraindication of the use of NSAIDs and steroids, and successfully treated with anti-TNF drugs.

Case report

A 72-year-old male presented to the outpatient department with a history of high-grade fever with 2 episodes of hematemesis. The subject had diabetes mellitus and was on insulin and oral hypoglycemic drugs. The patient had a history of hematemesis, secondary to peptic ulcer, six months back and was managed with proton pump inhibitors. The history also revealed multiple lacunar subcortical infracts in the brain and the patient was on clopidogrel treatment.

The patient was admitted and was treated with broad-spectrum antibiotics, pantoprazole and paracetamol injection. The baseline parameters of the subjects were as follows: Hb: 12.9 g/dl; PCV: 42%; CRP: 42 mg/dl; and creatinine 1.7 mg/dl. He had high ESR and total count with neutrophilia; but negative for RF, anti-CCP and ANA. After a day of antibiotic treatment, although fever subsided and sensorium improved, the patient developed severe arthritis involving all the peripheral joints.

The diagnosis of acute chikungunya arthritis was suspected in the patient, as 4 family members had similar arthritis symptoms and chikungunya test was positive in one of the family members. Moreover, chikungunya epidemic was reported in the surrounding areas of the patient's locality. Based on the patient history, a clinical diagnosis of chikungunya was concluded, as the IgM ELISA conducted within 1 week of presentation was found to be negative.

The patient was totally immobile due to severe pain in the joints and had difficulty in changing the postures in bed. The creatinine level of the patient reduced to 1.2 mg/dl in two days with good urine output. Fever subsided, but the joint pain persisted. The upper gastrointestinal endoscopy of the patient revealed multiple superficial gastric and duodenal erosions. Hence the patient was cautioned against the use of NSAIDs and steroids.

Depomedrol 80 mg intramuscular injection was given along with intravenous 80 mg pantoprazole injection, as the joint pain persisted. But even after three days, the pain did not subside, and intravenous steroid methyl prednisolone 40 mg was repeated for 2 days with etoricoxib 60 mg daily for 7 days. But the improvement was minimal. The patient was started on a combination therapy of hydroxychloroquine 400 mg with tramadol/paracetamol, since arthritis persisted for 2 weeks and patient was unable to move.

Since no significant improvement was noted in the patient, etanercept 25 mg injection was given twice weekly for two weeks. The pain decreased significantly within 48 hrs and patient was mobile in two weeks. He was managed with etanercept 25 mg weekly for 6 weeks and other medications such as clopidogrel, proton pump inhibitors and diabetic medications. The patient recovered with minimal residual pain at the end of 3 months.

Discussion

Rheumatic disease-type manifestations noted during the post-chikungunya infections have multiple etiologies. Careful review of history and rheumatologic assessment are paramount for early detection and appropriate therapeutic intervention. There are certain studies reporting the use of anti-TNF drugs, such as etanercept, for the successful treatment of chikungunya arthritis. Blettery *et al.* have used anti-TNF drugs such as etanercept and adalimumab respectively in 10 and 3 subjects with spondyloarthritis and seronegative RA, following acute chikungunya infection, and reported good tolerance, non-recurrence of viral infection and efficacy.[7] The current patient was initially prescribed with a broad-spectrum antibiotic and paracetamol injection, as the primary presentations included altered sensorium and high-grade fever. Depomedrol injection was administered for a rapid recovery after a viremic phase. It is recommended for managing musculoskeletal conditions by reducing pain/ inflammation and improving mobility.

A review by Zaild *et al.* has highlighted the significance of a patient-centred approach for reducing inflammation, pain, and stiffness and limiting other inflammation-related events. The treatment options, at this phase, mainly involve NSAIDs and analgesics. However, the NSAID treatment may depend on the clinical presentation of the patient and its effectiveness is revaluated during the first week or within 10 days.[8] However, the use of NSAIDS and steroids were contraindicated in the current patient considering the advanced age and the presence of comorbidities such as diabetes mellitus, erosive mucosal disease and mild renal dysfunction. Hence, etanercept was used and it helped to reduce the burden of inflammation with significant improvement.

In a stark contrast to current study findings, an *in vitro* mice model study by Zaid *et al*. has concluded that anti-TNF therapy not beneficial for treating alphaviral arthritides. The researchers have noted that Ross River virus (RRV) infected mice treated with etanercept demonstrated reduced weight gain and elevated viral titers in joints, muscles and blood.[9]

The current case was predominantly an RA-like presentation and the clinical diagnosis of chikungunya-induced arthritis was concluded on the basis of patient history and the report of the epidemic surrounding the patient's locality. The key objective of this case report is to underscore the fact that anti-TNF agents are ideal for managing persistent inflammation (inflammatory arthritis) in cases where NSAIDS are contraindicated.

The long-term morbidity due to persistent arthralgia poses a major disease burden to chikungunya patients. Considering the limited literature studies, further research is warranted to corroborate the effectiveness of anti-TNF drugs in managing acute viral arthritis in scenarios where the mainstay of treatment such as anti-inflammatory medications and steroids are contraindicated. Moreover, it should be noted that the present case is just presumptive and the possibility of AS was not excluded completely.

Conclusion

Etanercept may serve as a good treatment option in patients with acute viral arthritis to reduce inflammation, especially in cases where NSAIDS and steroids are contraindicated due to multiple comorbidities. Biologicals can be used for shorter duration to reduce the inflammation. However, it is necessary to consider the chances of developing anti-drug antibodies. Moreover, further studies in this direction is much essential to corroborate the use.

Competing interests

The authors declare that they have no competing interests.

Citation

Haridas V, Haridas K. Managing a case of chikungunya-induced chronic arthritis using etanercept. IJRCI. 2019;7(1):CS6.

Submitted: 4 May 2019, **Accepted:** 8 August 2019, **Published:** 9 August 2019

Correspondence

Dr. Vikram Haridas, Arthritis Super Speciality Center, Hubli, Karnataka, India

haridasvikram@yahoo.co.in

References

1. Sam I-C, Kümmerer BM, Chan Y-F, Roques P, Drosten C, AbuBakar S. Updates on chikungunya epidemiology, clinical disease, and diagnostics. Vector Borne Zoonotic Dis. 2015 Apr;15(4):223–30.
2. Sutaria RB, Amaral JK, Schoen RT. Emergence and treatment of chikungunya arthritis. Curr Opin Rheumatol. 2018;30(3):256–63.
3. Arthritis-India [Internet]. [cited 2019 May 1]. Available from: http://www.arthritis-india.com/chikungunya-arthritis.html
4. Dash PK, Parida MM, Santhosh SR, Verma SK, Tripathi NK, Ambuj S, et al. East Central South African genotype as the causative agent in reemergence of Chikungunya outbreak in India. Vector Borne Zoonotic Dis. 2007;7(4):519–27
5. Chikungunya [Internet]. [cited 2019 May 1]. Available from: https://www.who.int/news-room/fact-sheets/detail/chikungunya
6. Krutikov M, Manson J. Chikungunya Virus Infection: An Update on Joint Manifestations and Management. Rambam Maimonides Med J. 2016 Oct; 7(4): e0033.
7. Blettery M, Brunier L, Polomat K, Moinet F, Deligny C, Arfi S, et al. Brief Report: Management of Chronic Post-Chikungunya Rheumatic Disease: The Martinican Experience. Arthritis & Rheumatology (Hoboken, NJ). 2016;68(11):2817–24.
8. Zaid A, Gérardin P, Taylor A, Mostafavi H, Malvy D, Mahalingam S. Chikungunya Arthritis: Implications of Acute and Chronic Inflammation Mechanisms on Disease Management. Arthritis & Rheumatology (Hoboken, NJ). 2018 Apr;70(4):484–95.
9. Zaid A, Rulli NE, Rolph MS, Suhrbier A, Mahalingam S. Disease exacerbation by etanercept in a mouse model of alphaviral arthritis