Muhammad Abdur Rahim, Shahana Zaman, Khwaja Nazim Uddin. *Ethiop Med J, 2021, Vol. 59, No. 3*

CASE SERIES

CHIKUNGUNYA AMONG PATIENTS WITH PRE-EXISTING RHEUMATOLOGICAL DISEASES: A CASE SERIES AND REVIEW OF LITERATURE

Muhammad Abdur Rahim, FCPS[1*], Shahana Zaman, FCPS[2], Khwaja Nazim Uddin, FCPS[3]

ABSTRACT

Introduction: *Disease chronicity of chikungunya among patients with pre-existing rheumatological diseases is not well-described in the literature. The aim of the study is to discuss the clinical presentation and disease chronicity of chikungunya in cases with rheumatologic diseases supplemented by literature review.*
Methods: *Patients' clinical and laboratory data were recorded in case record forms. They were followed-up for three months to evaluate disease chronicity.*
Results: *Eight patients (mean age, 40.6 years; male, 6) with different pre-existing rheumatological diseases, complicated by chikungunya virus infection were analyzed. Their clinical presentation included fever (8), joint pain (8), rash (3), pruritus (3) and generalized body ache (4). Two patients (2/8, 25%) entered in chronic phase.*
Conclusion: *In spite of common initial clinical presentation, patients with pre-existing rheumatological diseases had higher frequency of post-chikungunya rheumatism.*
Key words: *chikungunya, post-chikungunya rheumatism, rheumatological diseases.*

INTRODUCTION

Chikungunya is one of the fast-spreading viral infections of global concern including Bangladesh, where it is an emerging infection (1, 2). Acute chikungunya is a self-limiting disease; fever and arthralgia/arthritis are the two most common features. Patients may have acute life-threatening complications like encephalitis and cardiomyopathy but much attention is paid to its protracted rheumatological courses (3, 4). Patient may develop definite rheumatological disease *de novo* after an acute chikungunia virus infection (5) but the outcome of patients with pre-existing rheumatological diseases complicated by chikungunya virus infection is scarce in the literature. A series of autochthonous chikungunya cases occurring among native Bangladeshi patients suffering from different pre-existing rheumatological diseases is presented here.

PATIENTS AND METHODS

This case series included eight patients (having pre-existing rheumatological diseases) with confirmed diagnosis of chikungunya virus infection at Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, Dhaka, Bangladesh from May to November 2017. Chikungunya virus infection was confirmed either by reverse transcriptase polymerase chain reaction (RT-PCR) or by immunoglobin M (IgM) against chikungunya virus.

RT-PCR was done by using Qualitative One-Step Real-Time RT-PCR technology in the ABI 7500 DX instrument with SDS software for chikungunya virus. IgM was detected by immunochromatographic test (ICT) for chikungunya IgM/IgG by using commercially available kits manufactured by SD BIOSENSOR, Republic of Korea. Patients' selected demographic, clinical and laboratory data were recorded in case record forms after getting informed written consent. Patients were followed-up clinically and over phone, as appropriate, for three months since the onset of acute chikungunya virus infection.

RESULTS

Eight patients with mean age of 40.6 years and ranging from 32 – 49 years with different pre-existing rheumatological diagnoses, complicated by chikungunya virus infection were analyzed (Table 1). Six of them were males and two were females. They had been suffering from the underlying disease for a mean of 2.5 (range 1 – 11) years. Patients were on remission during their latest follow-up prior acute chikungunya infection.

Clinical presentation included fever (n = 8), joint pain (n = 8), rash (n = 3), pruritus (n = 3) and generalized body ache (n = 4). One patient with fibromyalgia first presented with joint pain and later developed fever.

[1]Nephrology, BIRDEM, Dhaka, Bangladesh. [2]Cardiology, NICVD, Dhaka, Bangladesh
[3]Internal Medicine, BIRDEM, Dhaka, Bangladesh
*Corresponding Author E-mail: muradrahim23@gmail.com

Five (5/8, 62.5%) patients had lymphopaenia, six (6/8, 75%) had high erythrocyte sedimentation rate (mean, 41.9/1-h; range, 18 – 62) and high C-reactive protein (mean, 38 mg/L; range, 6 – 78). Diagnosis was confirmed by RT-PCR for chikungunya (n = 1) and by IgM against chikungunya (n = 7). Dengue was excluded in all patients by negative non-structural protein 1 (NS 1) (done by ICT by using commercially available kits manufactured by Humasis Co. Ltd., Republic of Korea).

Treatment consisted of paracetamol and other medications including disease modifying anti-rheumatic drugs (DMARDs) were continued. One patient with fibromyalgia recovered from her symptoms during the acute phase (within three weeks) but the other patient with fibromyalgia and the patient with ankylosing spondylitis (2/8, 25%) continued with joint pain even after three months (entered in to chronic phase) (Table 1).

Table 1: Chikungunya cases with underlying rheumatological diseases (N = 8)

Case number/ Age/ Sex	Underlying diagnosis/ Duration/ Drug(s) (DMARD)	Clinical features	Important laboratory investigations	Diagnostic test for chikungunya	Subacute phase	Chronic phase
Case 1/ 41 years/ Male	Ankylosing spondylosis/ 11 years/ Salphasalazine	Fever Arthralgia/ Arthritis Body ache Rash	Lymphopaenia ESR = 62 mm in 1st hour CRP = 64 mg/L	IgM	Yes	Yes
Case 2/ 32 years/ Female	Fibromyalgia/ 2 years/ Amitriptylin	Fever Arthralgia/ Arthritis Body ache Rash	ESR = 32 mm in 1st hour CRP = 24 mg/L	RT-PCR	Yes	Yes
Case 3/ 49 years/ Female	Fibromyalgia/ 1 year/ Amitriptyline	Fever Arthralgia/ Arthritis Body ache	ESR = 18 mm in 1st hour CRP = 6 mg/L	IgM	No	No
Case 4/ 48 years/ Male	Gout/ 3 years/ Febuxostat	Fever Arthralgia/ Arthritis	Lymphopaenia ESR = 38 mm in 1st hour CRP = 18 mg/L	IgM	No	No
Case 5/ 41 years/ Male	Gout/ 1 year/ Febuxostat	Fever Arthralgia/ Arthritis	Lymphopaenia ESR = 60 mm in 1st hour CRP = 52 mg/L	IgM	Yes	No
Case 6/ 43 years/ Male	Gout/ 3 years/ Febuxostat	Fever Arthralgia/ Arthritis	Lymphopaenia ESR = 52 mm in 1st hour CRP = 24 mg/L	IgM	Yes	No
Case 7/ 35 years/ Male	Rheumatoid arthritis/ 2 years/ Methotrexate	Fever Arthralgia/ Arthritis Body ache Rash	Lymphopaenia ESR = 53 mm in 1st hour CRP = 78 mg/L	IgM	Yes	No
Case 8/ 36 years/ Male	Systemic lupus erythematosus/ 2 years/ Hydroxy-chloroquine	Fever Arthralgia/ Arthritis	Lymphopaenia ESR = 20 mm in 1st hour CRP = 6 mg/L	IgM	No	No

[DMARD = disease modifying anti-rheumatic drugs, ESR = erythrocyte sedimentation rate, CRP = C-reactive protein, IgM = immunoglobulin M, RT-PCR = reverse transcriptase polymerase chain reaction]

DISCUSSION

Post-chikungunya rheumatisms is an established sequel, though prevalence varies in different countries and regions, may be due to different genetic characteristics, immunological phenomena and the criteria used for detection of post-chikungunya rheumatism (3, 4, 6 -8).

Not only that, the post-chikungunya rheumatism is an established entity, rather evaluation of post-chikungunya rheumatism revealed that an infective episode by chikungunya virus may unmask chronic rheumatism in genetically predisposed individuals; an infective episode may trigger the immunopathogenic reaction necessary for the underlying disease activation (5, 9, 10).

We followed-up our patients for three months with the aim to evaluate whether they enter into chronic phase. One-quarter (25%) of the patients were still experiencing musculoskeletal symptoms, which was much higher than a Bangladeshi chikungunya cohort of 107 cases without any pre-existing rheumatic diseases, where 1 of 11 cases (9.1%) had entered into chronic phase (11). Unfortunately, we failed to find any information in the literature, regarding post-chikungunya chronic rheumatism among patients with pre-existing rheumatological diseases and this observation prompted us to report the present series.

Patients with post-chikungunya rheumatism were managed differently and there is a published guideline for such management by the Brazilian Society of Rheumatology (12). Outcome of musculoskeletal symptoms of chikungunya infection among patients with and without pre-existing rheumatological diseases are lacking in the literature. We predict that patients with underlying rheumatological diseases behave differently and a longer follow-up of larger cohorts will answer this question adequately.

Conclusion

We concluded from the findings of this case series that, patients with pre-existing rheumatological diseases, when infected by chikungunya virus, may have similar clinical presentation of those without prior such diseases but have a higher chance of suffering from post-chikungunya rheumatism. We propose to follow-up the chikungunya cases, especially for rheumatological courses and we emphasize patients with pre-existing rheumatological diseases merit special attention in this regard.

ACKNOWLEDGMENTS

We express our acknowledgements to the Department of Immunology, BIRDEM General Hospital, Dhaka, Bangladesh for support in laboratory evaluation of the patients.

Conflict of interest: Nothing to declare.

REFERENCES

1. Kabir I, Dhimal M, Müller R, Banik S, Haque U. The 2017 Dhaka chikungunya outbreak. Lancet Infect Dis 2017;17:1118. 10.1016/S1473-3099(17)30564-9
2. Rahim MA, Uddin KN. Chikungunya: an emerging viral infection with varied clinical presentations in Bangladesh: Reports of seven cases. BMC Res Notes 2017;15;10(1):410.
3. Paixão ES, Rodrigues LC, Costa MDCN, et al. Chikungunya chronic disease: a systematic review and meta-analysis. Trans R Soc Trop Med Hyg 2018; 112: 301–316.
4. Rodríguez-Morales AJ, Cardona-Ospina JA, Urbano-Garzón SF, et al. Prevalence of postchikungunya infection chronic inflammatory arthritis: a systematic review and meta-analysis. Arthritis Care Res 2016;68(12):1849–1458.
5. Bouquillard E, Combe B. A report of 21 cases of rheumatoid arthritis following Chikungunya fever. A mean follow-up of two years. Joint Bone Spine 2009 Dec;76(6):654–657.
6. Bonifay T, Lienne JF, Bagoée C, et al. Prevalence and risk factors of post chikungunya rheumatic muscu loskeletal disorders: a prospective follow up study in French Guiana. Eur J Clin Microbiol Infect Dis 2018 Nov;37(11):2159–64.
7. Consuegra-Rodríguez MP, Hidalgo-Zambrano DM, Vásquez-Serna H, Jimenez-Canizales CE, Parra-Valencia E, Rodriguez-Morales AJ. Post-chikungunya chronic inflammatory rheumatism: Follow-up of cases after 1 year of infection in Tolima, Colombia. Travel Med Infect Dis 2018 Jan - Feb; 21:62–68.
8. Bertolotti A, Thioune M, Abel S, et al. Prevalence of chronic chikungunya and associated risks factors in the French West Indies (La Martinique): A prospective cohort study. PLoS Negl Trop Dis 2020; 14 (3): e0007327.
9. Amaral JK, Schoen RT. A Case Report of Chikungunya Fever, Rheumatoid Arthritis, and Felty's Syn drome. Rheumatol Ther 2018;5:293–301.
10. Fuentes-Silva Y, Acosta C, Ortega L, Al Snih S, Amaya I, Maldonado I. Rheumatic Conditions Appear ing De Novo after Infection with Chikungunya Virus in Venezuelan Patients [abstract]. Arthritis Rheuma tol 2017; 69 (suppl 10). https://acrabstracts.org/abstract/rheumatic conditions-appearing-de-novo- afterin fection-with-chikungunya-virus-in-venezuelan-patients/. Accessed October 12, 2019.
11. Rahim MA, Zaman S, Jahan I, et al. Socio-demographic, Clinical and Laboratory Characteristics of a Chi kungunya Cohort from the 2017 Dhaka Outbreak of Bangladesh. BIRDEM Med J 2019; 9(2):106–110.
12. Marques CDL, Duarte ALPD, Ranzolin A, et al. Recommendations of the Brazilian Society of Rheuma tology for the diagnosis and treatment of chikungunya fever. Part2 – Treatment. Rev Bras Reumatol 2017; 57(S2): S438–S451.