Case Series

Chikungunya: a series of RT-PCR confirmed cases from the early part of the 2025 outbreak in Dhaka, Bangladesh

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ABSTRACT

Chikungunya is one of the fast-spreading viral infectious diseases of global concern. Initial clinical manifestations of chikungunya and dengue are similar and early identification of each may tailor the treatment strategy. Reverse-transcriptase polymerase chain reaction (RT-PCR) technology can identify these infections with high sensitivity and specificity. Ten cases of RT-PCR confirmed chikungunya were analyzed. Age of the patients ranged from 23 to 66 years and six were females. Three had diabetes mellitus and hypertension. Presentation included fever (100%), arthralgia/arthritis (90%), rash (50%) and post-auricular lymphadenopathy (20%). Total white cell counts and their differentials were variable. Most had high erythrocyte sedimentation rates and C-reactive protein levels. Initial treatment was paracetamol and other symptomatic remedies along with ongoing medications for comorbidities. None entered in subacute phase while writing this report. Along with early detection and treatment, preventive strategies should be strengthened to reduce the disease transmission.

Key words: *Bangladesh, chikungunya, dengue, Dhaka, reverse-transcriptase polymerase chain reaction, outbreak.*

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INTRODUCTION

Chikungunya is an emerging mosquito-borne viral infectious disease in Bangladesh.[1] The vector responsible for transmitting the single stranded ribonucleic acid (RNA) virus causing the disease is the female *Aedes* mosquito. Bangladesh experienced a large chikungunya outbreak in 2017[2,3] and sporadic cases occur every year. The country is facing another outbreak in 2025 and as of May 28, 2025 a total of 337 cases were recorded.[4] Generally, patients present with fever, arthralgia or arthritis, maculopapular rash and sometimes with other varied symptoms.[1-3,5,6] Dengue is another notable endemic and prevalent viral illness in Bangladesh; the clinical manifestations and initial laboratory reports of which are almost indistinguishable from those of chikungunya. As a result, it is quite challenging in some scenarios with diverse symptoms to diagnose a case of chikungunya solely on the basis of clinical features. A highly reliable laboratory technique known as reverse transcriptase polymerase chain reaction (RT-PCR) can identify chikungunya, dengue and other viruses including Zika.[7] This case series included 10 RT-PCR confirmed cases of chikungunya along with their sociodemographic, clinical and laboratory characteristics and management strategies during the acute febrile phase of the infection.

METHODS

Patients' demographic and clinical features were recorded by face to face interview and physical examination. The records of laboratory reports and treatment provided were retrieved from patients' medical record files. Patients were followed-up clinically and over phone for possible sub-acute and chronic phase,[8] if appropriate.

CASE SERIES

A total of 10 patients were included in this case series. They were from Dhaka North City Corporation. Their age ranged from 23 to 66 years and females (6) were more than males (4) (Table I).

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Table I. Demographic, clinical and laboratory characteristics of patients having acute chikungunya virus infection (N = 10)

Case no. Age, Sex	Co-morbidity	Clinical presentation	Physical signs	Laboratory reports	Confirmatory test	Treatment given
1 34 years Female	None	Fever for 1 day Rash Itching Joint pain - hands, feet	Temp - increased Pulse 80/min BP 110/70 mm Hg	Hb 12.9 g/dl TC of WBC 5900/cmm Lymphocytes 7.5% Platelets 193000/cmm ESR 14 mm/hr,CRP 16.6 mg/L	RT-PCR	Paracetamol Fexofenadine
2 46 years Female	Diabetes mellitus Hypertension Hypothyroidism	Fever for 1 day Polyarthritis	Temp - increased Pulse 80/min BP 130/80 mm Hg	Hb 6.7 g/dl TC of WBC 11500/cmm Lymphocytes 4.1% Platelets 461000/cmm ESR 79 mm/hr CRP 116.9 mg/L	RT-PCR	Paracetamol Ondansetron Gliclazide Linagliptin Levothyroxine Blood transfusion
3 66 years Male	Diabetes mellitus Hypertension Dyslipidaemia Ischaemic heart disease	Fever for 5 days Polyarthritis Rash	Temp - normal Pulse 76/min BP 130/80 mm Hg	Hb 13 g/dl TC of WBC 4170/cmm Platelets 181000/cmm ESR 30 mm/hr NS1 negative	RT-PCR	Paracetamol Rupatadine Gliclazide Linagliptin Bisoprolol, Aspirin Atorvastatin
4 47 years Female	Diabetes mellitus Hypertension	Fever for 3 days Pain - hands, feet	Temp - normal Pulse 80/min BP 115/80 mm Hg	Hb 13 g/dl TC of WBC 2500/cmm Lymphocytes 53.2% Platelets 239000/cmm ESR 45 mm/hr CRP 46.1 mg/L FBG 16.3 mmol/L	RT-PCR	Paracetamol Fexofenadine Gliclazide Metformin Amlodipine-Olmesartan combination
5 29 years Male	None	Fever for 1 day Pain - left knee Rash	Temp - increased Pulse 80/min BP 125/80 mm Hg	Hb 15 g/dl TC of BC 12000/cmm Lymphocytes 5.1% Platelets 266000/cmm ESR 20 mm/hr, CRP 30.7 mg/L	RT-PCR	Paracetamol Rupatadine
6 32 years Male	None	Fever for 2 days Rash Pruritus	Temp - 103°F Pulse 80/min BP 120/60 mm Hg Rash LN – bilateral post-auricular, tender	Hb 14.7 g/dl TC of WBC 5630/cmm Platelets 265000/cmm ESR 15 mm/hr NS1 negative	RT-PCR	Paracetamol Fexofenadine
7 48 years Male	None	Fever for 2 days Joint pain - hands, feet	Temp 103°F Pulse 90/min BP 150/90 mm Hg	Hb 13.5 g/dl TC of WBC 5690/cmm Platelets 155000/cmm ESR 13 mm/hr ALT 41 U/L, AST 43 U/L	RT-PCR	Paracetamol Fexofenadine Ondansetron
8 23 years Female	None	Fever for 3-4 days Joint pain - hands, feet Rash Gum swelling	Temp - normal Pulse 80/min BP 120/80 mm Hg LN – bilateral post-auricular, tender	Hb 12 g/dl TC of WBC 5710/cmm Platelets 137000/cmm ESR 45 mm/hr	RT-PCR	Paracetamol Rupatadine Ondansetron
9 28 years Female	None	Fever for 2 days Joint pain - hands, feet	Temp 102°F Pulse 80/min BP 120/60 mm Hg	Hb 12.6 TC of WBC 4510/cmm Platelets 152000/cmm ESR 31 mm/hr	RT-PCR	Paracetamol Ondansetron
10 35 years Female	None	Fever for 1 day Joint pain - hands, feet	Temp -increased Pulse 80/min BP 115/80 mm Hg°	Hb 11.5 g/dl TC of WBC 7800/cmm Platelets 283000/cmm ESR 44 mm/hr CRP 34.9 mg/L (<3 mg/L)	RT-PCR	Paracetamol

BP - blood pressure, Hb - haemoglobin, TC - total count, WBC - white blood cell, ESR - erythrocyte sedimentation rate, CRP - C-reactive protein, RT-PCR - reverse transcriptase polymerase chain reaction

Three patients had diabetes mellitus and hypertension and other comorbidities are shown in Table I. Fever (10, 100%) and joint pain (9, 90%) were the two most prevalent clinical features followed by rash (5, 50%) and bilateral post auricular lymphadenopathy (2, 20%) (Figure 1, case 6). Patients presented within one to five days of fever onset. Common examination findings were raised temperature, maculopapular rash and lymphadenopathy. One patient had severe anaemia, one had leucopaenia, two had leucocytosis, one had relative lymphocytosis, three had lymphopaenia and most had raised erythrocyte sedimentation rate and C-reactive protein (Table I). Diagnosis was confirmed by the multiplex RT-PCR for chikungunya, dengue and Zika (using Rotor-Gene Q PCR system by QIAGEN, Germany) in all cases. Treatment included paracetamol, anti-emetics and anti-histamines in selected cases (Table I). One patient with severe anaemia required in-patient care for two units of red cell transfusion (case 2). Ongoing treatment for comorbidities were continued. None completed three weeks since onset of symptoms while writing this case series.

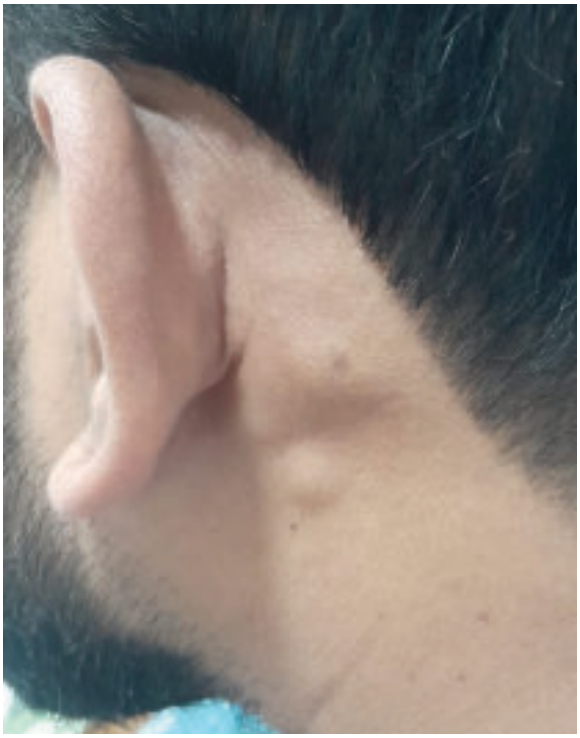

Figure 1. Enlarged left sided post-auricular lymph node in a patient having chikungunya

DISCUSSION

The first outbreak of chikungunya occurred in 1952-1953 in the Southern Province of Tanganyika Territory of Tanzania.[9,10] Several outbreaks were reported from different countries in Asia, Africa and South America and imported cases were reported from many countries and territories.[11-15] Sporadic cases[1] and three outbreaks have been reported in Bangladesh; the first outbreak took place in 2008,[16] second in 2011[17] and the large third one in 2017.[2,3,18]

Chikungunya is caused by the chikungunya virus. It is an RNA virus and it belongs to the family *Alphavirus*. It is also known as an arbovirus (arthropod borne virus) because it is transmitted by arthropods, commonly female *Aedes* mosquitos. The common vectors in Bangladesh are *Aedes aegypti* and *Aedes albopictus*. In 2011, *Aedes albopictus* was responsible for the outbreak of chikungunya.[17]

The classical clinical presentations of chikungunya are arthralgia or arthritis along with fever and rash. In our case series, all the patients presented with fever, almost all had arthritis and half had rashes. Out of 10 cases, three cases had comorbidities including diabetes mellitus, hypertension, ischemic heart disease and dyslipidemia. Arthritis of patients of current series involved the small joints of hands and feet. Arthralgia in chikungunya can involve large joints such as knee joint, ankle joint and shoulder joints and to some extent sternoclavicular and temporomandibular joints may be involved.[2] Two of our patients had bilateral post auricular lymphadenopathy. Previous reports from Bangladesh highlighted post auricular lymphadenopathy.[5]

The initial biochemical and hematological investigation results are non-specific and not sufficient to diagnose a case of chikungunya. All the 10 of our cases were diagnosed on the basis of clinical presentation, physical findings and confirmed by RT-PCR. The technique includes reverse transcription of RNA to deoxyribonucleic acid (DNA) and amplification of DNA through polymerase chain reaction. As chikungunya virus is an RNA virus, this technique can easily confirm the presence of virus in the patient's serum. The sensitivity and specificity of the test is very high.[7] The multiplex RT-PCR can identify dengue and Zika as well and is useful in identifying co-infections or excluding them.

During the acute phase, treatment includes paracetamol and other symptomatic remedies.[19] Once dengue is excluded, non-steroidal anti-inflammatory drugs (NSAIDS) may be used. Short course steroid may be used but the viraemic phase may be prolonged. Some patients may enter in to subacute phase and few in chronic phase and the proportion varies from series to series. One Bangladeshi paper claimed that 77% and 26% patients entered in to subacute and chronic phases respectively.[8] Our series were from the earliest part of the 2025 outbreak and none completed three weeks while reporting this case series.

As *Aedes* mosquitoes are prevalent as vectors for transmission of both chikungunya and dengue viruses, there is always a possibility that patients may have simultaneous or sequential infections by the two viruses. Such cases were reported from Bangladesh, India, Thailand and Colombia.[20-24] Our small case series did not have any such co-infection. Initial response to paracetamol was satisfactory in our cases, nobody required NSAIDs or prednisolone and none had life-threatening complications like meningoencephalitis or cardiomyopathy. In spite of good intial treatment outcome, some may present with arthralgia later on. RT-PCR may be an useful diagnostic tool for early detection of chikungunya and dengue virus infections but we must not forget about general measures to break the disease transmission which include using mosquito nets, cleaning the breeding sites of *Aedes* mosquitos and using insecticides.

Authors' contribution: SB, MAR planned the research. SB drafted the manuscript. MAR revised the manuscript. All authors read and approved the final manuscript for publication.

Consent: Informed written consent was taken from patients for publication of this case series along with accompanying images.

Conflicts of interest: Nothing to declare.

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