Original Article

Socio-demographic, Clinical and Laboratory Characteristics of a Chikungunya Cohort from the 2017 Dhaka Outbreak of Bangladesh

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Abstract

Background: *Chikungunya is a rapidly spreading viral infection of global concern. Initial presentation of chikungunya infection is often indistinguishable from other viral infections. In Bangladesh, chikungunya is an emerging infection. In this report, we describe socio-demographic, clinical and laboratory characteristics of chikungunya in a selected group of Bangladeshi patients.*

Methods: *A multi-center descriptive study was done including adult patients with chikungunya virus infection from July 1, 2017 to October 31, 2017. Diagnosis of chikungunya virus infection was confirmed by reverse transcriptase polymerase chain reaction (RT-PCR) or immunoglobulin M (IgM) against chikungunya.*

Results: *Total patients were 107 including 61 (57%) males. Mean age of the study participants was 35.6 (range 19-84) years. Ninety three (86.9%) patients presented with fever and 14 (13.1%) patients (with history of recent fever) presented due to joint pain. Most (93, 86.9%) patients were managed as out-patient basis; while 14 (13.1%) patients required hospitalization. Common features were fever/history of fever, joint pain, rash and lymphadenopathy. Out of 93 patients who presented with fever, 79 (85%) had concomitant arthralgia/ arthritis, 70 (75.3%) had persistent joint symptoms beyond febrile illness requiring paracetamol, 63 (67.2%) patients had joint pain beyond 3 weeks (sub-acute phase) requiring paracetamol, non-steroidal anti-inflammatory drugs or corticosteroids and 11 patients had passed 3 months since symptom onset (chronic phase) and only one (9%) had joint symptoms requiring hydroxychloroquine. There was no death.*

Conclusion: *Clinical manifestation of chikungunya virus infection was comparable with other viral infections but arthritis/arthralgia was an important differentiating point. As chikungunya is an emerging infection in Bangladesh, physicians should have a high index of suspicion and care should be taken to exclude other viral infections specially dengue.*

Key words: *Bangladesh, chikungunya, clinical characteristics, laboratory characteristics, socio-demographic characteristics.*

(BIRDEM Med J 2019; 9(2): 106-110)

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Received: December 31, 2017 **Accepted:** February 28, 2019

Introduction

Chikungunya is one of the most rapidly spreading mosquito-borne viral infections of global concern including Bangladesh, where it is an emerging infection.[1-3] In 2017, a massive chikungunya outbreak occurred in Dhaka, the capital city of Bangladesh.[4] Generally, chikungunya is a self-limiting disease; but it may have protracted rheumatological courses and occasionally life-threatening complications like cardiomyopathy and encephalopathy may occur.[2,5,6] The objectives of the present study were to describe selected socio-demographic, clinical and laboratory characteristics of chikungunya fever from the 2017 Dhaka outbreak of Bangladesh.

Methods

A multi-center [Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic

Disorders (BIRDEM) General Hospital (14), Gulshan Maa O Shishu Clinic Ltd. (64) and LABAID Gulshan (29)] descriptive study was done including adult patients (>18 years) with confirmed diagnosis of chikungunya [confirmed by reverse transcriptase polymerase chain reaction (RT-PCR) (Qualitative One-Step Real-Time Reverse-Transcriptase PCR technology in the ABI 7500 DX instrument with SDS software) (12) or immunoglobulin M (IgM) against chikungunya (done by immunochromatographic test (ICT) for chikungunya IgM/IgG by using commercially available kits manufactured by SD BIOSENSOR, Republic of Korea) (95)] from July 1, 2017 to October 31, 2017. Patients were followed-up clinically or over phone, as required; specially for rheumatological symptoms; whether they have entered in to sub-acute or chronic phase. Patients with incomplete data, disease duration less than 3 weeks since fever onset and patients who were lost to follow-up were excluded.

Results

During the study period, a total of 107 patients including 61 (57%) male patients were eligible for analysis. Mean age of the study participants was 35.6 (range 19-84) years. Seventy four (69.2%) patients were from Dhaka North City Corporation and 33 (30.8%) patients were from Dhaka South City Corporation. Twenty two (20.6%) patients had diabetes mellitus. Ninety three (86.9%) patients presented with fever and 14 (13.1%) patients presented after febrile periods because of joint pain. Fourteen patients (13.1%) required hospitalization and two patients (1.9%) had chikungunya-dengue co-infection or sequential infection. Base-line characteristics and common co-morbidities are shown in Table I and Table II respectively.

Table I Base-line characteristics of patients with chikungunya (N=107)

Characteristic	Parameter
Dhaka North (74): Dhaka South (33)	2.4: 1
Mean (range) age (years)	35.6 (19-84)
Male (61): female (46)	1.3: 1
Diabetic (22): non-diabetic (85)	1: 3.9
With fever (93): after fever (14)	6.6: 1
Hospitalization required	14 (13.1%)
Chikungunya-dengue co/sequential infection	2 (1.9%)

Table II Common co-morbidities of patients with chikungunya (N=107)

Comorbidity	Frequency	Percentage
Diabetes mellitus	22	20.6
Hypertension	19	17.8
Ischaemic heart disease	7	6.5
Chronic kidney disease	13	12.1
Fatty liver	9	8.4
Dyslipidaemia	11	10.3
Rheumatoid arthritis	1	0.9
Gout	1	0.9
Fibromyalgia	2	1.9

Fever, joint pain and rash were common presentations. Lymph adenopathy was also common, specially among non-diabetic patients (Table III). Complications, chronicity and initial laboratory reports are shown in Table IV, Table V and Table VI respectively.

Table III Clinical presentation of patients with chikungunya (N=107)

Clinical feature	Diabetic (22) Frequency (%)	Non-diabetic (85) Frequency (%)	p value
Fever/history of fever	22 (100)	85 (100)	0.731
Joint pain	19 (86.4)	76 (89.4)	0.671
Rash	6 (27.3)	19 (22.4)	0.093
Pruritus	4 (18.2)	13 (15.3)	0.723
Gastro-intestinal symptoms	9 (40.9)	21 (24.7)	0.061
Lymph adenopathy	1 (4.5)	12 (14.1)	0.001
Gum swelling/ulcer	1 (4.5)	4 (4.7)	0.782
Oedema	4 (18.2)	5 (5.9)	0.033
Late presentation			
Joint pain	3 (13.6)	11 (12.9)	0.004
Hyperpigmentation	2 (9.1)	3 (3.5)	

Table IV Complications of patients with chikungunya (N=107)

Complications	Frequency	Percentage
Protracted joint symptoms		
>3 weeks (N=107)	77	72
>3 months (N=11)	1	9.1
Acute kidney injury	11	10.3
Altered liver function	8	7.5
Neurological complication	1	0.9
Cardiovascular complications	3	2.8
Pancreatitis	1	0.9
Premature delivery	1	0.9

Table V Mode of clinical presentation, disease chronicity and management strategy of chikungunya cohort (N=107)

	Pattern of presentation (107)				
	Presentation with fever (93)				Presentation after fever (14)
Time since fever onset	At presentation (93)	After febrile periods (93)	After 3 weeks (93)	After 3 months (11)	---
Arthralgia/ arthritis	79, 85%	70, 75.3%	63, 67.2%	1, 9%	14, 100%
Treatment given	Paracetamol	Paracetamol	Paracetamol, NSAIDs, Prednisolone (selected cases)	Hydroxy-chloroquine	NSAIDs (11) Prednisolone (3)

[NSAIDs=non-steroidal anti-inflammatory drugs]

Table VI Laboratory parameters of patients of chikungunya (N=107)

Test	Frequency	Percentage
Lymphopaenia	32	29.9
ESR (>20 mm/1st hr)	107	100
CRP (>6 mg/L)	98	91.6
NS1	Negative in 93 (done in 93)	100 (negative)
Confirmatory tests		
RT-PCR	12	11.2
IgM	95	88.8
Raised ALT	8	7.5

[ESR=erythrocyte sedimentation rate, CRP=C-reactive protein, NS1=non structural protein 1, ALT=alanine aminotransferase]

Discussion

The first recognized outbreak of chikungunya fever occurred in Tanzania in 1952-53.[7] Since then outbreaks occurred in different regions and countries. In Bangladesh, first outbreak was recorded in 2008; though cases were thought to be imported from neighboring country, India.[8] The 2017 Dhaka outbreak was a massive one, an estimated 18 million people were affected and claimed few deaths.[4,9,10] Cases of imported chikungunya from Bangladesh have also been reported in literature.[11]

The clinical manifestation of chikungunya fever is like that of other arboviral infections (like dengue) including fever, arthritis/arthralgia and rashes. In countries with endemic dengue infections like Bangladesh, it is important to differentiate clinically between the two; as NSAIDs for pain relief in arthritis of chikungunya may worsen haemorrhagic manifestations of dengue. Presence of retro-orbital pain suggests dengue, while arthritis suggests chikungunya.[3] Chikungunya-dengue

co-infections are also to be remembered and such infections have been reported from Bangladesh.[10,12-15]

Clinical presentation of our cohort was not far different from two different reports from the same 2017 Dhaka outbreak published in literature.[9,16] Features were comparable with other chikungunya cohorts in literature as well.[17] Lymph adenopathy was common in non-diabetic patients in our series, while neurological and cardiovascular complications were less common. But we found acute kidney injury in one-tenth of our cases. Most chikungunya cases can be managed at home but severe cases require hospitalization and sometimes intensive care.[10,18]

The follow-up period of our cohort was limited. Only one-tenth of patients had passed 3 months since fever onset. One in 11 patients had chronic joint symptoms. Post chikungunya rheumatisms is an established sequel, though percentage varies in different countries.[19,20] Patients with post chikungunya rheumatism require evaluations and it is not unlikely that an infective episode may unmask chronic rheumatism in genetically predisposed individual.[21] Patients with post-chikungunya rheumatism were managed differently and there is a published guidelines for such management by the Brazilian Society of Rheumatology.[22]

Diagnosis of chikungunya requires clinical, epidemiological and laboratory criteria. RT-PCR is most reliable but not widely available and costly. IgM or increasing titres of IgG against chikungunya may be used. Care should be taken not to miss dengue. Life-threating neurological or cardiovascular complications are rare, but need high index of suspicion and aggressive interventions. Like any other vector borne diseases, mosquito control is important intervention in breaking chikungunya transmission.[23] It will benefit against dengue and other mosquito-borne infections as well.

As chikungunya is an emerging infection in Bangladesh and the clinical features are similar to dengue, we urge physicians should be aware of making a diagnosis of chikungunya carefully and exclude dengue with equal emphasis. Concomitant chikungunya and dengue infections are also possible. Improving awareness among general population is equally important; specially for the prevention of disease transmission.

Conflict of interest: Nothing to declare.

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