



## Chikungunya in Pakistan: A Review

Muhammad Imran Qadir and Muhammad Kashan Javed\*

*Institute of Molecular Biology and Biotechnology, Baha Uddin Zakariya University, Multan, Pakistan*

**\*Corresponding Author:** Muhammad Kashan Javed, Institute of Molecular Biology and Biotechnology, Baha Uddin Zakariya University, Multan, Pakistan.

**Received:** July 01, 2019; **Published:** August 02, 2019

**DOI:** 10.31080/ASMI.2019.02.0322

### Abstract

Chikungunya was initially isolated in 1952-53 in Tanzania. Chikungunya is a disease which is caused by a virus known as chikungunya virus or abbreviated as CHIKV. Chikungunya is an alphavirus that during the last period has increasing its variety and cause a big outbreak of human disorders all over the world. Despite warnings from NIH (National Institute of Health) Pakistan experience initial chikungunya outbreak in metro hills of Karachi. The first outbreak of chikungunya reported in Karachi, Pakistan with almost 30000 suspected and 4000 confirmed cases. On 8th August 2017, print media reported 49 cases of fever with severe joint pains from different villages of District Tharparkar. On the same day, a squad of FELTP (Field Epidemiology and Laboratory Training Program) colleagues was allocated to examine the situation. Chikungunya disease is an epidemic disease produced by the arthropod-borne virus known as chikungunya virus abbreviated as (CHIKV). Mosquito spread this disease. The symptoms include from fever to polyarthritis first outbreak reported in Karachi. To develop a vaccine against chikungunya. This virus first identified in India then it's outbreak confirmed in Pakistani was concluded that though chikungunya virus is not lethal, but its treatment is necessary to prevent nausea, headache and especially joint pain. Hence for the treatment of chikungunya virus, paracetamol and acetaminophen is recommended. Because there is no vaccine available for the treatment of this disease but still practices are made to develop a vaccine against chikungunya virus.

**Keywords:** Fever; Chikungunya; Virus

### Abbreviations

CHIKV: Chikungunya Virus; NIH: National Institute of Health; FELTP: Field Epidemiology and Laboratory Training Program; NSAIDS: Non-Steroidal Anti-Inflammatory Drugs; VRC: Vaccine Research Center; VLP: Virus-Like Particle.

### Introduction

Chikungunya was initially isolated in 1952-53 in Tanzania. Chikungunya is a disease which is caused by a virus known as chikungunya virus or abbreviated as CHIKV. The genus of this virus is alphavirus and tocinide is the family of this virus. The symptoms of this fever include severe joint pain, muscle pain, headache, nausea, rashes and fatigue rashes. Chikungunya is not a life-threatening

infection. The treatment of chikungunya includes anti-inflammatory drugs along with rest and reassurance usually suffices. Chikungunya spread through the bite of infected mosquito known as Aedes Mosquito. It resembles with dengue fever [1].

### Development of vaccines for chikungunya

Chikungunya is an alphavirus that during the last period has increasing its variety and cause a big outbreak of human disorders all over the world. Though death rate due to this virus is low. But chronic and acute illness caused by chikungunya represents a big burden of diseases which affect largely middle salary nations. This disease occurs in all ages in equal proportions. Chikungunya uses urban cycle subsequent in the sustained spread between humans

and mosquitoes producing widespread epidemics with outbreak rates reaching 90 [2].

### First chikungunya outbreak in Pakistan

Despite warnings from NIH Abbreviated as the national institute of health Pakistan experience initial chikungunya outburst in metro hills of Karachi. We underscore the attention of NIH towards factors associated with the spread of chikungunya and measures required to fight with this viral disease. In September 2016, The NIH cautioned Pakistan about dangers of Chikungunya later its spreading in India. Pakistan experiences its first outbreak in Karachi where 3000 people have been suspected infected [3].

### Commentary: outbreak of chikungunya in Pakistan

The first outbreak of chikungunya reported in Karachi, Pakistan with almost 30000 suspected and 4000 confirmed cases. However, this report has been denied by NIH indicating 818 assumed and 82 laboratories confirmed cases of viral disorder chikungunya. Rauf and co-workers highlighted that bad sanitary conditions End what climate is responsible for the outbreak of chikungunya in Pakistan. They also highlighted that chikungunya virus may come in Pakistan from India [4].

### An Outbreak Investigation of Chikungunya Fever -District Tharparkar, Pakistan, August 2017

On 8th August 2017, print media reported 49 cases of fever with severe joint pains from different villages of District Tharparkar. On the same day, a squad of FELTP colleagues was allocated to examine the situation. The purposes of the investigation were to determine the extent of outburst, estimate the danger factors and suggest a recommendation for control. An entire of 204 cases was recognized, 155 though dynamic case examination. Mean age was 25.5 years (range 01 month - 80 years) with a female preponderance (n=112; attack rate (AR) 54%). The overall AR was 26.7/1000, with 20-29 years being the most severely affected age group (AR 33/1000). Presence of uncovered water containers was significantly associated with disease (OR=10.4, 95% CI= 6.54-16.6). Use of bed nets had a protective effect. Out of 48 samples sent, 34 were positive on RT-PCR. Entomological Survey revealed house index 79.3%, container index 40.6% and breteau index 182%. Presence of uncovered water containers in the house were potential breeding sites for the vector and was the most probable cause of the outbreak. Indoor residual spray followed by fogging and community awareness were conducted [5].

### Clinical spectrum of chikungunya in Pakistan

Chikungunya disease is an epidemic disease produced by the arthropod-borne virus known as chikungunya virus abbreviated as (CHIKV). Mosquito spread this disease. The symptoms include from fever to polyarthritits first outbreak reported in Karachi. We stress on the consciousness and route control in order to avoid serious outcomes. This virus spread through *Aedes albopictus* and *Aedes aegypti*. These mosquitoes usually bite during the noon or daytime and mostly reported in tropical as well as in subtropical areas. The role of vaccination to control this fever is under ongoing research. Currently no treatment available for this fever on an immediate basis. Adequate oral hydration plus (NSAIDS) non-steroidal anti-inflammatory drugs for example acetaminophen are used in order to provide symptomatic relief and as the main stay of the treatment [6].

### Chikungunya virus control

To develop a vaccine against chikungunya, Vaccine Research Center (VRC) colleagues at the NIH have reinvigorated chikungunya virus vaccine development with the completion of Stage 1 medical trial on the virus-like particle abbreviated as (VLP) vaccine candidate, VRC-CHKVLP059-00-VP. The doors escalation open-label clinical trial included 25 patients to emulate the tolerability safety immunogenicity of the patient vaccine. Significantly the author demonstrated that neutralizing antibody continued for at least 6 months in all subjects in all dosage group which indicates the vaccine could provide long term protection against the disease [7].

### Emerging and re-emerging viruses: A global challenge illustrated by Chikungunya virus outbreaks

In recent decades, the issue of emerging and reemerging infectious diseases, especially those related to viruses, has become an increasingly important area of concern in public health. It is of significance to anticipate future epidemics by accumulating knowledge through appropriate research and by monitoring their emergence using indicators from various sources. These pathogens have been engaged in long-standing and phenomenally successful interactions with their hosts since their origins are exquisitely adapted to host parasitism. They developed strategies aimed at maximizing invasion rate, selecting host traits that can reduce their impact on host life span and fertility, ensuring timely replication and survival both within the host and between hosts and facilitating reliable transmission to progeny [8].

### Molecular diagnosis of chikungunya disease

For the molecule is a diagnosis of chikungunya virus we took a sample from 296 clinical suspected patients suffering from chikungunya virus to diagnose this virus we use the technique of gene extension real-time coil facilitated isothermal extension which is a fast specific and sensitive method. Real-time technique used to quantify and detect chikungunya disease in the severe stage of infection [8].

### Transmission of chikungunya virus

Chikungunya virus is transmitted by the bite of an infected mosquito. This virus first identified in India then it's Outback confirmed in Pakistan. The symptoms of this virus include joint pain, headache, nausea though this virus does not cause serious infections, the joint pain prolongs for a month or even two [9]. Vaccines are not available for this virus but still, practices are made to develop a vaccine against this virus. For the treatment of this virus usually, paracetamol is recommended. This virus can be transmitted through the Rivers or in rare cases through the person which is infected by chikungunya virus [10].

### Conclusion

It was concluded that though chikungunya virus is not lethal, its treatment is necessary to prevent nausea, headache, and especially joint pain. Hence for the treatment of chikungunya virus, paracetamol and acetaminophen are recommended. Because there is no vaccine available for the treatment of this disease but still practices are made to develop a vaccine against chikungunya virus.

### Bibliography

1. Pialoux G., *et al.* "Chikungunya, an epidemic arbovirosis". *The Lancet Infectious Diseases* 7.5 (2007): 319-327.
2. Mallhi TH., *et al.* "First chikungunya outbreak in Pakistan: a trail of viral attacks". *New Microbes and New Infections* 19 (2017): 13-14.
3. Mallhi TH., *et al.* "Commentary: outbreak of Chikungunya in Pakistan". *Frontiers in Public Health* 5 (2017): 261.
4. Memon B., *et al.* "An Outbreak Investigation of Chikungunya Fever-District Tharparkar, Pakistan, August 2017". *Proceedings* 4 (2018): e10629.
5. Naqvi S., *et al.* "Clinical spectrum of chikungunya in Pakistan". *Cureus* 9.7 (2017).
6. Schilte C., *et al.* "Type I IFN controls chikungunya virus via its action on nonhematopoietic cells". *Journal of Experimental Medicine* 207 (2010): 429-442.
7. Devaux CA. "Emerging and re-emerging viruses: A global challenge illustrated by Chikungunya virus outbreaks". *World Journal of Virology* 1.1 (2012): 11.
8. Lakshmi V., *et al.* "Clinical features and molecular diagnosis of Chikungunya fever from South India". *Clinical Infectious Diseases* 46.9 (2008): 1436-1442.
9. Ram D., *et al.* "Mother-to-child transmission of Chikungunya virus infection". *The Pediatric Infectious Disease Journal* 26 (2007): 811-815.
10. Chhabra M., *et al.* "Chikungunya fever: a re-emerging viral infection". *Indian Journal of Medical Microbiology* 26 (2008): 5.

**Volume 2 Issue 9 September 2019**

**© All rights are reserved by Muhammad Imran Qadir and Muhammad Kashan Javed.**