

Short Communication

Chikungunya on the move- reflection from Pakistan

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ABSTRACT

Chikungunya is not a recently discovered disease but it came into lime light again when three of the seven continents suffered a recent outbreak. The disease, its virus and the vector- the *Aedes aegypti* mosquito, were first described by Marion Robinson and William Hepburn Russell Lumsden in 1955. Out of fever, maculo-papular rash and joint pain; severe arthralgia dominates the symptoms of chikungunya, and that is why the word itself, translated into the language of its origin i.e. Makonde, means to become distorted. Many research studies have been conducted to find a vaccine. Lack of awareness in Pakistan and misdiagnosis has led consequently to an alarming number of cases over all in Pakistan but especially the Malir district of Karachi. Efforts to take pre cautions by increasing awareness about the disease and preventive measures such as eliminating breeding sites and avoiding mosquito bites can easily contain spread of disease.

Keywords: Chikungunya, Infectious disease, *Aedes aegypti*

INTRODUCTION

The tongue twisting word “Chikungunya,” derived from the Kimakonde language, means 'to be bent over' as exhibited by the patients of this disease.¹ This presentation is due to rigorous joint pain (arthralgia). Chikungunya virus (CHIKV) was first documented in Tanzania in the year 1952.² however, due to its relatively recent outbreaks in Asia, Africa, Europe, Indian and Pacific oceans, in addition to the occurrences documented for the first time in America and Caribbean islands after 2013 consequently led to the world's attention towards it. In the last decade, the spotlight on the disease's distinct set of symptoms has garnered the medical community's attention. However, comparatively, its symptoms are still less severe than that of Dengue and Zika viruses, two of the other chief mosquito borne diseases at present.³

BACKGROUND AND IDENTIFICATION

Chikungunya was first isolated from a febrile patient in the Makonde plateau, a bordering area between Mozambique and Tanzania.⁴ It was first described by Marion Robinson and William Hepburn Russell Lumsden in 1955.^{5,6} For a long time, it was inaccurately depicted that the term “Chikungunya” was derived from the “Swahili” language both by the general population and the official publications and reputed health papers. In reality the term “Chikungunya” is taken from the Makonde language, spoken by a cultural group in South-East Tanzania and Northern Mozambique from the origin “kungunyala”, meaning “to become dry or become distorted,” and implies the cause of a malformation or folding. In Congo, it has been named “buka-buka”, that means “broken-broken” once more portraying the debilitating arthralgia's that is a common severe sign of Chikungunya fever.⁷

VIROLOGY AND VECTOR

Chikungunya is a positive strand RNA virus belonging to the genus *Alphavirus* and the family *Togaviridae*.

The vector of the disease is *Aedes* species of mosquito, particularly *Aedes aegypti* and *Aedes albopictus*. Other variants like *Aedes furcifer-taylori* and *Aedes luteocephalus* have been reported to transmit the disease in Africa.² Some studies indicate and suggests that certain animals like primates act as a reservoir of the disease. First isolation of the virus from a nonhuman source was detected in monkeys in Malaysia.⁸

TRANSMISSION

Virus is introduced to the human body via mosquito bites during the blood meal. It's vital to understand that the spread of the virus is not human to human. However, there has been a report of a rare case of transmission from mother to fetus.⁹ Transmission via blood transfusion can also occur like other viral infections.

SYMPTOMS AND CLINICAL PRESENTATION

Incubation period of chikungunya virus is three to seven days after which the symptoms start to emerge.¹⁰ The main symptom are fever above 39 °C (102 °F), followed by joint pain and maculopapular rash after 5-7 days of the early symptoms, remaining symptoms include headache, joint swelling, nausea, muscle pain and conjunctivitis.¹¹

Chikungunya virus typically presents as an acute disease which has two stages:

The viral stage, high viremia phase prolonging for five to seven days, during this phase the mosquito can pick up the virus through a blood meal from an infected person.

The convalescent stage, during this stage the virus is undetectable in blood. Joint pain and maculopapular rash persist in the chronic phase of the disease.

DIAGNOSIS

Chikungunya virus causes high levels of viremia which lasts for 4-6 days; therefore, during the first 8 days of acute illness, chikungunya viral RNA can often be detected in the serum by RT PCR (reverse transcriptase polymerase chain reaction). CHIKV RNA is found in various body fluids such as plasma, cerebrospinal fluid, and placenta while it is absent in breast milk and synovial fluid.¹²

The antibodies normally develop toward the end of the first week of illness. For this, enzyme linked immunosorbent assay (ELISA) is carried out to confirm the presence of IgM and IgG antibodies. IgM antibodies levels are highest during weeks 3 to 5 after the onset of illness and continue for additional 2 months.¹³

TREATMENT AND PREVENTION

Great deal of research is being done to create a vaccine against CHIKV, lupeol acetate and voacangine compounds extracted from *Tabernaemontana cymosa* plant and coumarins from *Mammea americana* plant have shown promising results in inhibiting CHIKV infection.¹⁴

At present there is no definite antiviral drug or vaccine for chikungunya virus, leaving our body's own immune defense mechanism as the only way to recuperate from the disease. Additionally, symptomatic and supportive treatment is given for all the symptoms. Ibuprofen, Naproxen or Acetaminophen is given to reduce pain and pyrexia. Rehydration and rest help the patient's recover. Most patients get better within a week, but the debilitating joint pain experienced during the disease may persist even after recovery. The disease can be prevented by health and safety measures such as mosquito nets or mosquito repellents on exposed skin or otherwise by wearing long sleeve shirts and pants. Mosquitoes can be kept out of the house by using secure screens on windows and doors. Lastly it is extremely important to drain fresh stagnant water which serves as their breeding site.

CASES FROM PAKISTAN

In Pakistan, chikungunya virus has spread in the district of Malir, Karachi. Thousands of casualties have been reported to be affected by this "mysterious" disease including 17 doctors, 31 paramedics and 8 sanitary workers, presenting with the same symptoms of arthralgia, fever, nausea, vomiting and rash.¹⁵ In some cases people are not even able to walk on their own.

Due to the alarming increase in the number of cases, five samples were initially taken from Saudabad Hospital in Malir and sent to NIH (National Institute of Islamabad) for diagnosis, out of which three were confirmed cases of chikungunya. The Ministry of National Health Services, Regulation and Coordination (NHSRC) has reported the episode of chikungunya in Pakistan to the World Health Organization (WHO).¹⁶

CONCLUSION

Lastly, lack of awareness in Pakistan has led to the misdiagnosis and prolonged unnecessary antibiotic treatment of patients suffering from CHIKV. This leads to wastage of hospital resources as well as adding to the patient's suffering from a debilitating condition.

While investigations continue it is necessary to know the risks associated with chikungunya virus and its epidemic potential. Even though the virus is not as lethal as dengue or Zika, the lack of knowledge about the disease leads to misdiagnosis and incorrect documentation, often being mistaken as dengue virus because of its symptoms being similar to Chikungunya.¹⁷ Thus it is crucial to conduct awareness programs in medical universities, hospitals and

seminars for the general public should be held to educate the health care professionals medical students and the general population to protect themselves with this reemerging disease.

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