

Case Report

TRAVEL ASSOCIATED CASES OF CHIKUNGUNYA FEVER (CHIKF) IN ISLAMABAD DECEMBER, 2016

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Abstract

Due to significant climate changes in Pakistan and other Asian countries, the rising temperature has supported outbreak of many Arboviral illnesses. Cases of Chikungunya, an arboviral disease, started to surface in the second week of November, 2016. Karachi being the largest city of Pakistan, a large number of people travel from Karachi to other areas of Pakistan every day. Two cases travelled from Karachi to Islamabad and developed flu like illness with high grade fever and body aches. Both cases were hospitalized and investigated for conclusive diagnosis. Investigations revealed that both cases were positive for Chikungunya fever. These were first travel associated cases in Islamabad, originated from Karachi. After identification of these cases, necessary preventive & control measures were taken by local health authorities to contain the spread of disease. Dengue and Chikungunya transmitted through the bites of infected *Aedes* mosquitoes (*Aedes aegypti* and *Aedes albopictus*) and there is an urgent need to take appropriate measures in all dengue endemic areas because there is a potential risk of massive Chikungunya outbreaks in areas where the vector is populated.

Introduction

RNA virus named Chikungunya virus (CHIKV), belongs to the family of alphavirus genus of the *Togaviridae*. Chikungunya is word of Kimakonde language, meaning "to become bent". *Aedes Aegypti* and *Aedes Albopictus* are capable vectors for transmission of CHIKV in humans especially in tropical and subtropical regions of the world. () Symptoms include fever and joint pain which usually appear 3-7 days after bitten by infected mosquito. Joint pain is the hallmark when presented with fever. Other symptoms include headache, muscle pain, joint swelling or rash. It is not a fatal disease but may cause disability due to severe pains in joint during illness. (1) Chikungunya infection confer life-long immunity WHO. ()

First Chikungunya virus outbreak was observed in Tanzania during 1952. Asian subcontinent observed first outbreak in 1963 in Calcutta, India. Massive outbreak was reported in 2005 which affect 180,000 people in South India. () Outbreaks were also reported in south Asian countries in three decade of 60s, 70s and 80s, Bangkok, India, Sri Lanka, Vietnam, Myanmar and Indonesia (WHO, 2006). () Pakistan sharing a 2100 kilometer border with India. More than 5 border crossing point at different sites. Border crossing remain close till

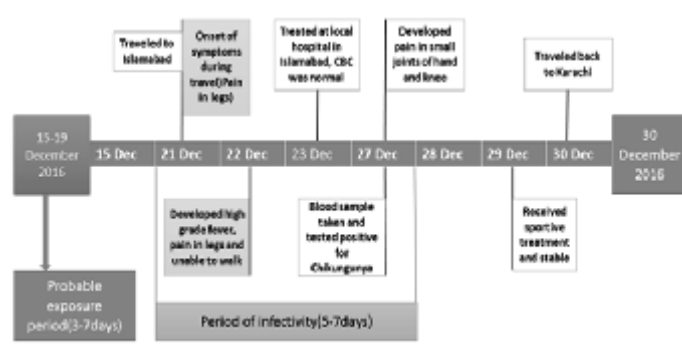
2005, except for Sikh pilgrims of Indian Panjab. Three cases of CHIKF were also reported in children <12years in 2011. ()

Case Reports

Case 1:

A 40 years old female resident of Madina colony Malir Karachi who traveled to Islamabad on 21st December by train and during traveling she developed fever and legs pain. On 22nd December as soon she reached Islamabad she developed high grade fever, headache, chills, severe pain in legs and feet and was unable to walk. (Figure 1)

Figure 1: Time line of Chikungunya case 1



On 23rd December she was taken to a nearby government hospital for treatment. On 24th December she also started having pain in the small joints of hand and knees as well. She visited same hospital and based on epidemiological link with the area of ongoing Chikungunya outbreak, she was provisionally labeled as a suspected case of Chikungunya. Accordingly she was advised PCR for Chikungunya. Her Blood sample was taken and on 27th December and tested positive for Chikungunya virus at virology Lab. N.I.H Islamabad. Her routine lab results shows total leukocyte count of 6,400/mm3 with 83% neutrophils, lymphocytes 13%, eosinophils 01% and monocytes 03%. Her urine analysis appeared normal. Hemoglobin was 12.5g/dl. Given her date of onset of symptoms, she was most probably exposed to the bite of mosquito infected with virus in between 15th-19th December (incubation period 3-7 days).

As she belong to a lower socioeconomic class residing in densely populated residential area of Karachi with poor sanitation facilities. The said area is already affected with Dengue and now Chikungunya outbreak. Fresh water is stored inside houses in containers which are in most cases uncovered which serves as breeding site for vector mosquitos.

The case had no history of use of mosquito repellents, door screenings or any other protective measure against mosquito bite while she was in Karachi. Her father in law was also diagnosed for Chikungunya two weeks back. Other close contacts /family members are well to date. She recovered within a week time and travelled back to Karachi.

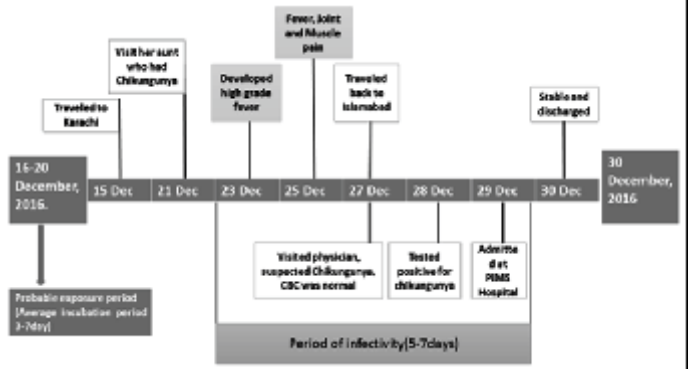
As case response, the district health department took necessary measures to prevent its further spread in the community. Insecticide-treated mosquito nets were distributed. Community were advised to use household insecticides and mosquito coils to prevent indoor mosquito bites. As source reduction, the community were advised to remove extra water container habitats and cover water storage containers all the times to prevent mosquitoes from getting inside. Community were advised to perform source reduction activities on regular basis for sustained vector control. Chemical control activities including Indoor residual spraying (IRS) and space spraying/outdoor fogging in the community were initiated to kill immature or adult mosquitoes.

Case 2:

A 16 years old female (student) resident of Islamabad (G-6/2) traveled to Karachi on 15th December by air to attend a wedding ceremony. (Figure 2) She stayed for 10 days in the Jaffar-e-Tayar colony, District Malir, the outbreak area. She also visited her aunt home on 21st Dec 2016, who had active illness of Chikungunya in Gulshan e Iqbal town, Karachi. She developed fever on 23th December 2016. Initially the fever was low grade and intensified with the passage of time. She never visited any clinician in Karachi and took Tab Paracetamol (Self-medication) for fever relief. She developed muscle

pain, joint pain, Maculopapular rashes, chills with fever, abdominal discomfort, fatigue and swelling of left thumb on 25th and 26th December 2016. She also suffered from nausea/vomiting and diarrhea. She traveled back to Islamabad on 27th December where she consulted a physician. Routine examination shows hemoglobin with in normal range (13.4g/dl) with total leukocyte count of 7940/mm3 with 76% neutrophils, lymphocytes 13%, eosinophils 0% and monocytes 11%. Her urine examination was normal. Blood sample was sent for PCR on 28th December which turned positive for Chikungunya and patient was admitted in Pakistan Institute of Medical sciences.

Figure 2: Time line of Chikungunya case 2



During her stay at Karachi, she never used mosquito repellent, door screenings or any other protective measures against mosquito bite.

Lab Investigations:

Routine lab investigations were done which revealed decreased platelet counts in case 1. Due to suspicion of CHK and travel history from Karachi, Real-time RT-PCR was done which turned out Positive for CHK Fever in both cases (table-1).

Table 1 : Blood test and Urine R/E Report

| Test | Case 1 | Case 2 |
|--------------------------|------------|------------|
| Hemoglobin | 12.5g/dl | 13.4g/dl |
| WBC count | 6,400/mm3 | 7,940/mm3 |
| Platelets | 133000/mm3 | 275000/mm3 |
| Urine R/E | Normal | Normal |
| PT | Not done | 10.8sec |
| CHKV(Real-time RT - PCR) | Positive | Positive |

Discussion

CHIKF is officially documented in Pakistan for the first time when some suspected cases reported from Karachi were confirmed by National Institute of Health Islamabad in November 2016. This was an emerging concern for

people of Pakistan after continuous media hype especially in Karachi. Although the actual figures are much lower than they reported in the newspaper. Pakistan is an underdeveloped country, already endemic for Dengue fever and have favorable environment for vector (*Aedes Aegypti*) reproduction, survival and transmission.

Karachi is a port city of Pakistan with population around 16.6 million and back bone of economy. () People from almost all areas of the country are settled in Karachi and frequently travel back to their home towns posing a potential threat to transfer the virus to other areas. So preventing disease transmission to the rest of the country is really a big challenge for health authorities. The above two cases are examples of travel associated transmission. CHIK virus was first isolated during the outbreak of dengue fever in 2011.() Its diagnosis in the first instance is difficult due to poor awareness of the healthcare staff and routinely clinicians don't include CHIKF in differential diagnosis so was not been possible to detect its presence in Pakistan before.

Cases may present to doctors and may go unnoticed due to lack of information about the diseases presence in the country. General awareness of the public and sensitization of health care staff including doctors especially in the areas where dengue is endemic is recommended.

Conclusion

Chikungunya outbreak was reported in Karachi in November and travel associated cases detected in Islamabad in December. It was alarming for health authorities in Islamabad because of Islamabad and Rawalpindi being the adjacent cities are already endemic for Dengue and there is a risk of a new outbreak. So immediate measures were taken to prevent susceptible population from getting infected. Due to continuous monitoring and larvicidal measures like "Indoor Residual Sprays", and fogging around houses, Health authorities were able to prevent its further spread and another impending outbreak. Proactive measures are recommended in all Dengue endemic areas to avert any possible importation and outbreak of Chikungunya.

Acknowledgment

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