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A review of Chikungunya disease in Sindh Pakistan

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Abstract
CHIKV is vector-borne diseases and caused by an *alphavirus* belonging to family Togaviridae. The CHIKV transmit by the *Aedes* mosquitoes. The common diagnostic symptoms of CHIKV are flu-like symptoms like joint pains, body temperature, swelling or inflammation of the body the whole body ach. The sign and symptoms of this resemble disease with dengue fever and can be misleading in states where dengue was prevalent. CHIKV was primarily diagnosed in the early 1950s at the borderline of Tanzania and Mozambique. For the past few decades, CHIKV has extended to 22 states together with Pakistan resultant hundreds of thousands of demise across the planet. CHIKV diseases were diagnosed in early 1983 in Pakistan. Furthermore, three subjects with CHIKV were also observed in Punjab provinces in 2011 throughout dengue eruption in Lahore during that period there were no any case has been reported from KPK and Baluchistan, but recently about two years ago during December 2016 first Chikungunya outbreak was reported from various arias of Karachi Sindh Pakistan.

Keywords: Chikungunya, *alphavirus*, *Aedes* mosquitoes, Karachi, Pakistan

1. Introduction
Chikungunya is viral diseases manifested by *alphavirus* belonging to the family Togaviridae. The word Chikungunya comes from the Bantu language of Makonde ethnic group Tanzania and Mozambique referred to the curved position of the patient due to debilitating joint pain (Thibervillete *et al*, 2013). The CHIKV virus belongs to the *Togaviridae* family and genus *Alphavirus* (Enserink, 2006; Powers, 2007 and King *et al.*, 2012) [4, 6, 7]. it is single strand RNA virus of 20 kb long. The viral particle is spherical, approximately 70 nm in diameter it is sensitive to heat above 50c (Schwartz and Albert, 2010) [43]. Different genotype of CHIKV have been recognized including (ECSA) East Central South African isolates, (West Africa) Africa isolates, Asian isolates (Asian) and the Indian Ocean lineage (IOL) 2004 as the successor of the ECSA family (Tsetsarkin *et al.*, 2007; Nunes *et al.*, 2015) [47, 31]. CHIKV is arthropod born disease transmit by the *Aedes aegypti* and *Aedes albopictus* the Asian 'Tiger' mosquitoes it seems like dengue and various other arboviral viruses but is often related with arthralgia. (Peper *et al.*, 2016). The vector mosquito, *Aedes* body measuring from 8-10 mm, covered with pasty or grey coated spots and body alienated into three portions: a couple of aerials, 3 pairs of legs which are pallidly striated, a couple of wings, a couple of beams, long antennae, a longhorn (Power *et al.*, 2000) The member of the species of *Aedes* cannot be recognized by mean of naked eye (Chua, 2010; Wangchuk, 2013; McCarthy, 2014) [49 50]. *Aedes albopictu*s is more livelyin the open air, while *Aedes aegypti* inhabited and feed inside. inhabiting arias of these vectors are flower urns, stagnant water, air and water coolers etc. and peri-domestic region such as edifice sites, coconut shells, unnecessary domestic garbage items like tiers, plastic and metal urns (world health organization). These mosquitoes usually bite during daytime and are mostly reported in tropical and subtropical areas (Cucunawangsih and Lugito, 2017) [7]. CHIKV causes major demise and financial distress, chikungunya virus life cycle starts from the skin of the victim it breeds in the skin, transfer to the liver, muscle, lymphoid organs and brain, via the blood circulation. The signs and symptoms of CHIKV are unclear it appears to be flues like symptoms characterized by skin irritation and critical joint pains which may continue for a number of weeks, months or even years after the acute stage of the diseases (Pialoux, 2007) [32]. Impediment of CHIKV comprise myocarditis, liver infection, eye diseases and neural diseases (Farnon, Sejvar and Staples, 2008) [15] Manifestation occur during 1952- 1953 in Tanganyika current day Tanzania (Robison, 1955; Rose, 1956). CHIKV spread worldwide. The outbreak was verified in Africa an Asia, Europe, America and Australia. The first transmission of CHIKV in America during 1995 (Economopoulos *et al.*, 2009). Europe was reported from north-eastern Italy in August 2007. Thereafter, a large number of CHIKV infection cases were reported in Italy, France, Croatia and Madeira from 2007 to 2012 In Asia, CHIKV was first reported from Bangkok and Thailand in 1958. Thereafter large number of cases were reported from various states of Asia in Singapore 1960 and 2006 Malaysia 1998, Indonesia 2007, India during 1963, 1964, 1965, 1973, 2006, 2009 and 2010 [14-18] China 2010 Nepal, 2013, Pakistan 1983, 2011 and 2016 (Diop, Meseznikov and Sanicas, 2015) [11].

2. Discussion
The disease was first identified Africa during 1952 following an occurrence on the Makonde Plateau in a Swahili village in the Newalla district, Tanzania (Tsetsarkin, 2007; Zeller *et al.*, 2013) [47, 52] the chikungunya virus was segregated from the serum of affected victim. The name chikungunya results from the Makonde word kungunyala, which refers to the curved or bending positions the result of the arthritic sign of the diseases. In Swahili, this means "the sickness of the curved hiker" (Wahid *et al.*, 2017) [49] The CHIKV virus were first

recognized in the Central-East Africa where the virus has been originated to flow in a sylvatic series among the forest-dwelling mosquitoes and non-human primates. Chikungunya has expanded to 22 states together with Pakistan follow-on millions of demise at the universal level. International journey considered to be the main threat issue for the swift total extent of the illness. (Receveur *et al.,* 2010; Heywood *et al.,* 2016) [39, 17] CHIKV can be highly injuring and outsized outbreak enclosed serious economic expenditure. Recurrence of CHIKV virus is a crucial public health issue (Weibel Galluzzo, 2015; Weaver and Forrester, 2015) [52, 52, 51]. In the past few decades, vast cases have been reported from the various corners of the world the significant outbreak was seen in Africa, Asia, the India Ocean, and more recently the Caribbean and Americas. A vast verity of work was done international level the different aspects of CHIKV including Robison, 1955; Rose, 1956 Enserink, 2006 [14]; Power and Logue, 2007 [33], King *et al.*, 2012 [21]; Paul, 2012; Chua, 2010 [5]; Wang Cucunawangsih and Lugito 2017 [7]; Pialoux, 2007; Chuk, 2013 [32]; McCarthy, 2014 [29]; Thiberville *et al,* 2013 [46]; Chu, 2010; Wangchuk, 2013 [5]; McCarthy, 2014 [29]; Economopoulos *et al.,* 2009 Farnon, Sejvar and Staples, 2008 [15] a little work had been done in Pakistan by different researchers including Darwish *et al.,* 1983 [8]; Rahman, 1977; Weible, Galluzzo, 2015; Weare and Forest 2015; Receur *at al.,* 2016; Rauf *et al.*, 2016.

CHIKV was diagnosed during the year 1983 in Pakistan. (Darwish *et al,* 1983) [8]. Thereafter three patients of chikungunya were reported from the Lahore Punjab in 2011 during a dengue outbreak in Lahore (Rahman, 1997). Throughout this period there is no any case has been reported from KPK and Baluchistan, but recently about two year ago during December 2016 first Chikungunya outbreak were reported from various arias of Karachi Sindh Pakistan. (Rauf *et al.,* 2017) [38] in their current communication in "*Lancet Infectious Diseases*" reported the first chikungunya outbreak in city of Karachi Pakistan with thirty thousand assumed and four thousand verified cases (Receveur *et al.,* 2016). Though this approximation was denied in a report by the (NIH) National Institute of Health. NIH signifying 818 unspecified and 82 laboratory-confirmed cases of chikungunya (Heywood *et al.,* 2016) [17]. A warm humid atmosphere and poor hygienic condition were responsible for the recent outbreak of CHIKV in Karachi, Sindh Pakistan. atmospheric conditions and hygienic matters enhance the possibilities of mosquito's growth and the magnitude of these concerns cannot be ignored. On the other hand international travels considered to be the main threat of the recent outbreak in Pakistan because the chikungunya cases were reported from India to few months before the outbreak from Pakistan (Receveur *et a.l,* 2009)**.** Despite the fact that NIH had cautioned Pakistan about the potential dangers of chikungunya transmission from India and encouraged the Government to keep vigil on cross-outskirt voyaging, no preventive measures were taken at air terminals, railroad stations, and the Indo– Pak fringes (Weibel Galluzzo, 2015) [52]. Pakistan shares 2,912-km eastern outskirt with India and many individuals travel between two nations on a regular routine by a few courses, for example, prepare, transport, and plane. In any case, there are no wellbeing screening offices at aero plane terminals and fringe crossing purposes of the two nations that represent a considerable danger of overflow contamination crosswise over outskirts (Weaver and Forrester, 2015) [51]. Heightened exchange and travel render political fringes insignificant and make assist potential outcomes of worldwide infection transmission. There are various precedents of the spread of intriguing pathogens to new geographic areas by cross-outskirt developments including jungle fever, dengue, Zika, West Nile, and Crimean-Congo hemorrhagic fever (CCHF). This procedure is encouraged when the ecological conditions crosswise over fringes share basic attributes (Mathew *et al.,* 2017) [28]. Pakistan and India have comparable climatic conditions that monstrously bolster vector multiplication. When contrasted with Pakistan, the range and weight of vector-borne illnesses (VBDs) are gigantic in India including extreme intense respiratory disorder virus in 2002– 2003. Influenza A virus epidemic of 2006 (avian flu), 2007 equine flu, swine influenza pandemic flare-ups in 2009 and 2014 (Weaver and Forrester, 2015) [51]. Besides, VBDs keep on ascending in India, with an ongoing flood of chikungunya and dengue cases (Lo Presti *et al*., 2016) [25].

3. Prevention and Control

The mosquito breeding sites among the human inhabiting arias are a hazardous factor for chikungunya as well as other vector-borne diseases. Prevention and control measures should be taken by reducing the number of native and artificial water-filled lakes and channels which sustain the breeding of the mosquitoes. During the eruption of diseases, clothing which lessen body exposure to the day-biting vectors should advise. Repellants can be used to uncovered body parts, pesticide-treated mosquito nets can be used for kids for patients and elders for safety. Mosquito coils or other insecticide sprays may also decrease rainy-day biting.

Significant safety measures should be used by public visiting to risk part and these comprise use of repellents, dressed in long sleeves and trousers and make certain accommodation behind fitted with the monitor to stop vectors from entering.

There is no significant antiviral medicine for chikungunya it is self-limiting infection patient can be recovered within 8-10 days. But it has been revealed that some time Acyclovir is used for fighting against the diseases and the Interferon type1 reasonable for plays a significant role in fighting against CHIKV. OR the treatment is directed according to the symptoms, including the joint pain using anti-pyretic, optimal analgesics and fluids.

4. Conclusion

Chikungunya is an arthropod-borne disease can cause acute fever and chronic joint pain. CHIK virus was first isolated in 1953 in Africa then spread all over the world, Spreads in 22 countries included 2 provinces of Pakistan Sindh and Punjab there are about three cases were identified in Lahore Punjab and 30, 000 supposed and 4000 confirmed cases were detected from Karachi Sindh Pakistan.

Climate and inferior hygienic circumstances as a causative issue of the outbreak so it is advised to international land national health organizations to deal with this significant matter

One of these factors is free cross-border travels between the effected arias are also one of the main reason for spreading the diseases. It has been observed that Pakistan experienced a chikungunya outbreak following too few months of its outbreak in India.

5. References

1. Aamir UB, Badar N, Salman M, Ahmed M, Alam MM.

Outbreaks of chikungunya in Pakistan. Lancet Infect Dis. 2017; 17(5):483.
2. Borgherini G, Poubeau P, Staikowsky F, Lory M, Le N, Moullec JP. Outbreak of chikungunya on Reunion Island:early clinical and laboratory features in 157 adult patients. ClinInfect Dis. 2007; 44:1401-1407.
3. Cecilia D. Current status of dengue and chikungunya in India. WHO South-East Asia J Public Health. 2014; 3(1):22-27.
4. Chhabra M, Mittal V, Bhattacharya D, Rana U, Lal S. Chikungunya fever: a re-emerging viral infection. Indian J Med Microbiol. 2008; 26(1):5-12.
5. Chua KB. Epidemiology of Chikungunya in Malaysia: 2006- 2009. Med J Malaysia. 2010; 65:277-282.
6. Cleton N, Koopmansa M, Reimerinka J, Godekea GJ, Reusken C. Come fly with me: a review of clinically important arboviruses for global travellers. J Clin Virol. 2012; 55(3):191-203.
7. Cucunawangsih, Lugito. NPH2017 Trends of dengue disease epidemiology. Virology. :10.1177/1178 122X17 695836
8. Darwish MA, Hoogstraal H, Robert TJ, Ahmed IP, Omar F. A seroepidemiological survey for certain arboviruses (Togaviridae) in Pakistan. Transactions of the Royal Society of Tropical Medicine and Hygiene. 1983; 77(4):4425.
9. Depoortere E, Coulombier D. Chikungunya risk assessment for Europe: recommendations for action. Euro surveill. 2006; 11:19.
10. Diallo M, Thonnon J, Traore M, Lamizana D. Fontenille. Vectors of Chikungunya virus in Senegal: current data and transmission cycles. Am J Trop Med Hyg. 1999; 60:281-6.
11. Diop D, Meseznikov G, Sanicas M. Chikungunya Outbreaks from A Review. Mad Crave. 2015; 2(6):1-1.
12. Disease outbreak news. Chikungunya and dengue in the southwest Indian Ocean. Geneva: WHO, 2006.
13. Edwards CJ, Welch SR, Chamberlain J, Hewson R, Tolley H, Cane PA. Molecular diagnosis and analysis of chikungunya virus. J Clin Virol. 2007; 39:271 http://dx. doi.org/10.1016/j.jcv.2007.05.008.
14. Enserink M. Infectious Diseases. Chikungunya: no longer a third world disease. Science. 2007; 318:1860-1861.
15. Farnon EC, Sejvar JJ, Staples JE. Severe disease manifestations associated with acute chikungunya virus infection. Crit Care Med. 2008; 36(9):2682-2683.
16. Hassan R, Rahman MM, Moniruzzaman M, Rahim A, Barua S. Chikungunya - an emerging infection in Bangladesh: a case series. J Med Case Rep. 2014; 8:67.
17. Heywood AE, Zwar N, Forssman BL, Seale H, Stephens N, Musto J. The contribution of travellers visiting friends and relatives to notified infectious diseases in Australia: state-based enhanced surveillance. Epidemiology and infection. 2016; 30:1-10.
18. Heydari N, Larsen DA, Neira M, Beltran E, Ayala P. Household Dengue Prevention Interventions, Expenditures, and Barriers to Aedes aegypti Control in Machala, Ecuador, International journal of environmental research and public health. 2017; 14:2.
19. Ho K, Ang LW, Tan BH, Tang CS, Ooi PL. Epidemiology and control of chikungunya fever in Singapore. J Infect. 2011; 62(4):263.
20. International conference on mosquito control: recommendations. WHO Wkly Epidem Rec. 2000; 75:173-5.
21. King AMQ. Adams MJ, Carstens EB, Lefkowitz EJ, San Diego. Virus taxonomy: classification and nomenclature of viruses: Ninth Report of the International Committee on Taxonomy of Viruses, Elsevier Academic Press, 2012.
22. Knudsen AB. Global distribution and continuing spread of Aedes albopictus, 1995.
23. Kumar NP, Joseph R, Kamaraj T, Jambulingam P. A226V mutation in virus during the chikungunya outbreak in Kerala, India. J Gen Virol. 2007-2008; 89:1945-8. http://dx.doi.org/10.1099/vir.0.83628-0
24. Kumarasamy V, Prathapa S, Zuridah H, Chern YK, Norizah I. Re-Emergence of Chikungunya Virus in Malaysia. Med J Malaysia. 2006; 61:221-225.
25. Lo Presti A, Cella E, Angeletti S, Ciccozzi M. Molecular epidemiology, evolution and phylogeny of Chikungunya virus: An updating review. Infection, genetics and evolution. journal of molecular epidemiology and evolutionary genetics in infectious diseases. 2016; 41:270-8.
26. Leo YS, Chow AL, Tan LK, David Lye C, Li Lin. Chikungunya outbreak, Singapore, 2008. Emerg Infect Dis. 2008-2009; 15(5):836-837.
27. Machala, Ecuador. International journal of environmental research and public health. 14(2). PubMed PMID: 28212349. Pubmed Central PMCID: PMC5334750. Epub 2017/02/18. eng.
28. Mathew AJ, Ganapat A, Kabeerdoss J, Nair A, Gupta N, Chebbi P. A Global Public Health Menace. Current allergy and asthma reports. 2017; 17(2):13. PubMed PMID: 28233156. Epub 2017/02/25. eng.
29. Carthy M. First case of locally acquired chikungunya reported in the US. BMJ. 2014; 349:4706.
30. Ng KW, Chow A, Win MK, Dimatatac F, Neo HY. Clinical features and epidemiology of chikungunya infection in Singapore, Singapore Med J. 2009; 50(8785-790.
31. Nunes MRT, Faria N, Vasconcelos JM, Golding N, Kraemer MUG, Oliveira LF. Emergence and potential for spread of chikungunya virus in Brazil. BMC Med. 2015; 13:102.
32. Pialoux G, Gauzere BA, Jaureguiberry S, Strobel M. Chikungunya, an epidemic arbovirosis. Lancet Infect Dis. 2007; 7:319-327.
33. Powers AM, Logue CH. Changing patterns of chikungunya virus: re-emergence of a zoonotic arbovirus, J. Gen. Virol. 2007; 88:2363-2377.
34. Pulmanausahakul R, Roytrakul S, Auewarakul P. Chikungunya in Southeast Asia: understanding the emergence and finding solutions. Int J Infect Dis. 2011; 15(10):e671-76.
35. Pun SB, Bastola A, Shah R. First report of Chikungunya virus infection in Nepal. J Infect Dev Ctries. 2014; 8(6):790-792.
36. Qiaoli Z, Jianfeng H, De W, Zijun W, Xinguang Z. outbreak of chikungunya in Dongguan city, Guangdong province, China: epidemiological characteristics. PLoS One. 2012; 7(8):e42830.
37. Rahman A, Lee H, Khan MA. Domestic water contamination in the rapidly growing megacities of Asia:

the case of Karachi. Pakistan. Environ Monit Assess. 1997; 44:339-60.
38. Rauf M, Manzoor S, Mehmood A, Bhatti S. Outbreak of chikungunya in Pakistan. Lancet Infect Dis. 2017; 17(3):258.
39. Receveur M, Ezzedin K, Pistone T, Malvy D.). Chikungunya infection in a French traveller returning from the Maldives, October, Euro surveillance: bulletin Europeansurles maladies transmissible = European communicable disease bulletin. 2010 Feb 25; 15(8):19494. PubMed PMID: 20197023. Epub 2010/03/04. Eng
40. Reller ME, Akoroda U, Nagahawatte A, Devasiri V, Kodikaarachchi W. Chikungunya as a Cause of Acute Febrile Illness in Southern Sri Lanka, PLoS One. 2013; 8(12):e82259.
41. Robinson MC. An epidemic of virus diseasein Southern Province, Tanganyika Territory, in 1952– 53. Clinical features, Trans. Roy. Soc. Trop. Med. Hyg. 1955; 49:(1)28-32.
42. Ross RW. The Newala epidemic. III. The virus: isolation, pathogenic properties and relationship to theepidemic. J. Hyg. London. 1956; 54(2):177-191.
43. Schwartz O, Albert ML. Biology and pathogenesis of chikungunya virus, Nat Rev Microbiol. 2010; 8:491-500.
44. Schuffenecker I, Iteman I, Michault A, Murri S, Frangeul L, Vaney MC. Genome microevolution of chikungunya viruses causing the Indian Ocean outbreak. PLoS Med. 2006; 3:e263. http://dx.doi.org/10.1371/journal. pmed. 0030263
45. Shu PY, Yang CF, Su LU, Chen CY, Chang SF. Two imported chikungunya cases, Taiwan, Emerg Infect Dis. 2008; 14(8):1326-1327.
46. Thiberville SD, Moyen N, Dupuis L, Maguiraga A. Nougairede EA. Chikungunya Fever Epidemiology, Clinical Syndrome, Pathogenesis and Therapy. 2013; 99:345-370**.**
47. Tsetsarkin KA, Vanlandingham DL, McGee CE, Higgs S. A single mutation in chikungunya virus affects vector specificity and epidemic potential. PLoS Pathog. 2007; 3:e201. http://dx.doi.org/10.1371/journal.ppat.0030201
48. Vanlandingham DL, Hong C, Klingler K, Tsetsarkin K, McElroy KL, *et al*. Differentialinactivities of o'nyong-nyong and Chikungunya virus isolates in Anopheles gambiaeand Aedes aegypti mosquitoes. Am J Trop Med Hyg. 2005; 72(5):616-21.
49. Wahid B, Ali A, Rafique S, Idrees M. Global expansion of chikungunya virus: mapping the 64-year history. Int J Infect Dis. PubMed, 2017, PMID: 28288924.
50. Wangchuk S, Chinnawirotpisan P, Dorji T, Tobgay T. Chikungunya fever outbreak, Bhutan, 2012. Emerg Infect Dis. 2013; 19(10):1681-16844.
51. Weaver SC, Forrester NL. Chikungunya: Evolutionary history and recent epidemic spread. Antiviral Res. 2015; 120:32-9. PubMed PMID: 25979669. Epub 2015/05/17. eng.
52. Weibel Galluzzo C, Kaiser L, Chappuis F. Reemergence of Chikungunya virus. Revue Médicale Suisse. 2015, 11(473):1012, 4-6. PubMed PMID: 26103764. Epub 2015/06/25. Chikungunya: La reemergence. free.
53. Zeller H, Van Bortel W, Sudre B. Chikungunya: It's History in Africa and Asia and Its Spread to New Regions in 2013-2014, The Journal of infectious diseases, 15; 214(suppl 5):S436-S40. PubMed PMID: 27920169. Epub 2016/12/07. eng.