

Letter to the Editor

Post-flood outbreaks of Cholera in Pakistan; Endemic-to-epidemic

Muhammad Umair^{1,2}, Muddasir Khan³, Abdul Jabbar¹, Sumera Afzal Khan³, Muhammad Hamayun⁴, Taj Ali Khan⁵

¹ Department of Medical Laboratory Technology, University of Haripur, Haripur, Khyber Pakhtunkhwa, Pakistan

² Institute of Basic Medical Sciences, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan

³ Centre of Biotechnology and Microbiology, University of Peshawar, Peshawar, Khyber Pakhtunkhwa, Pakistan

⁴ Department of Botany, Garden Campus, Abdul Wali Khan University, Mardan, Khyber Pakhtunkhwa, Pakistan

⁵ Institute of Pathology and Diagnostic Medicine, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan

Key words: Cholera; post-flood; epidemic.

J Infect Dev Ctries 2023; 17(3):423-424. doi:10.3855/jidc.17512

(Received 08 October 2022 – Accepted 29 December 2022)

Copyright © 2023 Umair *et al.* This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Dear Editor,

Cholera persists in low economical countries due to their poor hygiene, sanitation, and insufficient safe water [1]. It is an acute severe diarrheal disease caused by *Vibrio cholerae* serogroup O1 or O139 [2]. The profuse watery diarrhea is most commonly presented clinically with this infection, referred to as “rice water stools”. The accompanying symptoms include; leg cramps, vomiting, restlessness, and increased thirst. Hypovolemic shock can be caused in extreme cases of cholera due to the loss of electrolytes and fluids. The improper clinical management showed a 50% case fatality rate, but it can be decreased to 01% or less if treated promptly with antibiotics and rehydration. The transmission of the disease takes place through contaminated food or water by the fecal-oral route [3].

The *V. cholerae* has many serogroups but epidemiologically O1 and O139 are important and usually responsible for outbreaks. All recent outbreaks are caused by serogroup O1. The serogroup O139 was responsible for outbreaks in the past, identified initially in 1992 in Bangladesh, and has never been reported outside Asia. These two serogroups have no difference in the disease caused by them [4]. Cholera has a globally increasing burden and approximate cases of 2.9 million and 100,000 deaths yearly [5]. A cholera alert is defined as one suspected case of cholera, whereas an outbreak is defined as a confirmed case or a cluster of three or more suspected cases in a single location. In 2005, the World health organization

(WHO) introduced the Disease Early Warning System (DEWS) in Pakistan. From 2005 to 2009, the DEWS team responded to approximately 261 alerts and 46 outbreaks of acute watery diarrhea/suspected cholera across Pakistan. In 2006, the Ministry of Health (MOH) of Pakistan reported 4,610 suspected cholera cases. After the flood in 2010, the MOH reported 99 declared *V. cholerae* O1 cases across the country [6]. Cholera is linked to poor environmental and sanitation conditions, as well as the consumption of contaminated food and water as a result of natural disasters that have displaced thousands of people [2].

Pakistan has experienced extreme rainfalls in recent years which has led to severe flooding impacting more than 33 million people [7,8]. Certain infectious diseases are spreading across flood-affected areas such as COVID-19, malaria, and dengue fever but water-borne disease such as cholera can potentially turn into epidemic situations. The World Health Organization (WHO) announced endemic situations of cholera in Sindh, Pakistan, which may turn into an epidemic due to the recent historic disastrous situations in Pakistan. With 234 laboratory-confirmed cases reported between 15 January and 27 May 2022, Sindh province is experiencing a major rise in cholera outbreaks. Additionally, Punjab and Balochistan have recorded 31 and 25 confirmed cases of cholera, respectively. The Sindh, Balochistan, and Punjab provincial health authorities have issued a high alert to the affected

District Health Offices in response to the cholera outbreak [9].

The vaccine for cholera called oral cholera vaccines (OCVs) is critically important to control the outbreaks. Hygiene, sanitation, safe water, prophylactic antibiotic, and awareness are additionally helpful in preventing the outbreak. The WHO and the Global Task Force for Cholera Control (GTFCC) have set a strategy entitled 'Ending Cholera: A Global Roadmap to 2030' with the ambitious goal to eliminate cholera in 20 countries and reduce 90% mortality by 2030 in areas with greater risk [3]. There may be certain economic challenges but sufficient steps need to be taken at existing levels and capacities. Currently, alongside other diseases, the government and non-government authorities intensely needed to take precautionary measures in the country and equipped health facilities, and laboratories for epidemic situations. The supply of clean water or access people to clean water should be the top priority. The availability of medicine should be assured by an individual through medical camps to avoid emergencies. In flood-affected areas, the infrastructure is damaged and there is no system for waste management and disposal. The authorities should introduce low-cost latrine systems with proper drainage. A multifaceted system mainly can be approached to reduce morbidity due to *V. cholerae*, which can be based on surveillance, sanitation, water and hygiene, treatment, social mobilization, and orally administered vaccines. Furthermore, the authorities should introduce a hygiene awareness program through social media, door-to-door visits, and community meetings.

Authors' Contributions

All authors contributed equally to the conceptualization, drafting, critical reading, and revision of the manuscript, and gave final approval for publication.

References

- Taylor DL, Kahawita TM, Cairncross S, Ensink JH (2015) The impact of water, sanitation and hygiene interventions to control cholera: a systematic review. PLOS one 10: e0135676.
- Naveed A, Umer M, Ehsan M, Ayyan M, Shahid A, Zahid A, Essar YA, Cheema HA (2022) The cholera outbreak in Lahore, Pakistan: challenges, efforts and recommendations. Trop Med Health 50: 1-3.
- Chowdhury F, Ross AG, Islam MT, McMillan NA, Qadri F (2022) Diagnosis, management, and future control of cholera. Clin Microbiol Rev 35: e00211-21.
- Ramamurthy T, Pragasam AK, Taylor-Brown A, Will RC, Vasudevan K, Das B, Srivastava SK, Chowdhury G, Mukhopadhyay AK, Dutta S, Veeraraghavan B, Thomson NR, Sharma NC, Nair GB, Takeda Y, Ghosh A, Dougan G, Mutreja A (2022) *Vibrio cholerae* O139 genomes provide a clue to why it may have failed to usher in the eighth cholera pandemic. Nat Commun 13: 3864.
- Islam MT, Ross AG, Sleigh AC, Chowdhury F, Khan AI, McMillan NA, Qadri F (2022) A blueprint for eliminating cholera by 2030. Nat Med 28: 1747-1749.
- Naseer M, Jamali T (2014) Epidemiology, determinants and dynamics of cholera in Pakistan: gaps and prospects for future research. J Coll Physicians Surg Pak 24: 855.
- Abdullah, Ali S, Salman M, Khan M (2022) A looming twindemic of COVID-19 and dengue on post-flood scenario in the developing countries. Asian Pac J Trop Biomed 15: 383-384.
- Khan M, Shah SH, Khan SA, Hayat F (2022) Post-flood infectious disease prevention and control: Current scenario in Pakistan. J Flood Risk Manag 16: e12867.
- World Health Organization (2022) Disease outbreak news; cholera in Pakistan. Available: <https://www.who.int/emergencies/diseases-outbreak-news/item/2022-DON391>. Accessed: 20 June 2022

Corresponding author

Dr. Abdul Jabbar
Department of Medical Laboratory Technology,
University of Haripur, Haripur,
Khyber Pakhtunkhwa 22620, Pakistan
Tel: +923339483707
Email: jabbarptrl@outlook.com

Conflict of interests: No conflict of interests is declared.