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COVID-19 and dengue virus co-epidemics in Pakistan: A dangerous combination for overburdened healthcare system

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Running Head: COVID-19 and Dengue infection; Co-epidemic threat in Pakistan

Keywords: COVID-19; Dengue fever; Pandemic; Co-epidemics; Health care system; Pakistan

To the Editor,

We have read recent articles regarding co-epidemics/co-infections of COVID-19 and other infectious diseases [1-4], these reports highlights the impact of co-infections on the health care system. The recent pandemic of COVID-19 caused by a novel severe acute respiratory

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1002/jmv.26144.

syndrome coronavirus - SARS-CoV-2 has taken 378K lives and has spread worldwide infecting over 6.3 million individuals. The number of COVID-19 in Pakistan has been escalating at a rapid rate (76,000) and has caused 1621 deaths so far [5]. Simultaneously, in the coming days the country might also be facing the outbreak of dengue fever, a viral disease that is known to be transmitted by Aedes aegpti and Aedes albopictus mosquitoes [6]. According to Federal Disease Surveillance and Response Unit Field Epidemiology & Disease Surveillance Division National Institute of Health (NIH), Pakistan, dengue infection is continuously on raise from last three years (Figure 1a) [7]. The NIH data showed that in last year the number of cases started to rise from March and peaked in September and October infecting 24,547 people in year 2019 only (Figure 1b) [7]. The incidence of dengue around the globe has increased dramatically, estimating 100-400 million infections per year [8]. More number of dengue cases are reported in the rainy and summer season (April to March and then from August to October). Meanwhile, with an increase in respiratory system related complications also arising in this period of year, COVID-19 is yet to reach its peak during coming days in Pakistan. This temporal coincidence suggests that the two disease outbreaks might occur at the same time implying that it would have drastic effects on the population as well as the economy. In such conditions, public and private health sector departments must work together to overcome this health nemesis.

COVID-19 and Dengue fever are difficult to discriminate because they share clinical manifestations and laboratory features [9]. Some authors have discussed cases which were first wrongly diagnosed with dengue but later tested positive for COVID-19 [10]. SARS-CoV-2 has a severe impact on world economy[11] and due to several potential un-notice transmission routes, it will test the health care system for a longer time[12]. Keeping in view

the fragile condition of Pakistan's healthcare system and the complex epidemiological scenario, Pakistan is at the brink of multiple socio-economic collapses. The lack of sufficient amount of specific diagnostic tests and late detection of virus might result in viral importation and difficult to stop it from spreading, leaving uncounted and undetected positive cases. The actual number of infections is suspected to be much higher than it is reported. Another grave concern is inadequate public healthcare infrastructure which is understaffed and underfunded. According to Economic Survey of Pakistan 2018-2019, there is one doctor available for 963 patients and one hospital bed for 1608 individuals, with very low scale of availability of intensive care units (ICU) [13]. COVID-19 alone, if peaks as much as in the European countries have insurmountable capacity to overburden the healthcare system of Pakistan. In such condition if this pandemic is accompanied by dengue fever, this burden would be even greater.

Pakistan despite of economic and healthcare professionals' limitation is struggling hard to cope with COVID-19. However, vast majority of cases are asymptomatic and the limited number of tests might leave some undetected case wandering and infecting other individuals that might result in cluster of infections. Therefore, in order to restrain the epidemic drastic measures should be taken: large investment in epidemiological, diagnostic and vaccine development research, medical and protective supplies are required to tackle the epidemic efficiently. Active surveillance, viral identification assays and disinfecting large areas should be prioritized to detect and limit the transmission of virus. A combination of these measures may help to gain insight into the actual number of infected cases thus isolating them and limiting the spread of virus.

Ethics approval and consent to participate

The ethical approval or individual consent was not applicable.

Availability of data and materials

All data and materials used in this work were publicly available.

Consent for publication

Not applicable.

Funding

No funding

Disclaimer

The funding agencies had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; or decision to submit the manuscript for publication.

Authors' contributions

All authors conceived the study, discussed the results, drafted the first manuscript, critically read and revised the manuscript, and gave final approval for publication.

Declaration of competing interest

The authors declared no competing interests

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Figures

Figure 1a: Distribution of dengue virus confirmed cases in various provinces of Pakistan (2017-2019) [Data extracted from 7]

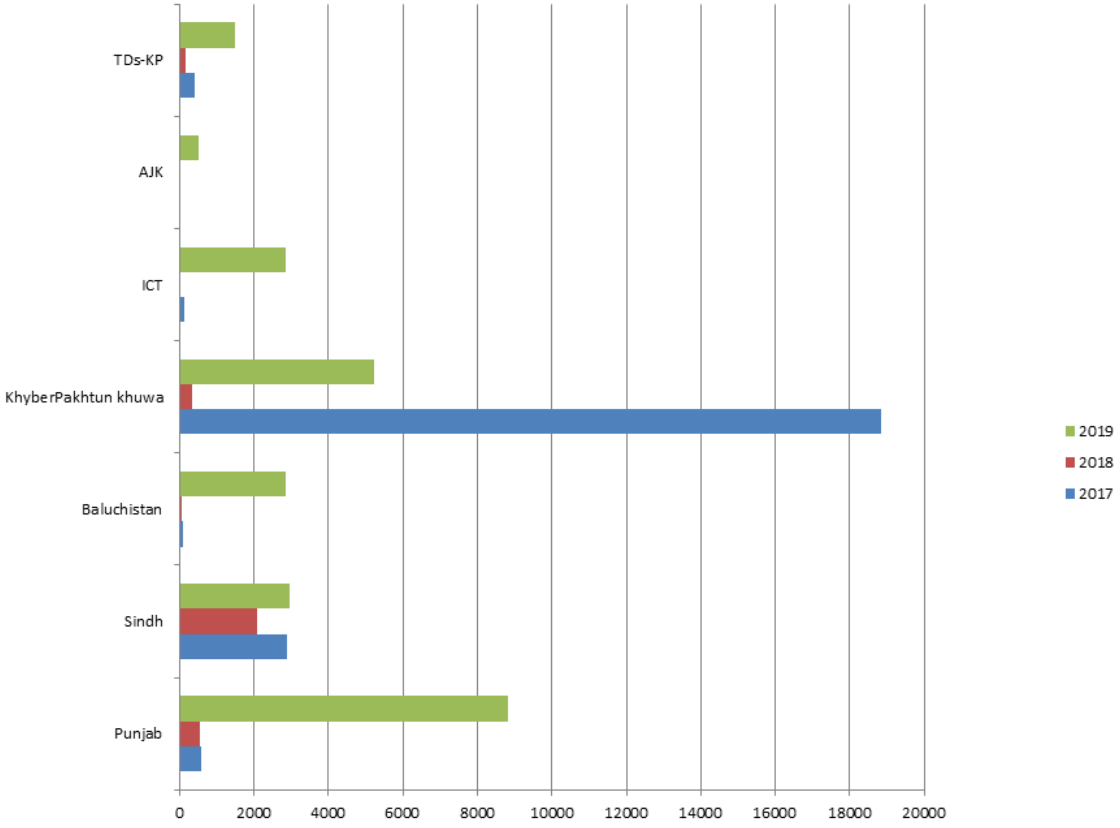

Figure 1b: Number of dengue virus confirmed cases in Pakistan (2019) [Data extracted from 7]