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LETTER TO THE EDITOR

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Dengue and COVID-19: A double burden to Brazil

To the Editor,

Dengue is a major health concern in Brazil since it first appeared in 1845.[1] The tropical climate of Brazil, characterized by high temperatures and humid conditions, provides a favorable environment for the development of the dengue vector, the Aedes aegypti mosquito. As a result of climatic conditions and population size, the country recorded the highest incidence of dengue in South America[2] in three explosive national epidemics, in 2002, 2008, and 2010.[3] Following the last major outbreak, the number of cases of the disease declined, until 2019, when the cases increased again and exceeded 2 million in 1 year.[4]

In addition to the burden of the re-emerging dengue epidemic, Brazil is also currently being severely affected by the COVID-19 pandemic, whose first cases were reported in February 2020.[5] Interestingly, according to the epidemiological pattern of the dengue fever in Brazil, the incidence of the disease gradually increases from the beginning of the year due to the rainy season and the high temperatures, and peaks in March or April. Evidently, the COVID-19 epidemic emerged shortly before dengue reached its seasonal peak, resulting in a simultaneous outbreak of both conditions in the first weeks of 2020.[5]

In fact, the number of dengue cases in Brazil increased significantly by 70% from December 30, 2019 to March 12, 2020 compared to the same period last year, with 390,684 cases in March 2020, compared to 229,064 cases in March 2019, respectively.[6] This stated, it appears that the emergence of COVID-19 coincided with a higher incidence of dengue. This increase may represent dengue cases that would remain undiagnosed in the previous years due to the lower level of testing.

Therefore, the country is currently battling two of the deadliest pathogens at the same time, both with a high mortality rate. As the contagion curve of COVID-19 grows and novel strains emerge, dengue's burden on the national healthcare system is increased. The lack of supplies and equipment necessary for the detection of SARS-CoV-2,[7] has caused many laboratories to redirect all their efforts to diagnose COVID-19, including arbovirus laboratories, which had a direct impact on the detection of arboviruses. In addition, COVID-19 and dengue infection are difficult to distinguish because they share similar clinical manifestations, mimicking each other.

Thus, the fact that dengue and COVID-19 are difficult to distinguish due to the common clinical presentation,[5] and the fact that both can present themselves as a coinfection, can lead to the underdiagnosis of dengue.[6] In other words, the epidemiological situation of arbovirus in the country may be much more serious than the data indicate. The underdiagnosis of some diseases due to the overlap of symptoms between these and COVID-19, has also been a recurring challenge in other countries, such as Pakistan, where the similarity between symptoms of COVID and typhoid fever led to the underdiagnosis of the second.[8]

Examples like this highlight how the overlap of symptoms can lead to devastating consequences for the country's public health system. The main problem with this is that, with the contagion curve of COVID-19 being out of control in the country, the tendency is that the focus of health in Brazil in 2021 will continue to be the pandemic of COVID-19. Consequently, the allocation of most health resources to fight the coronavirus, results in an unprecedented increase in dengue cases.

As a practical example of this we have the city of São Paulo. In 2020, São Paulo was the region most affected by COVID-19, and at that time the number of dengue cases was not known for a number of reasons, one of which was that all attention was focused on the coronavirus epidemic, and the state was unaware of the facts and statistics about dengue, as the entire focus of the inspection teams was directed at the same time to the fight against the coronavirus.[5]

One of the direct consequences of this failure in epidemiological surveillance is that, due to the unstable health system in Brazil, it has become almost impossible to eliminate the viruses transmitted by arthropods and other diseases more lethal to health. As a reflection of this, a recent epidemiological bulletin reported an increasing incidence of dengue cases (874,093) from January to July 2020.[9] To these are added 48,316 cases of chikungunya and 4666 cases of zika, both arboviruses transmitted by the same vector.

It is alarming that dengue is still circulating in the country, with millions of registered cases, posing a considerable risk to public health, even more so with the possibility that the disease vector can also transmit other potentially fatal arboviruses. Therefore, the seriousness of the dengue epidemic underway in Brazil cannot be underestimated by the country's authorities. Urgent initiatives, such as health literacy campaigns aimed at the general public and health professionals, are needed, with a specific emphasis on the early and more reliable detection of dengue cases, since the COVID-19 pandemic culminated in the deployment of health teams. epidemiological surveillance, resulting in the delay or underreporting of dengue cases.[7,10]

It is worth noting that the situation in Brazil has been aggravated by the crisis in hospital management that the country currently faces. As a matter of fact, the public healthcare system will not be able to withstand an influx of thousands of cases of COVID and dengue that require hospitalization.[7,10]

Overall, there is a need for more intensive care units in hospitals with lower hospital costs and accurate and affordable diagnostic test kits and tools for virus identification. Finally, yet importantly, early vaccination plans will help enormously to distinguish COVID-19 from dengue, providing precise management and control.

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