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Does previous infection of dengue impart disease severity in the current infection?

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Dengue is a colossal threat, especially in the subtropics and tropics of the world. It is spread through mosquitoes and four different, but closely related forms of viruses known as serotypes (DENV1, DENV2, DENV3, DENV4) cause the dengue infection. Clinical presentations vary from mild fever to severe forms of the disease known as dengue haemorrhagic fever (DHF), dengue shock syndrome (DSS), and expanded dengue syndrome. It is believed that a severe form of the disease is frequently associated when a person contracts the virus more than once and it is explained by a phenomenon known as antibody-dependent enhancement (ADE). However, other factors such as genetic differences of the host individuals and co-circulation of different viral types are thought to be playing a role. As the symptoms are similar to those of other fever-causing infectious diseases, the availability of dengue-specific laboratory diagnostics will enable clinicians to confirm the disease. In this study, we attempted to understand whether the previous infection of dengue has any impact on the disease severity and the differences of the serotypes in the current infection. We screened 689 patients with suspected-dengue fever from 2016-2019 who had presented at North Colombo Teaching Hospital, Base Hospital, Kiribathgoda, and District Hospital, Maligawatte. Colombo and Gampaha districts were the major- hot spots for dengue infection during this period. It was recorded that 129 individuals were suffering from dengue infection and type- 2 infection was the predominant serotype each year from 2016 to 2019. Furthermore, type-1 infection was observed more frequently in 2016 and 2019. The majority of the individuals who had contracted the virus for the first time (primary infection) and less percentage of patients who acquired the disease previously (secondary infection) were suffering from dengue fever. In conclusion, there was a likelihood of having dengue fever in the individuals with primary infection than the secondary infection. However, there was no association between the disease severities with either primary or secondary infection. Furthermore, there was no relationship between the disease severities with the type of the virus. Therefore, our findings become an eye-opener for having a systematic-laboratory diagnosis in the country.

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