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Circulating DENV serotypes and clinical outcome in Jaffna, Northern Sri Lanka

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Purpose: Jaffna, which is in the Northern Province of Sri Lanka has been experiencing an increase in the number of dengue infections in recent years. Therefore, it would be important to identify the emergence of different dengue virus (DENV) serotypes in the province to understand the changing epidemiology of dengue and to initiate timely control measures.

Methods & Materials: Blood sample was collected from patients with NS1 positive patients admitted to the Jaffna Teaching hospital from January 2018 to December 2019. Realtime PCR was carried out to identify the DENV serotype. Patients were followed up throughout the duration of hospital admission to determine dengue disease severity.

Results: Of the 563 patients recruited (309 in 2018, 251 in 2019) 256/563 patients had a positive NS1 antigen test and were included in the analysis. Of the 256 samples, the DENV serotype could only be identified in 219 samples. DENV1 was identified in 86/219, DENV2 108/219, DENV3 17/219 and DENV4 8/219. DENV2 was the dominant serotype that was seen in all four quarters in the year 2018, accounting for 56% of all cases. Although all four serotypes were seen throughout 2018, DENV4 only accounted for 4% of infections. DENV1 accounted for 19% infections in the first two quarters of 2018 and then the frequency of DENV1 reduced to 5%. However, from the fourth quarter onwards, the frequency of DENV1 increased with DENV1 emerging as the dominant serotype in 2019. 83/219 (37%) infections were between the ages of 20–29 years followed by 61/219 (28%) seen in <19 years. There were no

differences in clinical or laboratory features between the different serotypes. The emergence of DENV1 in the Jaffna province preceded the massive outbreak that occurred in the province by 4 to 6 months.

Conclusion: All four DENV serotypes were found in Northern Sri Lanka in both years and shifting of predominant circulating serotype to DENV1 in 2019, preceded the onset of the outbreak by a few months. Therefore, surveillance of any change in the DENV serotypes is useful to predict the emergence of outbreaks to take timely action.

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