

Epidemiology of dengue and dengue haemorrhagic fever in the Northern Sri Lanka from 2009 to 2012

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Sri Lanka has experienced dengue fever (DF) and dengue hemorrhagic fever (DHF) for a long time. The four serotypes of dengue viruses (DENVs) have been co-circulating in Sri Lanka for more than 3 decades. However, people in the Northern part of Sri Lanka were isolated from the rest of the country due to the restriction of travelling as a result of recently ended war. Thus the epidemiology of circulating DENV in the Northern part of Sri Lanka has not been investigated and this is such a study to describe the epidemiology of circulating DENV serotypes and their association to DHF in the northern Sri Lanka from 2009 to 2012.

Demographic data and blood samples (5 mL / patient) were collected from 765 patients suspected of having DF / DHF from all medical and paediatric wards of the Teaching Hospital, Jaffna from 2009 to 2012. Viral RNA was extracted from patients' sera using Qiagen viral RNA mini kit (Cat No 5206). Identification and typing of DENV were carried out using a combination of RT-PCR and a single-tube multiplex PCR. Primers described by Lanciotti and colleagues were used to detect the C and PrM genes of the DENV.

Of the 765 patients, 205 were positive for DENV RNA by the RT-PCR. Of the 205 RT-PCR positive patients, 64 were from 2009 / 2010 dengue outbreak and the rest were from 2011 / 2012 dengue outbreak. Distribution of DENV-1, DENV-2, DENV-3 and DENV-4 were found in 12 (18.7%), 19 (29.6%), 25 (39%) and 1 (1.5%) patients, respectively in the 2009 / 2010 outbreak. Seven (10.9%) had co-infection with DENV-2 and DENV-3. In contrast, in the 2011/2012 outbreak DENV-1 was found to be the dominant serotype (55.3%) and DENV-4 was not found in any samples. In 2009/2010 outbreak severe forms of DHF was caused by DENV-2 and DENV-3 (86%). However, in 2011//2012 more than one third cases of DHF were caused by DENV-1.

A shift in the circulation of DENV serotypes were clearly observed in the northern Sri Lanka and the DENV-1 predominance has been observed in the Western Province Sri Lanka in the last 5 years. Thus the shift might be due to the movement of people from the Northern Province of Sri Lanka to other parts of the country and vice versa.

Key words: Dengue, dengue haemorrhagic fever, dengue virus serotypes and Sri Lanka.

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