

Epidemiological and clinical characteristics of dengue during epidemic and non-epidemic periods in southern Sri Lanka- lessons learned from 2007 and 2012-2013

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Objectives

We evaluated epidemiological, clinical characteristics of dengue, comparing two similar studies performed at Teaching Hospital Karapitiya (THK) Galle during outbreak (2012-2013) and without outbreak (2007).

Methods

Two cross-sectional studies have been conducted at THK from March - October 2007 and June 2012 - February 2013. Adults and children with acute fever (tympanic $\geq 100.4^{\circ}\text{F}$, documented $\geq 102^{\circ}\text{F}$), with no obvious bacterial focus, have been enrolled within 48 hours of admission. Data and blood have been collected at enrollment and 2-4 weeks later. Acute dengue was confirmed by paired IgG and IgM ELISA, PCR or viral isolation.

Results

In 2007 total of 1079 patients (61.2% male, median age 30.7 years) and in 2012 /2013 total 409 patients (64.3% male, median age 25.2 years) have been enrolled. Acute dengue was confirmed in 54 (6.3%) in 2007 and 188 (46.0%) in 2012-2013. Acute dengue had leukopenia ($\text{WBC} < 4.0 \times 10^3 / \mu\text{l}$, $p < 0.01$) and thrombocytopenia (platelets $< 100 \times 10^3 / \mu\text{l}$, $p < 0.01$) than non-dengue in both studies. Total 3 (2007) and 7 (2012-2013) patients met criteria for dengue hemorrhagic fever. In 2007, clinical diagnosis sensitivity, specificity and positive predictive value were 14.0%; (95% CI 11.6 - 16.4), 97.8% (95% CI 96.8 - 98.9) and 30.4% (95% CI 27.2 - 33.6) respectively. In 2012/2013 the corresponding values were 64.4%; (95% CI 57.1 - 71.2), 71.5%; (95% CI 65.1 - 77.4) and 65.8% (95% CI 58.4 - 72.6). Serotypes DEN 2-4 isolated in 2007, changed to DEN-1 (94.6%), DEN-4 (5.4%) in 2012/2013. Sero- prevalence increased from 50.9% (2007) to 83.7% (2012/2013).

Conclusions

Dengue was a major cause of febrile hospital admissions during 2012-2013. DEN 1 caused the 2012-2013 epidemic. Sensitivity of clinical diagnosis and positive predictive value significantly improved during 2012-2013.