

OP-07: Rational use of diagnostics for acute dengue infection

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Introduction: Large numbers of suspected cases of dengue are admitted to hospital for monitoring and care. Considering the ongoing limitations on health budgets, we assessed the sensitivity and implications of NS1/IgM/IgG lateral flow immunochromatographic assay (LFIA) and reverse transcriptase polymerase chain reaction (RT-PCR) in the management of hospitalised patients with acute undifferentiated febrile illness (AUFI).

Methods: We prospectively recruited 151 patients admitted to a district hospital in the Western Province within seven days of fever onset. Data were collected on presumed diagnosis, investigations and treatment on admission. Serum samples were separated and stored at -80°C pending LFIA for NS1, IgM and IgG and RT-PCR. Sensitivity was compared to a composite gold standard of RT-PCR and/or NS1 positivity.

Results: Dengue diagnostics were performed on serum collected at a median of 4 days (IQR 3 to 5) post onset of fever. 82/151 were confirmed as dengue (75/151 by RT-PCR, 70/151 by NS1 and 63/151 by both). Sensitivity of NS1 and RT-PCR were 85.0% and 91.0%. Only 38/82 (45.0%) were IgM positive (median day of fever 4, range 2-6). 52/82 (63.0%) were secondary dengue infections (IgG positive). A third, 28/82 (34%) had platelets in the normal range $>150 \times 10^3/\mu\text{L}$. Antibiotics were used in management of 14/82 (17.0%) of dengue patients. Where NS1 was not performed on admission (n=60), a clinical diagnosis of dengue was made in 15/60 (25.0%), of whom eight (53.0%) were confirmed as dengue on NS1/RT-PCR. Conversely, dengue was confirmed by NS1/RT-PCR in 10/60 (17.0%) patients without a clinical diagnosis of dengue, and antibiotics were used in 6/10 (60.0%) of these patients.

Conclusions: In this cohort, the clinical diagnosis of dengue had a low precision. Sensitivity of NS1 was comparable to RT-PCR, even in secondary dengue patients. Rational use of diagnostics reduces inappropriate use of antibiotics in hospitalised patients with AUFI.

Keywords: dengue diagnostics, inpatient management, rational use