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Diagnosis of dengue virus infection with IgA anti dengue rapid test

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There is an urgent need for highly sensitive, specific, rapid, economical tools for early diagnosis of dengue infection that can be used for clinical management, surveillance and outbreak investigations. The acquired immune response to dengue virus infection consists of the production of immunoglobulins (IgM, IgG and IgA) that are mainly specific for the virus envelope (E) protein. The intensity of the response varies depending on whether the individual has a primary or secondary dengue infection. During a primary dengue infection, the IgM response is typically higher titer and more specific than during secondary infections. IgM is detected 5 or more days after the onset of illness and IgG is detected from 10-15 days. The titer of the IgG response is higher during secondary infection than during primary infection. IgA-based assays have also been used as markers for the sero-diagnosis of dengue infections and also higher during secondary dengue infection. The maximum diagnosis of NS1 antigen can be obtained between days 3 and 5 in both kinds of primary and secondary infections. Dengue diagnostic tests comprise both laboratory-based and point-of-care tests. The laboratory-based tests comprise non-commercial assays such as NAATs, ELISAs, HAI tests and neutralization assays. Point-of-care tests for dengue diagnosis based on immune-chromatographic assays in the dengue endemic regions are the great importance. Immunochromatographic tests (ICT) for IgM, IgG or IgA antibodies or NS1 antigen detection have been existed in different forms. Dengue IgA rapid test based on reverse flow technology demonstrated highly sensitivity and specificity especially in secondary dengue infection. The capability of dengue IgA rapid test in detecting dengue infection in terms of day of illness was comparable to reverse transcriptase polymerase chain reaction and was found better than in-house IgM ELISA, also dengue IgA persists for a shorter period of time. Compared with in-house IgM ELISA, dengue IgA rapid test also detected similar number of dengue virus (DENV) 1, DENV 2, and more DENV 3 and DENV4 cases. The overall performance thus suggested its usefulness as one of the dengue early diagnostic tools where diagnostic facility is limited.

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