EFFICACY OF NS1 ANTIGEN DETECTION FOR EARLY DENGUE INFECTION DIAGNOSIS IN INDONESIA

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Abstract. Diagnosing dengue is challenging and problematic as clinical symptoms of dengue show similar clinical presentations with another vector-borne diseases, such as chikungunya and malaria particularly in the initial stages of infection. There are several laboratory methods available for dengue diagnosis, however, some of them are costly, time-consuming and need specialized laboratory staff, who may not be widely available in hospital in challenging settings. This study was a cross-sectional study that evaluated the sensitivity and specificity of SD Bioline Dengue Duo for primary and secondary DENV infection in Jakarta, Indonesia between 2010 and 2011. In addition, we investigated the kinetics of NS1 as well as anti-DENV antibodies. A panel of sera samples from 102 patients experiencing fever within the last 48 hours was tested. DENV infection was confirmed using gold standard tests, Reverse Transcription-Polymerase Chain Reaction (RT-PCR) or virus isolation in C6/36 cell line or increased antibody titer by ELISA. The type of immune response towards the infection was determined by measurement of antibody titers on convalescent phases by HI test. The sensitivity of SD Bioline Dengue Duo was higher in primary infection [93.11% (95% CI: 92.7-100)] than in secondary infection [86.11% (95% CI: 82.7-100)]. The specificity of NS1 antigen detection kit was 100%. NS1 detection rate reduced over the course of the illness and was lowest on day 7 in both primary and secondary infection. However, decreased of NS1 detection was recovered by increased antibody detection. Thus, a combination of DENV NS1 antigen test and IgM and IgG test in the early stages of dengue infection should be conducted to obtain a more accurate early diagnosis, thus allowing appropriate treatment to be made and reducing mortality if the disease is allowed to progress to a severe stage.

Keywords: dengue, early diagnosis, NS1 antigen, RT-PCR

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