EVALUATION OF TWO IgM RAPID IMMUNOCHROMATOGRAPHIC TESTS DURING CIRCULATION OF ASIAN LINEAGE CHIKUNGUNYA VIRUS

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Abstract. Chikungunya is an emerging viral disease, which is clinically difficult to distinguish from dengue. Current laboratory methods to diagnose chikungunya infection, such as virus isolation, RT-PCR and ELISA, are not readily available in many clinical settings. In order to provide a rapid and easy method for the diagnosis of chikungunya infection, rapid immunochromatographic tests to detect chikungunya IgM have recently become commercially available. The sensitivity and specificity of the *OnSite*® Chikungunya IgM Rapid Test-Cassette and the SD Bioline CHIK IgM rapid test were evaluated in comparison to a capture ELISA. The sensitivity of the *OnSite* test was 20.5% while its specificity was 100%. The sensitivity of the SD Bioline test was 50.8% while its specificity was 89.2%. The sensitivity of the SD Bioline test increased with increasing CHIK IgM titers and with days of onset in samples collected before day 21 of illness. Increasing the reading time from the manufacturer's suggested time of 10 to 20 minutes significantly increased the sensitivity of the SD Bioline test to 68.2%, but did not significantly change its specificity.

Keywords: chikungunya virus, CHIK IgM ELISA, CHICK RT PCR, rapid test

INTRODUCTION

Chikungunya virus (CHIKV) is an alphavirus belonging to the Togaviridae family. It is the causative agent of chikungunya fever, a disease that is transmitted to humans primarily through *Aedes aegypti* and *Aedes albopictus* mosquitoes. CHIKV is endemic in 23 countries (Powers and Logue, 2007) and has been reported to cause human epidemics in many areas of Africa, Asia, and a limited area of Europe. Recently, there has been a resurgence in the numbers of CHIKV outbreaks, with reports in the Republic of Congo in 2000, La Reunion in 2005, India, Sri Lanka, Malaysia, and Gabon in 2006, Italy in 2007, and Singapore and Thailand in 2008. Phylogenetic analysis has demonstrated that CHIKV likely originated in Africa with subsequent importation into southern Asia and is clustered into three major

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