e - ISSN - 2348 - 2168
Print ISSN - 2348 - 215X

Acta Biomedica Scientia

Journal homepage: www.mcmed.us/journal/abs

EVALUATION OF RAPID IMMUNO-CHROMATOGRAPHY TEST AND ENZYME LINKED IMMUNO-SORBENT ASSAY FOR DETECTION OF DENGUE NS1 ANTIGEN IN CLINICALLY SUSPECTED DENGUE CASES AT A TERTIARY CARE HOSPITAL

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Article Info

Received 29/07/2014
Revised 16/08/2014
Accepted 19/08/2014

Keywords :-
Dengue infection, Rapid immuno-chromatography test (Rapid ICT) and enzyme linked immuno-sorbent assay (ELISA).

ABSTRACT

Background: Rapid diagnosis of Dengue virus infection is essential for the patient management. The rapid immuno-chromatography test (Rapid ICT) and enzyme linked immuno-sorbent assay (ELISA) for dengue NS1 antigen. ELISA is giving more accurate result as compared to Rapid ICT. Objective: To evaluate and compare rapid ICT and ELISA for dengue virus infection. Material and Methods: The laboratory records of clinically suspected dengue patients from January to August 2014 were analyzed retrospectively and results of NS1 antigen of dengue virus tested by rapid ICT and ELISA respectively and we compared the accuracy of both the tests. Both the rapid ICT and ELISA tests were performed by following the manufacturer's instructions. Result: ELISA showed excellent sensitivity as compared to rapid ICT. The rapid test detected NS1 antigen and 258 serum samples were positive out of 1106(23.33%).ELISA test detected NS1 antigen and 146 serum samples were positive out of 258(56.59%).The present study emphasizes the continuous sero-epidemiological surveillance for the effective dengue virus infection control programme. Conclusion: These tests should be a useful aid in confirming the clinical diagnosis of dengue virus infection. The rapid test will be particularly valuable in peripheral health setting while the ELISA has a place in central testing Laboratories.

INTRODUCTION

The Dengue viruses (Serotypes DEN 1,2,3 &4) are transmitted by blood sucking arthropods from one vertebrate host to another. The vector acquires a lifelong infection through the ingestion of blood from a viremic vertebrate host. The viruses multiply in the tissues of the arthropod without evidence of disease or damage.

The major arboviral diseases distributed worldwide are Yellow Fever, Dengue, Japanese B Encephalitis, Chikungunya, St. Louis Encephalitis, Western Equine Encephalitis, Eastern Equine Encephalitis, Russian Spring Summer Encephalitis, Westnile Fever and Sand Fly Fever [1]. The dengue is a flue like viral disease characterized by fever, rash, muscle and joint pain. It is spread by the bite of infected Aedes mosquitoes. The vector-borne disease and mosquitoes breeding sites are playing an important role in the transmission and propagation of dengue.

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MATERIAL AND METHODS

The study was conducted at a tertiary care Hospital from January to August 2014. Serum samples from suspected dengue cases were included in our study.

Aseptic precautions, two to five ml of blood samples were collected by venipuncture from dengue suspected cases and samples were transported to the Microbiology laboratory in vaccine carriers with duly filled requisition forms. The serum was separated by centrifugation of the whole blood sample and stored in the refrigerator at -20^{o}C [2-7]. The test kits used were Dengue Day1 rapid ICT by J Mitra and Co.Pvt Ltd Okhla Ind area Ph-1, New Delhi, India and Dengue NS1 Ag MICROLISA supplied by J Mitra and Co.Pvt Ltd Okhla Ind area Ph-1, New Delhi, India. The tests were performed strictly as per the manufacturers' instructions.

RESULTS

During eight months of study period, 1106 dengue suspected serum samples were analyzed by dengue NS1 rapid ICT, out of these 258 (23.33%) samples were positive for dengue NS1 antigen[Table No:1]. Similarly 258 dengue suspected serum samples were analyzed by dengue NS1 ELISA, out of these 146(56.59%) samples were positive for dengue NS1antigen[Table No: 2].The percentage of positivity is more in ELISA as compared to Rapid ICT.

Table 1. Dengue NS1 Rapid Immuno-chromatography test (Rapid ICT).

Samples Tested	Positive	Percentage	Negative
1106	258	23.33	848

Table 2. Dengue NS1enzyme linked immuno-sorbent assay (ELISA).

Samples Tested	Positive	Percentage	Negative
258	146	56.59	112

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