Screening for dengue infection in clinically suspected cases in a rural teaching hospital

Quader Ahmed Jalily, Gandham Pavani and A. J. Nandeshwar

Department of Microbiology, Mediciti Institute of Medical Sciences, A. P., India

ABSTRACT

Dengue is probably one of the most important arthropod borne viral disease in terms of human morbidity and mortality. The detection of Anti dengue IgM and Anti dengue IgG is a valuable tool for the rapid diagnosis of primary viral infection and secondary infection. Hence the present study was conducted to detect the prevalence of Dengue viral infection in clinically suspected cases and to analyse whether primary or secondary dengue infection is common in our hospital area by detecting IgM and IgG. Prospective study of Serum samples of 113 clinically suspected cases of dengue were studied for a period of 6 months in Central laboratory, Mediciti Institute of Medical Sciences, Ghanpur. Samples were screened for Anti dengue IgM and IgG antibodies by Rapid card QDx Dengue IgG/IgM Combo test, which is a immunochromatographic test for the qualitative detection and differentiation of dengue IgG and IgM. Among 113 clinically suspected cases analysed, 59 (52.2%) cases were seropositive for dengue infection. Among the seropositives, 2 (1.76%) were positive for Anti dengue IgM and 45 (39.8%) were positive for Anti dengue IgG. Both Anti dengue IgM & IgG were positive in 12 (10.6%). Most of the seropositives (42%) were of the age group 20 – 30 yrs and 51.2% of them were males. Secondary dengue infection is more common than primary infection in our hospital area. There was no difference in age and sex preponderance of dengue infection when compared to other areas of India.

Keywords: Dengue, Immunochromatographic test, Anti Dengue IgM, Antidengue IgG.

INTRODUCTION

Dengue is probably one of the most important arthropod borne viral disease in terms of human morbidity and mortality. The spectrum of disease ranges from self limited dengue fever to more severe forms of dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS).[1]. About 2.5 billion people are now at risk of dengue, and is the most rapidly spreading mosquito-borne viral disease. Further, the disease incidence has increased thirty-fold in the last 50 years.[2]. Various studies revealed increased incidence of dengue infection among young adults, with an increased prevalence in males. [3]. Distinguishing between Primary and Secondary dengue infection is important as secondary infections have been associated with more severe disease.[4]. The immune response in dengue infection varies depending upon whether the individual has a primary or a secondary dengue infection. [5]. Various studies revealed that Immunochromatographic card assay provides sensitive and specific detection of anti dengue antibodies and could prove useful in settings where microplate ELISA is impractical. [6]. In a primary dengue infection, the first antibody to be detected is the Anti dengue IgM. The Anti dengue IgG appears late i.e at the end of the first week and rises slowly. In case of a secondary dengue infection, Anti dengue IgG is detectable even in the acute phase of the disease i.e in the first week of fever and then rises for the following two weeks. [7]. Hence, the present study was conducted to detect the seroprevalence of dengue viral infection in clinically suspected cases, to know the age and sex related prevalence of Dengue infection and to analyse whether primary or secondary dengue infection is common in our hospital area by detecting IgM and IgG.
MATERIALS AND METHODS

Serum samples of 113 clinically suspected cases of dengue were studied for a period of 6 months from June 2012 to November 2012 in Central laboratory, Mediciti Institute of Medical Sciences, Ghanpur. Details like Age, Sex of the patient, Day of fever were taken from the patients. Samples were collected from the patients in the first week of fever. Samples were screened for Anti dengue IgM and IgG antibodies by Rapid card QDx Dengue IgG/IgM Combo test, which is an immunochromatographic test for the qualitative detection and differentiation of dengue IgG and IgM.

RESULTS

SEROPREVALENCE

AGE DISTRIBUTION IN SEROPOSITIVES
In the clinically suspected Dengue cases analysed, 52.2% cases were seropositive in our study. In a study conducted in Delhi by A Chakravarti et al, the seroprevalence was 30.15% which did not correlate with our study [3]. This suggests that our area has a high seroprevalence for Dengue infection. The increased prevalence of Dengue seropositivity in our rural teaching hospital confirms the spread of dengue to rural areas.

Among the seropositives, Anti Dengue IgG was positive in 39.8% of the cases, whereas Anti Dengue IgM was positive only in 1.8% of the cases. And both Anti Dengue IgM and IgG were positive in 10.6% of the cases. The high positivity of both IgM and IgG when compared to the positivity of IgM alone suggests that secondary dengue infection is more common in our hospital area. This was in accordance with other studies [1] and [8], where the seropositivity for IgM alone was 8.9% and 3.8% respectively and the seropositives for both IgM and IgG was 16.8% and 55.9% respectively.
The possibility of cross reaction with other Flaviviruses can be ruled out because most of these can be differentiated from dengue virus infection on clinical grounds and our samples were collected from clinically suspected cases.[4]. The secondary dengue infection being more common in our area suggests that our hospital area is an endemic area for Dengue infection.[5].

Among the seropositives, majority (42.3%) were of the age group 20 – 30 yrs. This correlated with the study [9], which reported that 15 -- 30 years age group was the predominant age group in dengue infected cases. Dengue fever was typically acknowledged to be a childhood disease and is an important cause of paediatric hospitalization in south east asia. But now there is an increasing incidence in the young adults and older age groups. This suggests an age shift of dengue infections indicating an epidemiological change.[10].

There was a male preponderance in the seropositives in our study. This correlated with the study [9] and [11]. The low prevalence among females could be because they stay at home and are less exposed to infection. And ours being a rural area, women are less likely to be taken for care at a hospital when ill or are taken at late stages of disease when no other options are available.[10].

**CONCLUSION**

Secondary dengue infection is more common than primary infection suggesting that our hospital area is an endemic area for dengue infection. The predominant age group in the seropositives was 20 – 30 yrs. There was a slight male preponderance in the seropositives. Our study shows an increased prevalence of Dengue infection in our hospital area

**REFERENCES**