ISSN: 0975-833X

Availableonlineathttp://www.journalcra.com

International Journal of Current Research
Vol. 11, Issue, 07, pp.5626-5627, July, 2019

DOI: https://doi.org/10.24941/ijcr.36090.07.2019

INTERNATIONAL JOURNAL OFCURRENTRESEARCH

RESEARCH ARTICLE

STUDY OF SEROPREVALENCE AND MOLECULAR EPIDEMIOLOGY OF DENGUE FEVER IN NORTHERN INDIA

[1*]Awadhesh Kumar, [2]Umesh Verma, [3]Chinmoy Sahu, [4]Dipesh Kumar, [5]Ismat Rehana, [6]Hemant Verma and [7]Dhole, T.N.

[1,4,5]Department of Microbiology, Mahamaya Rajkiya Medical College, Ambedkar Nagar, Uttar Pradesh, India
[2]Department of Community Medicine, Mahamaya Rajkiya Medical College, Ambedkar Nagar, Uttar Pradesh, India
[3]Department of Microbiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India
[6]Department of Microbiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India
[7]Hind Institute of Medical Sciences, Safedabad, Barabanki

ARTICLEINFO

Article History:
Received 29th April, 2019
Received in revised form
20th May, 2019
Accepted 15th June, 2019
Published online 31st July, 2019

Keywords
Dengue, PCR,
Typing.

ABSTRACT

Dengue is one of the major public health threats in India. Every year, blood samples with dengue-like illness are referred to us from different medical colleges and hospitals in Uttar Pradesh for the detection of dengue infection in them by PCR. A total of 198 samples were referred to us for that purpose. All the samples were tested for the detection of IgG antibodies and by antigen by ELISA method, followed by RT-PCR test for the detection of serotypes. 72 samples were ELISA positive. Out of 32 antigen positive samples, all were RT-PCR positive. None of the antibody positive samples were positive by PCR. All were typed as Dengue 3 by in-house PCR.

***Citation: Awadhesh Kumar, Umesh Verma, Chinmoy Sahu, Dipesh Kumar, Ismat Rehana, Hemant Verma and Dhole, T.N.*. 2019.** "Study of sink parameters in the field of phaseolus mungo under different treatments", *International Journal of Current Research*, 11, (07), 5626-5627.

INTRODUCTION

Dengue virus infection has emerged as a notable public health problem in recent decades in terms of the mortality and morbidity associated with it (World Health Organization, 1997). Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of India (George, 1975; Kaur, 1997; Gupta *et al.,* 2005) and abroad (Fakeeh, 2002). The case fatality rate in patients with dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) can be as high as 44%.(7) Hence early and rapid laboratory diagnosis of dengue is crucial. Appropriate clinical management can save the lives of DHF and DSS patients and mortality can be reduced to less than 1%.(8) It is also worthwhile for planning appropriate control strategies. The present paper reports the molecular epidemiology of dengue infections occurred in Northern India.

Study design: This was a cross-sectional study.

Setting: It was done in Sanjay Gandhi Post Graduate Institute of Medical Science, Lucknow, a tertiary care institute of Northern India.

***Corresponding author:* Awadhesh Kumar,**
Department of Microbiology, Mahamaya Rajkiya Medical College, Ambedkar Nagar, Uttar Pradesh, India.

Participants: Patients suspected of dengue or DHF or DSS were selected. Sample from all over the Uttar Pradesh were sent.

MATERIALS AND METHODS

Blood samples from 198 suspected cases from medicine and pediatric wards were collected during a period from January 2018 to December 2018. Sera were separated and subjected for antidengue IgG antibody testing by the ELISA method (Panbio) and also by Dengue antigen testing by ELISA method (Panbio). The sample were further processed by real time PCR (Genomes Diagnostics). The positive samples were further typed by in-house PCR.

RESULTS

Out of 198 cases, 40 (20%) were found to be positive for IgG. 32 (16%) were positive for Dengue antigen. The number of positivity by either antibody or antigen tests was highest in the month of November, i.e., followed by in October. From January 2018 to August 2018, out of 26 suspected sera, no sample was found positive for dengue tests.

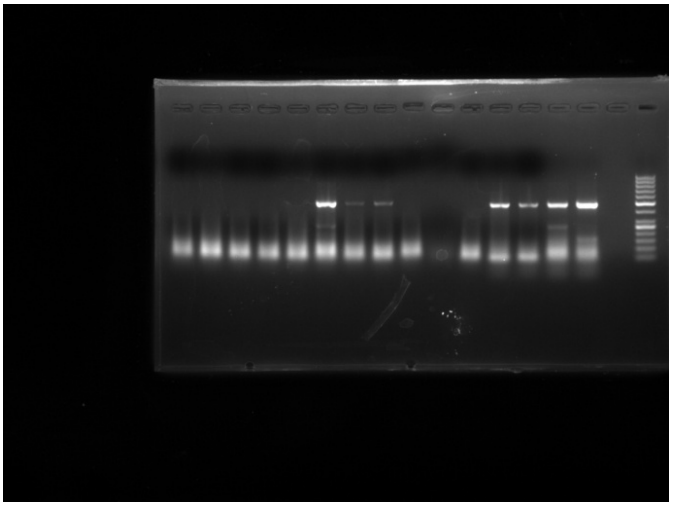

Fig.1. Dengue 3 gene product detected

The most affected age group was 15 to 30 year (31.71%), followed by the 5 to 9 year age group, (19.51%). The male-to female ratio was found to be 2.9:1. All the samples of that were positive by Dengue antigen were also positive by real time PCR. None of the samples that were positive by antibody ELISA were positive by real time PCR. The typing was done by in-house PCR. All the samples were positive for Dengue-3 virus (Figure 1). No other Dengue viruses were detected.

DISCUSSION

In the present study, 36% patients were serologically positive for dengue infection. The dengue infection from Nagpur was reported earlier in 1965 (Rodrigues *et al.,* 1979). In Maharashtra, the dengue outbreak was reported from Parbhani (Mehendale *et al.,* 1991) and Dhule, (Padbidri *et al.,* 1991). In India, the outbreak of dengue was reported from Bangalore (George, 1975), Punjab (Kaur *et al.,* 1997), and Delhi (Gupta *et al.,* 2005). The present dengue cases occurred during the postmonsoon season, i.e., from September to November only, which is similar to most of the previous outbreaks in India (Kaur *et al.,* 1997; Gupta, 2005). It may be because this season is very favorable for high breeding of the vector, i.e., Aedes aegypti**.** This seasonal outbreak of disease transmission is very important at local level for effective control measures. The age group of 15-30 years was highly affected with dengue which is consistent with the outbreak in Delhi in 2003 (Gupta, 2005). In some parts of the world, it is mainly a pediatric public health problem (Gubler, 1998). It is attributed to the changes in locations where disease transmission takes place. The higher prevalence of dengue infection was noted among male patients than female patients unlike other reports in which both the sexes were equally affected (Mehendale *et al.,* 1981). The male-to-female ratio was 2.9:1 which is comparable with the study in Delhi (Gupta *et al.,* 2005).

Male preponderance and the age group of 15-30 years indicate more transmission of dengue infections at work sites. Studies about the molecular typing of dengue are rare in India. One study in Kolkata reported that 7 samples (9.5%) had the monotypic infection with DENV-1, 45 samples (60.8%) had the monotypic infection with DENV-2 and 22 samples (29.7%) had the monotypic infections with DENV-3 serotype (13). However, the molecular epidemiology of Dengue is changing. Our study reported mainly the Dengue-3 virus in contrast to the previous study.

REFERENCES

Chalupa P., Kolarova M., Sojkova N., Januska J. 2003. Diagnosis of imported Dengue fever in the Czech Republic. *Dengue Bull*. 27:34–8.

Chaturvedi UC, Shrivastava R. Dengue haemorrhagic fever: A global challenge. Indian J Med Microbiol. 2004;22:5–10.

Fakeeh M, Zaki AM. Dengue in Jeddah, Saudi Arabia, 1994-2002. Dengue Bull. 2003;27:13–8.

George S., Soman RS. 1975. Studies on Dengue in Bangalore City: Isolation of virus from Man and Mosquitoes. *Indian J Med Res.,* 63:396–401.

Gubler DJ. 1998. Dengue and Dengue haemorrhagic fever. *Clin Microbiol Rev.,* 11:480–96.

Gupta E., Dar L., Narang P., Srivastava VK., Broor S. 2005. Serodiagnosis of dengue during an outbreak at a tertiary care hospital in Delhi. *Indian J Med Res.,* 121:36–8

Kaur H., Prabhakar H., Mathew P., Marshalla R., Arya M. 1997. Dengue haemorrhagic fever outbreak in October-November 1996 in Ludhiana, Panjab, India. *Indian J Med Res.,* 106:1–3.

Mehendale SM., Risbud AR., Rao JA., Banerjee K. 1991. Outbreak of Dengue fever in rural areas of Parbhani district of Maharashtra, India. *Indian J Med Res.,* 93:6–11.

Padbidri VS., Mahadev PV., Thakre JP., Pant U., Illkal MA., Varghese GG. *et al.,* 1996. Virological and entomological investigations of an outbreak of Dengue fever in Dhule district, Maharashtra. *Indian J Med Microbiol*., 14:25–32.

Perez JG., Clark GG., Gubler DJ., Reiter P., Sanders EJ., Vorndam AV. 1998. Dengue and Dengue haemorrhagic fever. Lancet. 352:971–6.

Rodrigues FM., Patankar MR., Banerjee K., Bhatt PN., Goverdhan MK., Pavri KM. *et al.,* 1972. Etiology of the 1965 epidemic of febrile illness in Nagpur City, Maharashtra state, India. Bull WHO. 46:173–9.

Sarkar A., Taraphdar D. and Chatterjee S. 2012. Molecular Typing of Dengue Virus Circulating in Kolkata, India in 2010," *Journal of Tropical Medicine*, vol. 2012, Article ID 960329, 5 pages.

World Health Organization, 1997. Dengue haemorrhagic fever: Diagnosis, Treatment, Prevention and Control. 2nd ed. Geneva: *World Health Organization*. pp. 12–23.

****