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CHIKUNGUNYA AS A RE-EMERGING EPIDEMIC: A SEROLOGICAL PERSPECTIVE

KEYWORDS

Dengue, Chikungunya, ELISA, NS1 antigen.

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ABSTRACT In view of atypical clinical manifestations, the diagnosis of both Dengue and Chikungunya virus is often clinical with serological diagnosis being the mainstay for definitive diagnosis of these diseases. MATERIALS AND METHODS The samples of patients having chief complaint of acute fever clinically diagnosed as dengue fever were tested for dengue for both NS1 antigen and IgM antibody by ELISA. All the samples negative for dengue were then subjected to ELISA for Chikungunya IgM antibody. RESULTS AND OBSERVATIONS Out of 1921 samples tested in 2015, 1231 were positive for dengue and 17 were positive for Chikungunya. In 2016, out of 2410 samples tested, 652 were positive for dengue and 63 were positive for Chikungunya. CONCLUSION Patients presenting with complaint of acute febrile illness, clinically suspected as Dengue fever were diagnosed with other possibilities of AFI as well like Chikungunya. The optimal use of microbiological laboratory services aiding the diagnostic process is required.

INTRODUCTION

Diseases due to arboviruses are one of the major public health problems worldwide. Out of many arboviruses, Chikungunya virus (CHIKV) and Dengue virus (DENV) are the two most rapidly spreading and medical health important.[1] Chikungunya is an arboviral infection, transmitted by the Aedes aegypti mosquito, caused by the Chikungunya virus, which is a single-stranded RNA virus of family Togaviridae and genus Alphavirus.2 Dengue is an acute febrile illness caused by dengue virus (DENV) - an arthropod-borne virus of the family Flaviviridae. Four distinct serotypes have been described for DENV - serotypes 1-4.3 Both the diseases have some common signs and symptoms which include fever with chills, swelling of major and minor joint with pain, difficult to move limbs, nausea, headache and vomiting and sometime appearance of rashes. To date, both CHIK and DENV are circulating in India.[1]

In view of atypical clinical manifestations and in the absence of any localizing signs, the diagnosis of both Dengue virus and Chikungunya virus is often clinical with serological diagnosis being the mainstay for definitive diagnosis of these diseases. Missed diagnosis or wrong diagnosis of these infections also poses a greater impact in terms of complications.

Our study particularly draws attention to understand emerging arboviral infections and emphasizes the need for a multidimensional diagnostic approach in such clinical situations.

MATERIALS AND METHODS

The Prospective study was conducted in the department of Microbiology, Government Medical College, Amritsar over a period from January 2015 to October 2106. The samples presenting to Microbiology department of patients having chief complaint of acute fever clinically diagnosed as dengue fever were included in the study. The samples were tested for dengue fever for both NS1 antigen and IgM antibody by ELISA.

All the samples negative for dengue fever were then subjected for testing of IgM antibody for Chikungunya virus by ELISA.

The ELISA kits used in the study are listed below:
1. Dengue Early ELISA (Dengue fever): Panbio4
2. NIV Dengue IgM Capture ELISA (Dengue fever): NIV, Pune5
3. Chikungunya IgM ELISA (Chikungunya virus): NIV, Pune6

The tests were performed according to instructions given in the manual provided with the kit.

Seroprevalence of Chikungunya fever in patients clinically presenting with dengue fever was then recorded.

RESULTS AND OBSERVATIONS

Out of 1921 samples tested in 2015 for Dengue virus, 1231 were positive for Dengue and 17 were positive for Chikungunya. Whereas in 2016 till October, out of 2410 Samples tested for Dengue 652 were positive for Dengue and 63 were positive for Chikungunya.

Table 1: Percentage of positive samples of Dengue and Chikungunya in 2015 and 2016.

Year	Total samples	Dengue positive (% age)	Chikungunya positive (% age)
2015	1921	1231(64.08%)	17(0.88%)
2016 (till October)	2410	652(27.05%)	63(2.6%)

DISCUSSION

Keeping in view the overlapping spectrum of clinical presentation and various other factors including season, aim of the present study was to serologically evaluate Chikungunya cases amongst the cases of acute febrile illness provisionally diagnosed as Dengue fever. Since isolation rate of the causative

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organism from clinical specimens is low due to low suspicion index by clinicians, prior indiscriminate use of antibiotics and difficult and expensive isolation techniques, so currently, serological techniques remain the cornerstone of diagnostics

In 2015, a total of 1921 samples were tested in the microbiology department for dengue virus from Amritsar district. Cases were positive for Dengue came out to be 1231 in number. The negative sera was then tested for Chikungunya virus, out of which 17 cases were found to be positive for Chukungunya IgM antibody by ELISA. Keeping in view the common spectrum of presentation of both the etiologies, IgM ELISA for Chikungunya was put up in year 2016 as well. Surprisingly out of 2410 Samples tested for dengue from January 2016 to October 2016, 652 were positive for dengue and 63 were positive for Chikungunya amongst Dengue negative sera. Sero-prevalence for Chikungunya came out be 0.88% in year 2015 and 2.6% in 2016 (Table -1).

CONCLUSION

Our study highlighted the fact that patients presenting to hospital with complaint of acute febrile illness, clinically suspected as Dengue fever were diagnosed with other possibilities of acute febrile illness as well like Chikungunya. These cases are difficult to differentiate clinically as is emphasized by this study. Therefore, delay in appropriate therapy can be devastating. The need stands for quick, simple, robust, reliable and affordable diagnostic tests and to amply, introduce and implement these tests, paying special attention to areas with limited health care facilities and to outbreaks.[7] The optimal use of microbiological laboratory services aiding the diagnostic process is also required.[8]

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