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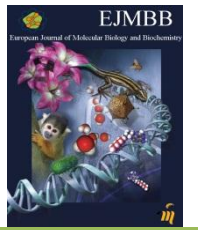

THE PREVALENCE OF ARBOVIRAL INFECTION MAINLY JAPANESE B ENCEPHALITIS IN AND AROUND BELLARY DISTRICT KARNATAKA

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ABSTRACT
Background: An arbovirus is one that multiplies in a blood sucking arthropod and is transmitted by the bite to a vertebrate host. Objective: To know the prevalence of Japanese B encephalitis arboviral infection in and around Bellary district. Material and Methods: The laboratory records of clinically suspected Japanese B encephalitis patients from January 2009 to December 2011were analyzed retrospectively and results of Ig M anti-Japanese B encephalitis antibodies tested by Ig M capture enzyme linked immunosorbant assay (Mac ELISA. A total of 706 Japanese B encephalitis suspected cerebrospinal fluid samples and 491 serum samples were analyzed, out of which 31(4.39%) in cerebrospinal fluid samples and 20 (4.05%) in serum samples were found positive for Japanese B encephalitis virus infection. Here maximum cases were found in 2009 (7.09%). The present study emphasizes the continuous sero-epidemiological surveillance for the effective arboviruses mainly Japanese B encephalitis control programme.

INTRODUCTION

The arboviruses 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. Some arboviruses are maintained in nature by transovarian transmission in arthropods [Figure No: 1]. The major arboviral diseases distributed worldwide are yellow fever, dengue (DEN), Japanese B encephalitis (JE), chikungunya (CHIK), St. Louis encephalitis, western equine encephalitis, eastern equine encephalitis, Russian spring summer encephalitis, Westville fever and sand fly fever[1]. The Japanese B encephalitis is characterized by fever, head ache, vomiting, altered sensorium, convulsions, weakness and aphasia. Encephalitis is an inflammation of the brain, which is a reaction of the body's immune system to virus invasion. It is spread by the bite of infected Culexmosquitoes [1, 2]. The vector-borne diseases and mosquitoes breeding sites are playing an important role in the transmission and propagation of Japanese B encephalitis.

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MATERIAL AND METHODS

The study was conducted at a tertiary care Hospital from January 2009 to December 2011. A total 706 cerebrospinal fluid (CSF) and 491 serum samples from suspected Japanese B encephalitis cases were included in our study. Aseptic precautions, two to five ml of blood samples were collected by venipuncture and two to three ml of CSF was collected by lumbar puncture by the pediatrician for suspected JE cases. Both 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. The CSF and serum samples were transferred to sterile aliquots, labeled with the particulars of the patient and stored in the refrigerator at -20^{o}C [2]. The test kits used were JE Ig M

antibody capture ELISA supplied by Group leader, Arbovirus Diagnostics, National Institute of Virology, Pune, India. The JEV CheX, X Cyton Diagnostics, A product of Research of National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore and King George Medical College, Lucknow and National Institute of Immunology, New Delhi, India. The tests were performed strictly as per the Manufacturers' instructions.

RESULTS

During the three years of study period, A total 706 JE suspected CSF and 491 serum samples were analyzed, out of these 31(4.39%) CSF samples and 20 (4.05%) serum samples were positive for JE virus infection [Table 1].The prevalence of JE is high in 2009 (7.09%) [Table 2]. Male to Female ratio of fever diagnosis of JE suspected cases is 1.2 [Table 3] and majority of cases belong to age group more than 15 years [Table 4].

Table 1. Distribution of Japanese B Encephalitis results according to specimen

Specimen	Suspected	Confirmed	%	Flaviviral infection	%	Negative
CSF	706	31	4.39	4	0.57	671
Serum	491	20	4.05	0	0	471

Table 2. Distribution of Japanese B Encephalitis, suspected and confirmed cases according to year

Year	Japanese B Encephalitis		
	Suspected	Confirmed	%
2009	437	31	7.09
2010	461	03	0.65
2011	299	17	5.69

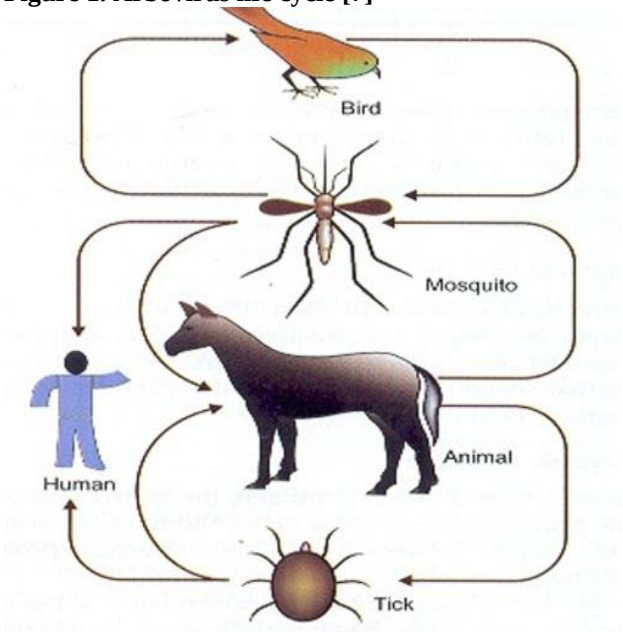
Table 3. Distribution of fever diagnosis according to Gender of the patients

Gender	No. of Cases	Japanese B Encephalitis
Male	2168	646
Female	1811	551
Total	3979	1197

Table 4. Distribution of fever diagnosis according to age of the patients

Age in Years	No. of Cases	Japanese B Encephalitis
Less than 5	590	499
5 to 10	379	217
10 to 15	738	330
More than 15	2272	151

Figure 1. Arbovirus life cycle [7]



DISCUSSION

The serological study indicated that arthropod-borne viruses studied were prevalent in and around Bellary district, although the prevalence differed according to age, sex, geographic location and the individual virus. The geographical distribution had a significant influence on the prevalence of antibodies to viruses. This might be explained by the possible impact of ecological characteristics of the areas on the natural cycles of the arthropod-borne viruses under consideration [3]. Japanese B Encephalitis is one of the arthropod-borne viral encephalitis and responsible for most of the epidemic viral encephalitis. According to one study, out of 82 CSF samples, 19 (23.17%) were positive for JE and 12 (14.63%) were positive for flaviviral infection. Out of 63 serum samples tested 10 (15.87%) were positive for JE and 11 (17.46%) were positive for flaviviral infection [2]. In our study, out of 706 CSF samples 31 (4.39%) were positive for JE and 4 (0.57%) were positive for flaviviral

infection. Out of 491serum samples tested, 20 (4.05%) were positive for JE.

CONCLUSION

Among arboviral infections mainly Japanese B Encephalitis is common in tropical and subtropical regions. The vector (Culex mosquitoes) control is important preventive measure in community. The serological results (Ig M antibody capture ELISA) clearly establish the etiology.

Key message: The prevention is better than cure.

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