

Clinical And Socio-Demographic Profile of Japanese Encephalitis in Children Admitted in A Tertiary Care Hospital.

Gautam Medhi¹, Himadri Das², Rukeya Begum³

Dept Of Pediatrics ,Gauhati Medical College And Hospital, Assam, India

Abstract: Japanese encephalitis is a mosquito born encephalitis caused by a group B arbovirus (flavivirus) and transmitted by culicine mosquito. Japanese encephalitis is the leading cause of acute encephalitis syndrome in children. An estimated 50000 cases of Japanese encephalitis occur globally each year with 10000 deaths and 15000 disabled. This study was undertaken to determine the clinical and socio-demographic profile of Japanese encephalitis in children admitted in Gauhati medical college and hospital. A total number of 196 acute encephalitis cases were admitted during the study period. Out of 196 cases Ig M ELISA for Japanese encephalitis was positive in 31(15.8%) number of cases. Among the JE positive cases 17(55%) were male and 14(45%) were female. The age group mainly affected was between 5 to 11 years. Most of the cases were not vaccinated against Japanese encephalitis (70%). The most common clinical presentation were fever, seizure and altered sensorium. Outcome at discharge was recorded in 25 cases as 6 patients left against medical advice during the hospital stay. Total of 22 patients were discharged and 3 expired. Out of the 22 discharged cases, 12 (54%) were discharged without neurological sequelae and 10 (46%) were discharged with neurological sequelae.

Keywords: Japanese encephalitis, arbovirus, demography,

I. Introduction

Japanese encephalitis (JE) is a mosquito born encephalitis caused by a group B arbovirus (flavivirus) and transmitted by culicine mosquito. It is a zoonotic disease i.e. infecting mainly animals and incidentally men. Recognition of JE based on serological survey was first made in 1955 in Tamil Nadu. Subsequent surveys carried out by National Institute of Virology, Pune indicated that half of population of south India had neutralizing antibody to the virus. In the year 2003, there has been upsurge of JE in Assam, Andhra Pradesh, Bihar, Karnataka, Haryana, Maharashtra, Tamil Nadu and Uttar Pradesh. Japanese encephalitis is the leading cause of acute encephalitis syndrome children. An estimated 50000 cases of Japanese encephalitis occur globally each year with 10000 deaths and 15000 disabled. As per National Health Profile 2013, DGHS, Ministry of health and family welfare, New Delhi, Assam reported a total 1388 cases of Acute encephalitis syndrome with 272 deaths [1]. The majority of the cases (about 85%) occur in children less than 15 years of age. Most JE cases are asymptomatic. The virus targets mainly the central nervous system. No specific treatment is available and treatment is essentially supportive and symptomatic to prevent neurological sequelae. Under this backdrop this study is undertaken to determine the clinical and socio-demographic profile of Japanese encephalitis in children admitted in Gauhati medical college and hospital.

II. Materials and method

The study was a prospective study carried out over a period of one year between may 2015 to april 2016 with the objective to determine the clinical and socio-demographic profile of Japanese encephalitis in children admitted in Gauhati medical college and hospital and to determine the outcome of Japanese encephalitis in children admitted in Gauhati medical college and hospital. All the hospitalized cases of acute encephalitis syndrome was included in the study.

Who case definition of AES was used i.e. Person of any age with acute onset of fever and a change in mental status with /without

- a) new onset seizures (except febrile seizures)
- b) irritability, somnolence and unexplained abnormal behavior.

Serum and csf was tested for the presence of IgM Elisa for Japanese encephalitis. Clinical and sociodemographic profile was recorded in a predesigned proforma after written consent from the parents. Laboratory parameter namely csf total wbc counts, DLC, protein, LDH and glucose was recorded. Outcome was recorded at the time of discharge as recovered completely/ recovered with neurological sequelae /death. The study was approved by institutes ethical committee. Results were presented in the form of percentage and mean \pm SD.

III. Results

A total number of 196 acute encephalitis cases were admitted during the study period. Out of 196 cases, Ig M ELISA for Japanese encephalitis was positive in 31(15.8%) number of cases. Among the JE positive cases 17(55%) were male and 14(45%) were female. The age group mainly affected was between 5 to 11 years. Youngest child to be affected was 5 months old. All the cases were from rural Assam. According to modified Kuppaswamy scale, 8(26%) cases belonged to upper lower socioeconomic status and 23(74%) to lower socioeconomic status. Most of the cases were not vaccinated against Japanese encephalitis (70%). Also some (30%) didn't know about their vaccination status as immunization card was not present with them.

Table below showing demographic profile of the Japanese encephalitis patients

Parameter	Number of patients	Percentage
Age		
<1 year	2	6.4%
1 to 5 years	10	32.25%
5 to 12 years	19	61.29%
Sex		
Male	17	(55%)
Female	14	(45%)

The clinical profile of the cases of Japanese encephalitis is given in the table below

Clinical feature	Number	Percentage%
Fever	31	100%
Altered sensorium	24	77%
Seizure	24	77%
Headache	09	29%
Weakness	15	48%
Unconsciousness	12	39%

The laboratory profile of the JE positive cases were as follows: the CSF WBC counts of the JE patients ranged from $3/\text{mm}^3$ to $80/\text{mm}^3$, the mean being $12 \pm 7.07/\text{mm}^3$. The WBC counts in the CSF was high ($>5/\text{mm}^3$) in 25 (80%) JE cases. It was predominantly lymphocyte in nature. The mean CSF protein and glucose level were $51.0 \pm 25.4\text{mg/dL}$ and $54.2 \pm 20.5 \text{mg/dL}$, respectively. Amongst them 22 (71%) had elevated ($>40\text{mg/dL}$) level of protein.

Outcome at discharge was recorded in 25 cases as 6 patients left against medical advice during the hospital stay. Total of 22 patients were discharged and 3 expired. Out of the 22 discharged cases, 12 (54%) were discharged without neurological sequelae and 10 (46%) were discharged with sequelae. The neurological sequelae mainly included quadriplegia, paraparesis, hemiparesis, seizure disorder and extra pyramidal movement disorder.

IV. Discussion

In our study, around 15.8% of the admitted AES cases were diagnosed to be Japanese encephalitis. A similar study carried out in Cuddalore district of Tamil Nadu reported 29.3% of the admitted AES cases to be Japanese encephalitis [2]. A similar study carried out in Dibrugarh district of Assam reported 30% of the admitted AES cases to be Japanese encephalitis [3]. Elevated WBC counts was seen in ($>5/\text{mm}^3$) in 80% JE cases and elevated protein in 71% of the JE positive cases. It was predominantly lymphocyte in nature. A similar study, carried out in Dibrugarh district of Assam reported 77% of the admitted AES cases to have elevated WBC counts [3] and 52.5% had elevated ($>40\text{mg/dL}$) level of protein. In a study by Avabratha et al elevated cell count was seen in 45.06% and protein in 74.67% of the cases [4].

In our study, fever, altered sensorium and seizure were the most common manifestations of the JE positive cases. Similar observations were seen in studies by K.M.Chen et al [5] and Avabratha et al [4].

In our study most of the JE positive cases were not vaccinated against Japanese encephalitis (70%). Also some (30%) didn't know about their vaccination status as immunization card was not present with them. A similar study carried out in Dibrugarh district of Assam reported 80.5% of the Japanese encephalitis cases were not vaccinated [3]. Mortality in our study was 9.6% while in the study carried out in Dibrugarh was 14.7%.

V. Conclusion

Japanese encephalitis is a major cause of Acute encephalitis syndrome in India. The most common clinical presentation is fever, seizure and altered sensorium. The treatment is mainly supportive and symptomatic, and no definitive treatment is available. In our state, Assam JE vaccination with the live vaccine (SA-14-14-2) has been included in the routine immunization programme as per national immunization schedule. This will go a long way in combating this menace of Japanese encephalitis and in saving the lives of the

children. Through this study we seek the interest of the global community to come out with measures to fight this arboviral borne encephalitis.

Funding: none

Conflict of interest: none stated

References

- [1]. K Park, preventive and social medicine, 22nd edition, page 259-260.
- [2]. L. Kabilan, S. Ramesh, S. Srinivasan, V. Thenmozhi, S. Muthukumaravel, and R. Rajendran, "Hospital- and laboratory-based investigations of hospitalized children with central nervous system-related symptoms to assess Japanese encephalitis virus etiology in Cuddalore district, Tamil Nadu, India," *Journal of Clinical Microbiology*, vol. 42, no. 6, pp. 2813–2815, 2004.
- [3]. G. Kakoti, P. Dutta, B. R. Das, J. Borah, J. Mahanta, "clinical profile and outcome of Japanese encephalitis in children admitted with acute encephalitis syndrome", *biomed research international*, vol 2013, article id 152656, pg 1-6, 2013.
- [4]. K. S. Avabratha, P. Sulochana, G. Nirmala, B. Vishwanath, M. Veerashankar, and K. Bhagyalakshmi, "Japanese encephalitis in children in Bellary Karnataka: clinical profile and Sequelae," *International Journal of Biomedical Research*, vol. 3, no. 02, pp. 100–105, 2012.
- [5]. K.-M. Chen, H.-C. Tsai, C.-L. Sy et al., "Clinical manifestations of Japanese encephalitis in southern Taiwan," *Journal of Microbiology, Immunology and Infection*, vol. 42, no. 4, pp. 296–302, 2009.
- [6]. World Health Organization, "Japanese encephalitis vaccines," *The Weekly Epidemiological Record*, vol. 81, pp. 331–340, 2006.
- [7]. D. W. Vaughn and C. H. Hoke Jr., "The epidemiology of Japanese encephalitis: prospects for prevention," *Epidemiologic Reviews*, vol. 14, pp. 197–221, 1992.
- [8]. A. Henderson, C. J. Leake, and D. S. Burke, "Japanese encephalitis in Nepal," *The Lancet*, vol. 2, no. 8363, pp. 1359–1360, 1983.