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# JAPANESE ENCEPHALITIS: A CASE REPORT

**KEY WORDS:** Japanese encephalitis

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**ABSTRACT**

Japanese encephalitis is an infection of central nervous system. It is caused by the JE virus (JEV) which belongs to the family of Flavivirus, and is more common in the rural parts of Asia. The clinical manifestations of JEV are fever, headache, vomiting followed by altered mental status, seizures, flaccid paralysis, extrapyramidal sign and cranial nerve involvement. The diagnostic tests include serum IgM against JEV and CT scan. However only supportive management can be given because there is a lack of specific antiviral therapy. The current case report is aimed to present a 17 years old female diagnosed with Japanese encephalitis at a tertiary medical centre of Madhya Pradesh.

## INTRODUCTION

Japanese encephalitis is a common human endemic encephalitis occurring in various parts of the world including India. Usual clinical presentation is an acute febrile illness associated with behavioral abnormalities, altered sensorium, convulsion, abnormal movements, meningeal sign and focal neurodeficits in various combinations. It has a high rate of mortality and morbidity accounting for 20-24% and 20-30% of affected persons respectively (Thongchareon, 1989). In 2005, a Japanese encephalitis epidemic occurred in the Indian states of Uttar Pradesh and Bihar and throughout Nepal, resulting in more than 5000 cases and approximately 1000 deaths (Kumar R et al, 2006). Usually the cortex and the deeper gray matter such as, thalamus, basal ganglia and brainstem nuclei including anterior horn cells of cervical cord are affected (Kalita J & Misra UK, 2002). Japanese encephalitis virus, a flavivirus (single-stranded ribonucleic acid [RNA]), represents the most significant etiology of arboviral ecephalitis worldwide. Japanese encephalitis virus belongs to the Japanese encephalitis serocomplex, which is composed of 9 genetically and antigenically related viruses of the *Flaviviridae* family. JE serocomplex flaviviruses include Alfuy virus, Cacipacore virus, Japanese encephalitis virus, Koutango virus, Murray Valley encephalitis virus, Saint Louis encephalitis virus, Usutu virus, West Nile virus including Kunjin virus, and Yaounde virus (Lobigs M & Diamond M, 2012). The diagnosis of Japanese encephalitis is mainly done through imaging and serological tests. But the imaging reports might be the most helpful for suspecting the JEV infection rather than seriological report findings which often get delayed to be obtained.

## CASE REPORT

A 17 years old farmer female residing in a village in Umariya district of Madhya Pradesh reported to the emergency department of our tertiary healthcare centre with the complaint of moderate to high grade fever since 15 days, altered sensorium since three days and loss of consciousness since one day and history of focal seizure. On physical examination, the patient had signs of meningeal irritation and Glasgow Coma Scale (GCS) was E2V1M4 and pupil was mid constricted. On the basis of history and clinical examination, provisional diagnosis of meningoencephalitis was made. The CT scan was suggestive of ill-defined nonenhancing hypodensities in bilateral internal capsules, bilateral anteromedial thalami, left medial temporal parenchyma, bilateral medial cerebellar parenchyma. Cerebral edema was also noted. Cerebrospinal fluid (CSF) examination was suggestive of protein 26 mg/dL, sugar 47 mg/dL and no cellular elements were found. CSF was negative for herpes simplex virus (HSV) encephalitis and positive for IgM antibody ELISA for JE. MRI was indicative of multifocal areas of T2 and FLAIR bright central and both sided lesions at gangliocapsular region and pericallosal and deep frontal regions as well as in left medial temporal lobes and dorsal pons. The patient was hence admitted in the ICU on 10/10/2018 and supportive management was given. However the patient did not respond to the given treatment and died after 34 days of admission to ICU.

## DISCUSSION

JE is a neurological disease caused by a mosquito-borne JEV. Because of the enzootic nature of its transmission, JEV, unlike smallpox and polio, cannot be completely eliminated (Yun S.I., 2014). Reporting of JE cases depends on the quality of health information systems and the ability to clinically and serologically diagnose the disease. JE is often confused with other forms of encephalitis. Differential diagnosis should therefore include other encephalitides (e.g., conditions caused by other arboviruses and herpes viruses) and infections that involve the central nervous system (e.g., bacterial meningitis, tuberculosis, and cerebral malaria) (Soloman T et al,2000). Diagnosis of Japanese encephalitis in a patient of endemic region depends on clinical features and radiological changes in the thalamus and basal ganglia, supported by CSF abnormalities and increased titre of antiviral antibody in the convalescent serum. As the initial viremia is very short lasting, a positive viral culture is less likely and at the same time dependence on serological evidence of the JE unduly delays the diagnosis also. In these circumstances, radiological changes in CT/MRI of brain may be very much helpful as an important diagnostic criterion even in early stage of the JE and could guide physician in the right direction (Sarkar N. et al,2005). As there are no direct antiviral drugs available, only supportive management can be given as a treatment option for patients with JEV. Suramin, a drug used to treat trypanosomal disease, and diethyldithiocarbamate have shown reasonably good antiviral efficacy against Japanese encephalitis virus in vitro (Saxena SK, 2003). Novel nonparenteral vaccination approaches such as intranasal inoculation using mouse brain–derived inactivated Japanese encephalitis virus appear to have some potential for inducing immunogenicity but will likely require more effective adjuvant products (Harakuni T, 2009).

## CONCLUSION

Japanese encephalitis is one of the leading viral infections worldwide with maximum outbreaks in eastern and southern Asia. There is a need to control the emergence of JE through effective vaccinations with appropriate diagnosis at the earliest. The drug management needs to be worked upon to reduce the high mortality rates due to Japanese encephalitis.

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