

Occurrence of Herpes Simplex Virus Encephalitis at Jaipur

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Abstract

Introduction: Herpes Simplex Encephalitis (HSE) is the most common cause of fatal sporadic acute encephalitis occurring worldwide. In India, HSE appears to be under diagnosed, probably due to lack of awareness and lack of diagnostic facilities.

Materials and Methods: A total of 50 CSF samples were tested for HSV IgM antibody using ELISA kit.

Results: Out of 50 CSF samples, 12% were positive for HSV IgM ELISA. Positivity in males was 17.85% while in females was 4.54%. Positivity was higher in adults 13.79% as compared to children 9.52%. All patients presented with complaints of fever along with altered sensorium (100%) following seizures (80%), headache (25%) and vomiting (18%).

Conclusion: HSE is the only form of sporadic encephalitis which has a specific antiviral therapy i.e. acyclovir. Rapid early diagnosis of HSE by ELISA has helped in initiating treatment and helps reduce mortality and morbidity.

Keywords: HSV, AVE, ELISA, acyclovir

Introduction

Herpes Simplex Encephalitis (HSE) is the most common cause of fatal sporadic acute encephalitis occurring worldwide, contributing to 10-20% cases of viral encephalitis.^(Levitz et al 1998) Exact incidence of this disease is difficult to estimate, because only few patients with severe disease report to hospital whereas mild and self-limiting cases usually go unrecognized.^(Panagariya et al 2001)

HSV is DNA virus and member of family Herpeviridae. HSE can be caused Herpes Simplex Virus type 1 (HSV- 1) and type 2

(HSV- 2) virus. More than 90% of the HSE cases are caused by HSV-1 and 7% are caused by HSV-2.^(Rahman et al 2011)

There is bimodal age distribution of HSE, with one third of cases occurring in those less than 20 years old and two third cases in aged 50 years or more.^(Gambhir et al 2001) As per global data 2-4 individuals per million populations per year get affected by this disease.^(Panagariya et al 2001)

In India, HSE appears to be under diagnosed, probably due to lack of awareness and lack of diagnostic facilities.^(Panagariya et al 2001) Data from

epidemiological studies for the virus are not available in many parts of the country, due to lack of diagnostic facility.^(Rahman et al 2011)

Routine CSF examination is important in establishing the diagnosis of encephalitis but does not identify the causative viral agent. Moreover, normal CSF findings can be seen early in the disease. Antibody detection in serum and CSF samples can help in rapid diagnosis of HSE.^(Panagariya et al 2001)

The prognosis of the disease has been significantly improved by acyclovir treatment, provided that the drug is administered very early after the onset of symptoms.^(Whitley et al 1982) Early diagnosis is, therefore, crucial for predicting outcome. Though Polymerase Chain Reaction (PCR) for HSV DNA performed on CSF is more sensitive for the diagnosis of HSE and can be positive from the first day of the disease and can be very useful for clinical decision making but is expensive and facility is not available at all centres.^(Cingue et al 1996) Early diagnosis and timely initiation of specific antiviral therapy, acyclovir can help in proper management of the patient.^(Panagariya et al 2001)

However, large scale serological and epidemiological studies for HSE have not been reported from this part of the country and only limited data is available from Rajasthan.^(Panagariya et al 2001) Therefore prevalence of cases of viral encephalitis and proportion of HSE are difficult to estimate. Early diagnosis of HSE is essential because early introduction of antiviral therapy can significantly decrease mortality and morbidity associated with this disease.^(Panagariya et al 2001)

Thus the present study was planned to study the occurrence of HSE in patients attending SMS and attached group of hospitals at Jaipur

Materials & methods

Study design: This was a prospective study.

Setting: This study was carried out on samples received at the Grade 1 DHR/ICMR Viral Research Diagnostic Laboratory, Advanced Basic Science and clinical research laboratory, Department of Microbiology and Immunology, Sawai Man Singh Medical College, Jaipur, Rajasthan.

Selection of patients:

Inclusion criteria:

The patients, presenting with progressive alteration of sensorium, behavioral abnormality, focal or generalized seizures with or without focal neurological deficit, preceded by a history of prodromal phase of headache, fever and other constitutional symptoms were included.

Exclusion criteria:

Samples from patients suffering from head injury, simple febrile seizures, seizure disorder, heat stroke, metabolic disorders, papilloedema were not included in the present study.

Sample collection and transportation:

A total of 50 CSF samples were collected from patients with AES by a trained clinical staff, labeled and transported on ice at the earliest to the laboratory. Informed consent was obtained from the parents/guardians of the patients.

Sample Processing and Storage in Laboratory:

On receiving the sample in laboratory they registered and given a unique identification number. The samples were separated and aliquoted in 2 vials. One vial stored at -80 °C for back up. Second vial was used for serology and stored at -20 °C till further use.

Serological Detection:

HSV 1&2 IgM antibody detection in CSF was done using commercial ELISA kit (DIA. PRO) as per manufacturer's instructions among the acute viral encephalitis suspected patients.

Table 1: Distribution of HSV in acute viral encephalitis suspected patients.

	Males			Females			Total Samples		
	Samples	Positive	%	Samples	Positive	%	Samples	Positive	%
Children	12	2	16.16	9	0	0	21	2	9.52
Adults	16	3	18.75	13	1	7.69	29	4	13.79
Total	28	5	17.85	22	1	4.54	50	6	12

Results

A total of 50 CSF samples were received from clinically suspected AES patients, 6 (12%) were positive for HSV IgM ELISA.

Among the 50 patients enrolled in study male to female ratio was 1.2:1. Positivity in males was 5 (17.85%) while in females was 1 (4.54%) for HSV IgM ELISA. Male patients showed higher positivity for HSE in the present study. This is perhaps because of the fact that women in our society do not report for medical care in comparison to male. Positivity was higher in adults 4 (13.79%) as compared to children 2 (9.52%). All patients presented with complaints of fever along with altered sensorium (100%). Other important commonly observed symptoms were seizures (80%), headache (25%) and vomiting (18%).

Discussion

HSE is the most common cause of acute sporadic encephalitis, causing high morbidity and mortality. It's important to diagnose the HSE at the earliest as proper treatment can be started in time. However diagnostic facilities are limited and knowing local trends in HSE can help clinician in making a decision.

In the present study, 12% samples were found positive for Anti HSV IgM antibody. Similarly Jain et al from Lucknow reported in 9.3%, Baig et al from Aligarh reported in 10.2%, Ambrose et al from UK reported in 19% and Panagariya et al reported ELISA positive in 50% of highly suspected cases from Rajasthan.

In the present study HSE was found to be higher in adults 4 (13.79%) as compared to children 2 (9.52%), similarly Jain et al and panagariya et al also reported HSE in more common in the adult patients.

In present study HSE was found to be higher in male patients 5 (17.85%) as compared to female patients 1 (4.54%), similarly Jain et al from Lucknow reported higher in male patients 11.6%. Males showed higher positivity in the present study, male: female ratio was 1.6:1, similarly Panagariya et al from Rajasthan also reported that HSE was more common in males, male: female ratio was 2:1 in their study. This could be due to the fact that females report less commonly to medical health care set up in India. However Whitley et al found no characteristic racial, age, sex or seasonal predilection.

Most common presenting signs and symptoms were fever and altered sensorium (100%), seizures (80%), headache (25%) and vomiting (18%), similarly panagariya et al reported 64% cases presented with acute onset and suffered from focal and severe disease. Prodromal phase characterized by fever and constitutional symptoms was observed in 82% of the patients. Common neurological manifestations included altered sensorium, seizures, abnormal behaviour, focal neurological deficit and ataxia.

HSE is the only form of sporadic encephalitis which has a specific antiviral therapy i.e. acyclovir.^(Levitz et al 1998, Panagariya et al 2001) Since the disease HSE was found to not very uncommon and carries a very high mortality and morbidity in absence of treatment it's important to diagnose it early

using available methods as the antiviral drug, acyclovir is quite effective, if used early in the course, saves the patients. Rapid early diagnosis of HSE by CSF ELISA has helped in initiating treatment in most of the centres in Indian conditions and helps reduce mortality and morbidity. Though CSF-PCR is the diagnostic test of choice, which has sensitivity rate as high as 98-99% and specificity of 100 %, but is not routinely available. ^(Panagariya et al 2001, Satish et al 1993)

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Conflict of interest: None

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