Case Report

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Herpes Simplex Encephalitis in an Elderly Woman with Comorbidities

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Abstract

Herpes simplex encephalitis (HSE) is a relatively common sporadic central nervous system (CNS) infection caused by Herpes simplex virus (HSV) type 1 (most often) and HSV 2 (occasionally). The final diagnosis depends on CSF PCR study to conclude the presence of the HSV in CNS. But as this is not possible in all patients due to limited availability and precluded in patients with raised intracranial tension, clinical and radiological features with a high index of suspicion is the cornerstone of early diagnosis and managing this acute, potentially lethal CNS infection. HSE presents with initial nonspecific symptoms like fever, headache followed by rapidly evolving neurological features namely, seizures, impaired sensorium and altered behavior which, if left untreated, may progress to coma, quadiparesis and death. Early diagnosis and treatment with appropriate antiviral drug acyclovir can control the infection and promote recovery, especially in elderly people who are usually severely affected by the virus due to their comorbidities and possible immunocompromised state. Here we present an elderly woman with essential hypertension who was admitted with symptoms of a viral fever rapidly progressing to loss of consciousness. Her imaging features and clinical presentation was supplementated by serological test positive for HSV 1 IgG and IgM antibody. She was promptly dealt with by necessary medical therapy precluding CSF study for HSV-PCR due to her raised intracranial tension. She recovered completely and uneventfully in 2 weeks. Physiotherapy was instituted.

Keywords: Encephalitis; Herpes simplex virus; Serology; Temporal lobe, Insula.

INTRODUCTION

Herpes simplex encephalitis (HSE) is a relatively common sporadic central nervous system (CNS) infection caused by Herpes simplex virus (HSV) type 1 (most often) and/or HSV 2 (occasionally). HSE presents with initial nonspecific symptoms like fever, headache, vomiting which is often followed by neurological features including seizures, impaired sensorium, hemiparesis and/or altered behavior which, if left untreated, may progress to coma, quadiparesis and death. HSE has some characteristic features in magnetic resonance imaging (MRI) which can distinguish it from other viral encephalitidis. The limbic system, particularly the insula and medial temporal lobe may be involved asymmetrically showing hyperintense signal in T2 flair sequences. The basal ganglia are usually spared, unlike Japanese B encephalitis. Elderly people with history of other

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chronic illness like diabetes mellitus, hypertension or immunocompromised situation are at particular risk of atypical symptoms and more severe central nervous system complications. Early diagnosis and prompt treatment with specific antiviral medication are essential for management of patients with any of these comorbid disorders.

CASE HISTORY

A 75 yr old woman was admitted in ICU with history of sudden loss of consciousness. She was having fever for last 3 days with intermittent headache and vomiting. There was no abnormal movements or history of convulsion. She was a known hypertensive on medication.

On initial evaluation, she had blood pressure 130/70, pulse rate 60/min, regular, low volume, respiratory rate 20/ min. Her body temperature at admission was 100*F. Anemia, jaundice, edema, cyanosis and lymphadenopathy were absent. She appeared dehydrated. She had no respiratory distress, the oxygen saturation was 98% on room air.

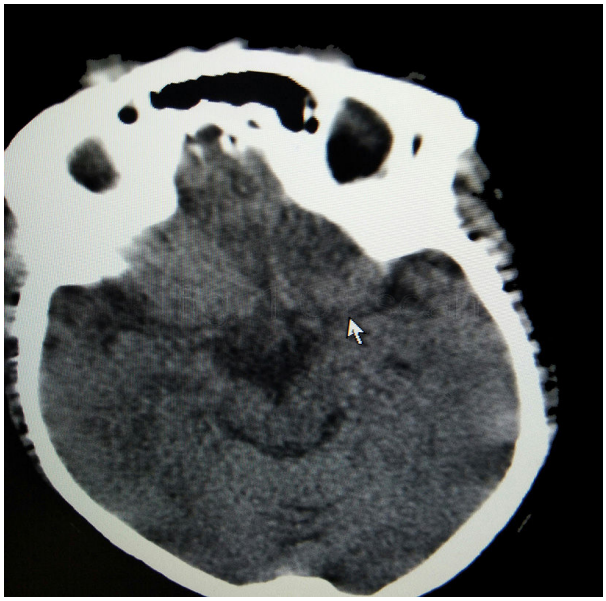

Fig. 1: CT Scan

Neurological examination revealed her altered sensorium, confusion and impaired speech comprehension with perseveration. She could not recognize her family members.

The cranial nerves examination was normal.

Motor system and sensory examination was deferred due to her altered consciousness.

Her complete blood count showed mild leukocytosis (12,000 total leukocyte count) with 75% polymorphs and 23% lymphocytes.

CT scan of brain (fig. 1) revealed scattered hypodense areas over frontal, temporal and occipital regions.

Considering the probability of cerebral edema and meningoencephalitis, intravenous mannitol was given after initial stabilisation with normal saline infusion. Lumbar puncture was deferred. MRI brain was done.

Mean while, her serological test for HSV antibody was positive for IgG and IgM.

Non contrast MRI of brain revealed moderate diffusion restricted lesion in left insular area without corresponding ADC dark mapping (fig. 2). T2 hyperintense signal was present in left temporal and insular regions (fig. 3,4) and T2 flair hyperintensity was more prominent (fig. 5,6) in corresponding areas.

Her headache improved, vomiting was controlled, but fever and lethargy was persistent.

Since CSF study could not be done, and the radiological features were suggetive of Herpes

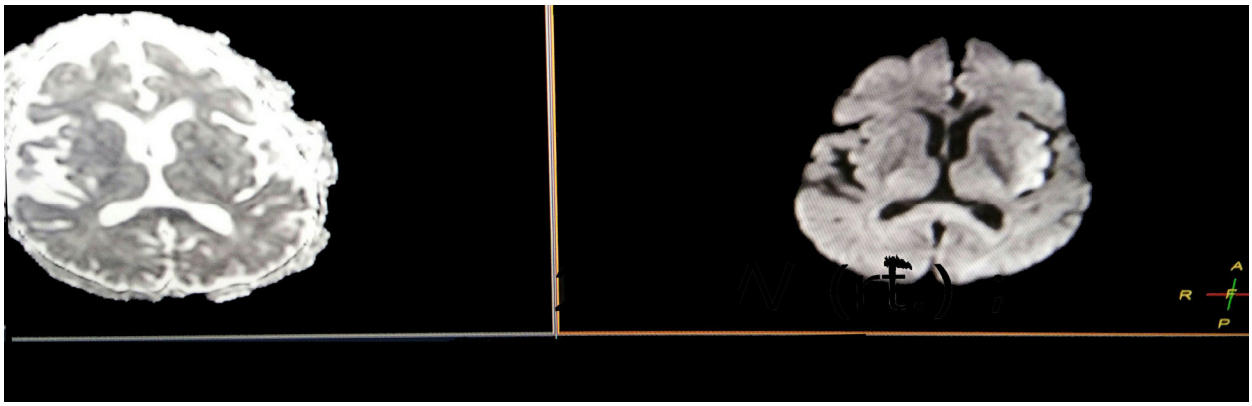

Fig. 2: (Right) DW (Left) ADC

simplex encephalitis, and as her serological test was positive for HSV 1 IgG and IgM, she was put on intravenous acyclovir for 10 days.

During 6 days of therapy with intravenous acyclovir she gradually regained her consciousness and her speech became normal. She was found to have motor weakness of her right upper and lower limbs (MRC grade 4), without any sensory or cerebellar signs. Her CSF study was done at this stage and showed cell count 22, all lymphocytes. CSF sugar was normal (60 mg /dl) with raised protein level (52 mg/dl). CSF PCR study could not be done due to financial constraints of patient. She did not have any convulsion before or after hospitalisation and her EEG did not show any periodic lateralised discharges or any epilepiform activity.

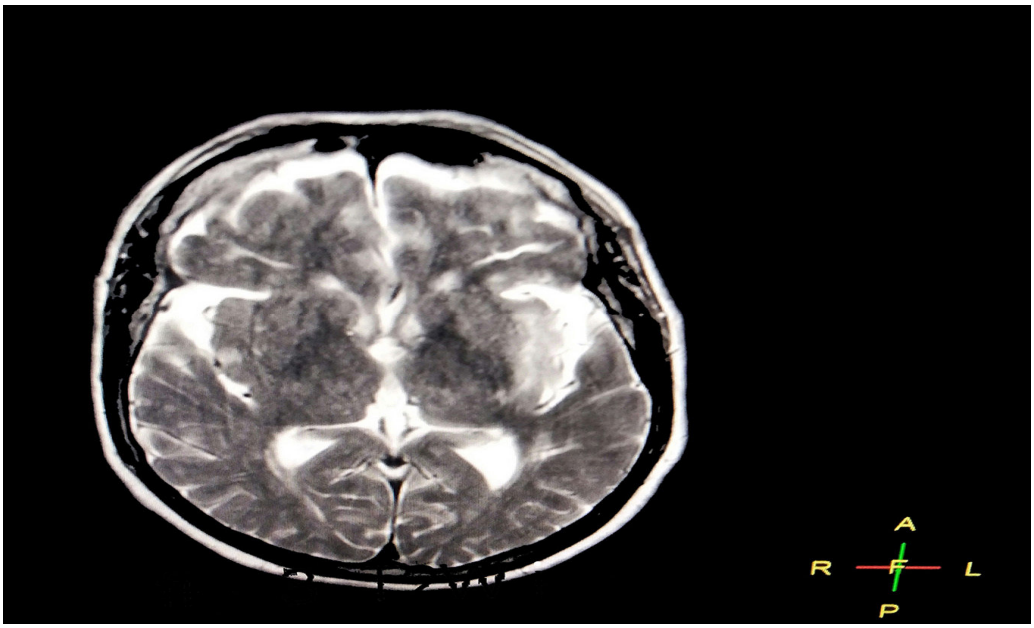

Fig. 3: T2W

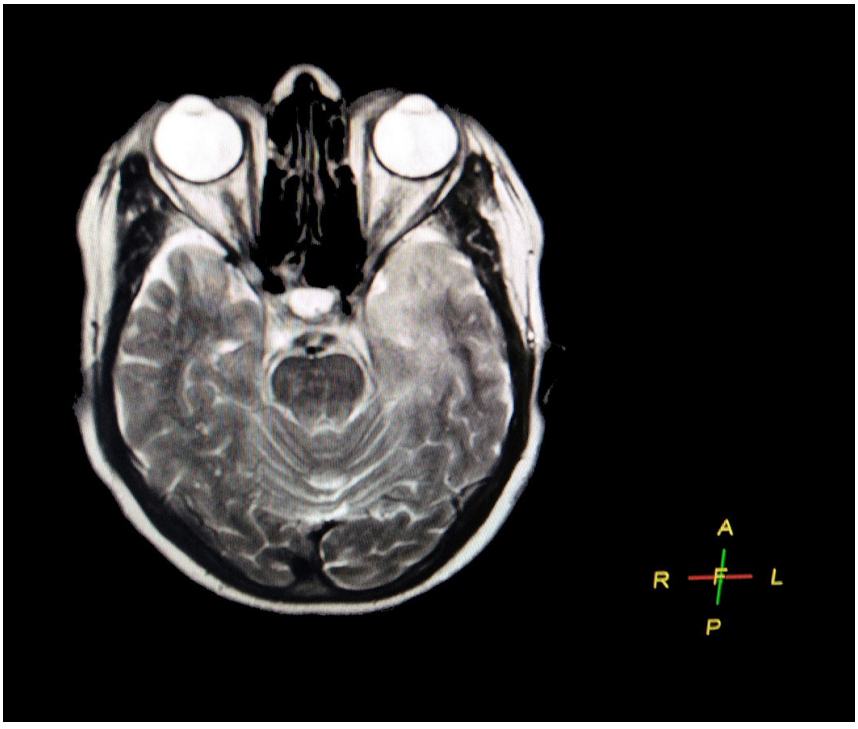

Fig. 4: T2W

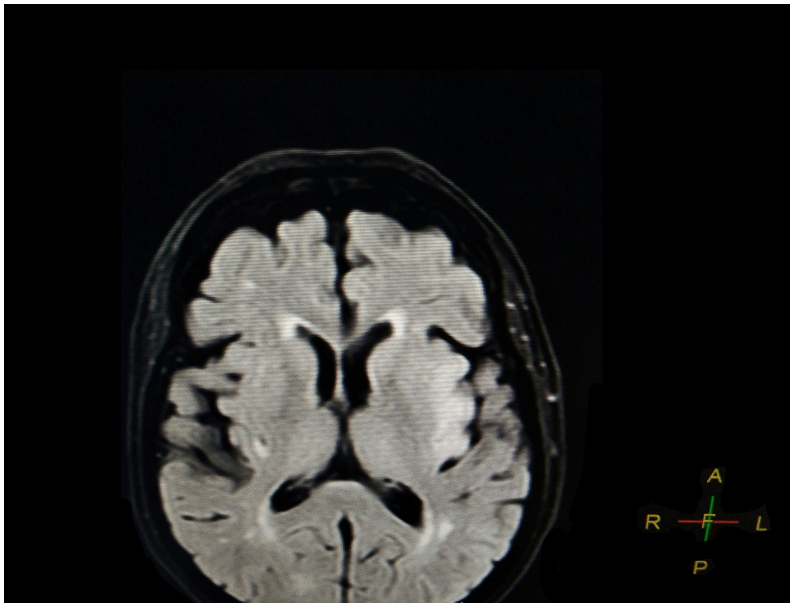

Fig. 5: Flair Image

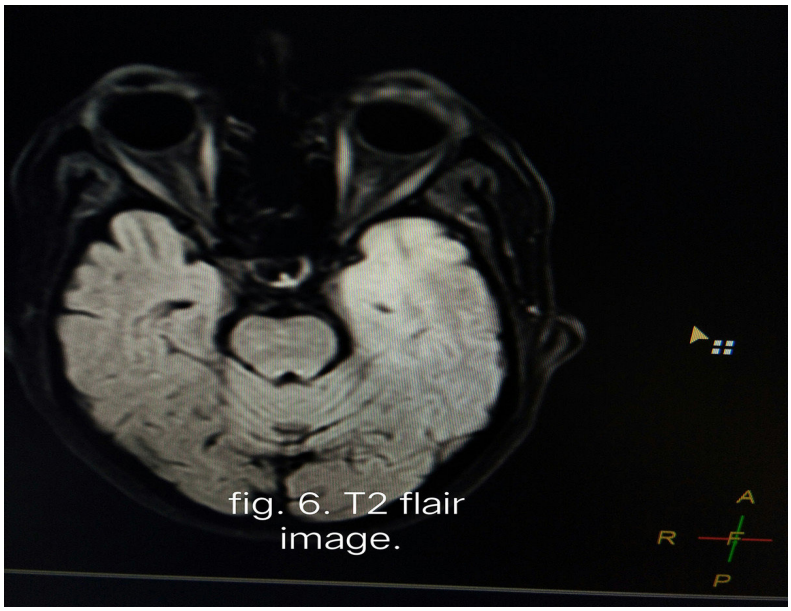

Fig. 6: T2-Flair Image

DISCUSSION

Herpes simplex encephalitis (HSE) is a relatively common sporadic central nervous system (CNS) infection caused by Herpes simplex virus (HSV). HSV type 1 causes children and adult infection while HSV 2 causes perinatal and sexually transmitted genital infection.[1]

Neonates may occasionally suffer from Herpes simplex infection, including encephalitis by HSV 2 transmitted during birth through mother's genital tract.

HSV is an obligatory intracellular virus that infects nasopharyngeal mucosa and if conditions facilitate, can enter the CNS ascending to the trigeminal ganglia where it may remain latent for prolonged period. Reactivation of the virus may occasionally lead to fulminant central nervous system (CNS) infection in patients with or without immunosupression.

HSE presents with initial nonspecific symptoms like fever, headache followed by rapid neurological features namely, seizures, impaired sensorium and altered behavior which, if left untreated, may progress to coma, quadiparesis and death.

Diagnosis is established with polymerase chain reaction (HSV-PCR) which detect presence of viral DNA in cerebrospinal fluid,[2] although the characteristic clinical and radiological features with CSF demonstrating pleocytosis and elevated protein, usually suffice and justify treatment with specific antiviral therapy.

HSE has some characteristic imaging features which can distinguish it from other viral encephalitidis. The limbic system, particularly the insula and medial temporal lobe may be involved asymmetrically. The basal ganglia are usually spared, unlike Japanese B encephalitis.[3]

In our patient, presence of both IgG and IgM antibody against HSV1 in her serum could be due to the recent infection superimposed on a previous dormant infection which got unnoticed.

Primary infection of the CNS does occur sporadically via hematogenous route in addition to the ascending mode of transportation to the CNS from nasal and oral mucus membrane.

Case Summary: Our patient presented with symptoms of nonspecific viral illness followed rapidly by loss of consciousness. Her age, comorbidities and features of brain edema precluded lumbar puncture and CSF study was postponed. MRI brain features were suggetive of herpes simplex encephalitis. Serological antibody report was positive for HSV 1 IgG and IgM. So intravenous acyclovir was started immediately and continued for 10 days. Physiotherapy was instituted.

She recovered completely in 14 days of treatment and was discharged.

CONCLUSION

Herpes simplex encephalitis can be fatal, with rapid progression to brain edema, coma, quadriparesis, status epilepticus and death. Clinicians need to be aware of the potential consequences of this condition.[4,5] Elderly people with acute neurologic symptoms having earliar comorbidities require prompt investigation with noninvasive cerebrovascular imaging for rapid diagnosis and treatment for good recovery.[6]

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