

# Herpes Simplex Encephalitis: An Uncommon Presentation

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## ABSTRACT

Herpes Simplex Virus (HSV) encephalitis is an uncommon illness, with about 2 cases per 250,000 per year. Most are caused by HSV-1, with 10% having HSV-2 as the aetiologic factor. We present a case of Herpes simplex type 1 encephalitis in a 70 year old male with an uncommon presentation. The patient was a known case of endogenous depression with no medical records and on no treatment for the same, reported with acute changes in mental state for the past five days. He was talking irreverently, had hallucinations and was unduly aggressive and violent. He was subjected to a thorough clinical and diagnostic work-up which included cerebrospinal fluid analysis, CT head and MRI brain. MRI brain was suggestive of mild subdural effusion which hinted towards infectious cause of encephalitis. The cerebrospinal fluid viral serology panel detected herpes simplex type 1 virus (HSV1) that was later confirmed by CSF Polymerase Chain Reaction (PCR) technique. Hence, acyclovir was initiated by intravenous route at a dosage of 10mg/kg body weight and continued for two weeks. This case holds significance in view of the fact that organic causes must be excluded in suspected cases of psychiatric illness especially in the absence of fever. Also, CSF-PCR testing plays a pivotal role in diagnosing herpes simplex encephalitis.

**Keywords:** Psychosis, Polymerase chain reaction, Subdural effusion, Viral encephalitis

## CASE REPORT

A 70-year-old male patient, was admitted to a tertiary care Hospital in the state of Uttarakhand, with an unusual presentation of acute psychosis in the form of irrelevant talking, hallucinations and aggressive and violent behaviour for the past five days. He had a history of depression for last two years. However, there was no evidence of intake of medications for the same. There was no history of fever, vomiting, headache or seizures. He was a non-alcoholic and there was no family history of any psychiatric illness.

On examination, his blood pressure was 120/70 mmHg, pulse was 84 beats per minute, respiratory rate was 16 per minute. Bilateral pupil size was equal and reacting to light. Abdominal examination revealed no organomegaly and the rest of the physical examination was unremarkable. There was no sign of meningeal irritation.

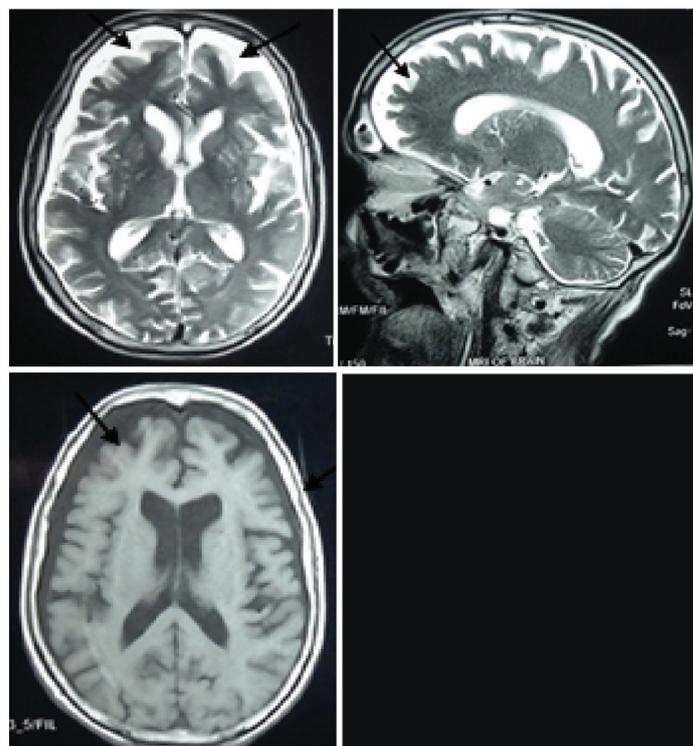
Blood biochemistry and chest X-ray was normal, CSF analysis revealed protein levels of 50 mg/dl (normal range-15-50 mg/dl), glucose-45mg/dl (normal range-40-70mg/dl) and no cells were found. CT head was normal, MRI brain demonstrated mild bilateral subdural effusion [Table/Fig-1a-c]. This finding on MRI brain was suggestive of an infectious cause of encephalitis as there was no history of trauma. Hence, we performed a CSF viral serology panel which was positive for Herpes simplex type 1 virus and negative for dengue virus, west Nile virus and Japanese encephalitis virus. Thereafter CSF-PCR testing was done which confirmed our findings. Patient was given IV acyclovir therapy at a dosage of 10mg/kg body weight for two weeks. He visited our hospital after one week of this therapy and was found to have no residual neuro-psychiatric symptoms or sequelae.

## DISCUSSION

Herpes simplex virus type-1 (HSV1) in adults is associated with significant morbidity, although overall mortality has decreased from 70% to 20% after acyclovir therapy [1,2]. The usual presentation is of low grade fever along with neurological symptoms. Biochemical abnormalities in CSF analysis with positive CSF-PCR testing confirm the diagnosis of Herpes simplex encephalitis [3]. Brain biopsy, which was earlier, required for the

diagnosis of HSV encephalitis is now an obsolete procedure and CSF-PCR is considered to be a gold standard technique [4,5]. We present an unusual case of HSV encephalitis confirmed by CSF-PCR assay. Patient presented with acute psychosis with no history of fever and without significant CSF biochemical abnormalities [6].

Acute psychosis can occur in both organic and functional brain disorders. Organic brain disorders are caused by structural and psychological changes in the brain [6]. The development of sudden onset of psychosis without any family history or past medical history of psychotic illness, presence of non auditory hallucinations



**[Table/Fig-1]:** Sections of MRI Brain showing mild bilateral subdural effusion. (a) Coronal section; (b) T1 weighted image; (c) T2 weighted image.

and absence of mood congruent delusions hints towards organic causes of psychiatric illness.

HSV-1 encephalitis is associated with very high mortality rate (70%) without treatment [7]. It is the most common cause of encephalitis in neonates but is uncommon in adults with reported incidence of 2 per 250,000 cases per year [7-9]. Majority of the cases of HSV encephalitis present with fever and abnormal mental state changes in more than 90% cases, few patients (50-60%) might also develop signs and symptoms of raised intracranial tension like projectile vomiting, meningismus, headache, diplopia etc., approximately 30% of patients can have focal neurological deficit [6,9]. CSF analysis is essential to diagnose the aetiology of encephalitis. In more than 90% of cases of herpes simplex encephalitis CSF examination will show pleocytosis with lymphocytic predominance, protein is mildly elevated in 75% of cases with variable glucose levels. CSF-PCR testing is considered to be the gold standard for the diagnosis of herpes simplex encephalitis and has replaced brain biopsy. The sensitivity of CSF-PCR testing is 98% and specificity is 94% for the detection of HSV-1 virus in the CSF [4].

In preset case report, CSF analysis showed mildly elevated protein levels (50mg/dl) and normal glucose levels with no cells found. Hence, CSF -PCR testing was done which was positive for Herpes simplex type-1 virus. Thus, our case highlights the importance of CSF-PCR testing for the early detection of HSV encephalitis so that antiviral therapy can be initiated at the earliest. Radiological imaging also holds importance. More than 90% of cases will show temporal lobe abnormalities on MRI brain imaging, although earliest finding is brain oedema [3]. Few cases have been found to involve occipital and frontal lobes [10,11]. Our patients MRI brain was suggestive of mild subdural effusion which is a rare presentation. The standard therapy given in HSV encephalitis is intravenous acyclovir (10mg/kg) eighth hourly for two to three weeks in adults which reduces the mortality to less than 29%.

## CONCLUSION

CSF-PCR assay in cases with unusual presentation like absence of fever with acute psychosis helps in early detection of herpes simplex encephalitis. Henceforth, we would like to highlight the fact that physicians should always try to look for organic causes of acute psychosis so that treatable causes be diagnosed and treated successfully

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