

# Herpes simplex encephalitis

## Key concepts

- a hemorrhagic [viral encephalitis](#) with a predilection for [temporal lobes](#)
- definitive diagnosis requires [brain biopsy](#)
- optimal treatment: early administration of IV [acyclovir](#)

Herpes simplex encephalitis (HSE) AKA multifocal necrotizing encephalomyelitis, is caused by the [herpes simplex virus](#) (HSV) type I. It produces an acute, often (but not always) hemorrhagic, necrotizing [encephalitis](#) with edema. There is a predilection for the temporal and orbitofrontal lobes and [limbic system](#).

## Epidemiology

Estimated incidence of HSE: 1 in 750,000 to 1 million persons/yr. Equally distributed between males and females, in all races, in all ages (over 33% of cases occur in children 6 mos to 18 yrs), throughout the year <sup>1)</sup>.

## Presentation

Patients are often confused and disoriented at onset, and progress to [coma](#) within days.

## Diagnosis

[Herpes simplex encephalitis diagnosis](#).

## Brain biopsy

see [Brain biopsy for Herpes simplex encephalitis](#).

## Differential diagnosis

There are a few cases reported in the literature in which a diagnostic dilemma between was raised between herpes simplex encephalitis and brain [glioma](#), and a definitive diagnosis was difficult to be obtained

When confronted with confounding data that can pose a diagnostic dilemma between HSV encephalitis and glioma, brain biopsy and PCR of CSF samples could be able to verify the definite diagnosis <sup>2)</sup>.

## Complications

[Herpes simplex encephalitis complications.](#)

## Treatment

[Herpes simplex encephalitis treatment](#)

## Case series

Basaran et al. aimed to explore distinctive clinical and laboratory features of HSV-1 encephalitis. All of the adult patients with viral encephalitis hospitalized between 2011-2017 were enrolled, including 16 patients with HSV-1 encephalitis and 51 patients non-HSV-1 viral encephalitis. The determination of viruses in cerebrospinal fluid was performed by PCR tests. Female sex, hyponatremia, and abnormalities in MRI were independently associated with HSV-1 encephalitis ( $p < 0.05$  for each). In particular, hyponatremia ( $< 135$  mEq/L) was found in nine patients with HSV-1 encephalitis (56.3%) and 10 patients with non-HSV-1 viral encephalitis (19.6%) ( $p = 0.005$ ). As serum sodium is determined easily and quickly in clinical practice, the presence of hyponatremia among patients with viral encephalitis could be helpful for the early diagnosis of HSV-1 encephalitis before cerebrospinal fluid PCR results were available. Moreover, the presence of positive findings in MRI could further support the diagnosis. This is the first study that compared the serum sodium levels among patients between HSV-1 and non-HSV-1 viral encephalitis. We thus propose the diagnostic value of hyponatremia for HSV-1 encephalitis <sup>3)</sup>.

## Case reports

McLaughlin et al. presented the 40th known case of [herpes simplex virus](#) (HSV) encephalitis following the neurosurgical intervention and review the previously reported cases. In their review, the authors observed positive HSV polymerase chain reaction (PCR), which had initially been negative in several cases. In cases in which there is a high suspicion of HSV, it may be prudent to continue antiviral therapy and retest CSF for HSV PCR. Antiviral therapy significantly reduces mortality associated with HSV encephalitis <sup>4)</sup>.

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A case of a 78-year-old woman with no known prior history of HSVE and declining mental status eleven days after posterior C3-T1 decompression and instrumented fusion following resection of an intradural extramedullary tumor confirmed to be meningioma on final pathology. Reactivation of HSV-1 encephalitis was suspected to be the underlying cause of her symptoms, though MRI scans of

the brain for HSVE were negative. The patient reacted positively to a 21-day treatment of acyclovir and was discharged with a neurological status comparable to her preoperative baseline. This case contributes to the literature in that it is the first reported instance of HSVE reactivation after intradural cervical spinal surgery with negative MRI findings.

Heller et al. recommended utilizing multiple tests, including PCR, EEG, and MRI, for postoperative neurosurgery patients that have decreased mental status in order to quickly and correctly diagnose/treat patients who are HSVE positive. Clinicians should consider the possibility of receiving false-negative results from PCR, CSF, EEG, or MRI tests before terminating treatment for HSVE reactivation <sup>5)</sup>.

A 74-year-old man with a history of herpes simplex encephalitis suffered recurrent seizures. Brain magnetic resonance imaging revealed a mass lesion and resection was performed. A polymerase chain reaction using a brain biopsy specimen was positive for HSV DNA; thus, the patient was diagnosed with HSV-associated granulomatous encephalitis. After administering acyclovir, the patient showed improvement. HSV can cause granulomatous encephalitis in adults, and acyclovir can be used for its treatment <sup>6)</sup>.

## References

<sup>1)</sup>

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<sup>3)</sup>

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