

# Encephalitis in adults caused by herpes simplex virus

Ronak K. Kapadia MD, Kenneth L. Tyler MD, Daniel M. Pastula MD MHS

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## 1 Herpes simplex virus (HSV) is the most commonly identified cause of sporadic acute encephalitis

Herpes simplex virus causes the only viral encephalitis with an effective antiviral treatment; early treatment improves outcomes. Most cases in adults are caused by HSV-1 and occur equally in both sexes. Age of more than 50 years is an important risk factor.<sup>1</sup>

## 2 Early consideration of the diagnosis is important given the broad manifestations of this disease

The diagnosis should be considered in any patient who presents with an acute altered mental status for more than 24 hours or new seizures, typically with fever. Accompanying headache or focal neurologic signs are also common.<sup>1</sup>

## 3 Patients with suspected encephalitis caused by HSV should be started immediately on acyclovir administered intravenously

After starting treatment, investigations for HSV encephalitis and alternative diagnoses can be performed (e.g., lumbar puncture, magnetic resonance imaging [MRI] of the brain with gadolinium and an electroencephalogram [EEG]). A positive result for a cerebrospinal fluid polymerase chain reaction (PCR) test for HSV confirms the diagnosis.<sup>2</sup>

## 4 Cerebrospinal fluid PCR testing may provide a false-negative result within 72 hours of symptom onset

Although the sensitivity and specificity of cerebrospinal fluid PCR testing for HSV is greater than 95% in HSV encephalitis, false-negative results can occur within the first 72 hours of onset. If clinical suspicion is high for HSV encephalitis, continuing treatment and repeating the PCR test for HSV in cerebrospinal fluid between days 3 and 7 after symptom onset is suggested. Other supportive findings include a cerebrospinal fluid pleocytosis, abnormalities on EEG, and brain lesions or enhancement involving the temporal lobe, or orbitofrontal and/or insular cortex on MRI (Appendix 1, available at [www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.191636/-/DC1](http://www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.191636/-/DC1)).<sup>3</sup>

## 5 Long-term neurologic sequelae are common

Although acyclovir administered intravenously has substantially improved outcomes for HSV encephalitis, (mortality has been reduced from 70% untreated to 8% treated), 35% of those who survive still have long-term neuropsychiatric disabilities including cognitive and seizure disorders.<sup>3,4</sup> About 25% of patients with HSV encephalitis also develop autoimmune encephalitis (predominantly anti-NMDA [*N*-methyl-D-aspartate] receptor encephalitis) within 3 months after recovery from acute symptoms.<sup>5</sup>

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**Affiliations:** Neuro-Infectious Diseases Group, Department of Neurology and Division of Infectious Diseases (Kapadia, Tyler, Pastula), University of Colorado School of Medicine, Aurora, Colo.; Division of Neurology (Kapadia), Department of Clinical Neurosciences, University of Calgary, Cummings School of Medicine, Calgary, Alta.; Department of Epidemiology (Pastula), Colorado School of Public Health, Aurora, Colo.

**Correspondence to:** Ronak Kapadia, [ronak.kapadia@ahs.ca](mailto:ronak.kapadia@ahs.ca)

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