

# HSV ENCEPHALITIS IN A PATIENT WITH HIV

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## Background

- Herpes simplex virus (HSV) type 1 encephalitis is a type of viral brain inflammation caused when HSV enters the brain. It can be rapidly devastating with significant morbidity and mortality, even with the correct antiviral medications. (1)
- HSV enters the brain by the axons from the face to the trigeminal ganglia from either a primary HSV infection, after reactivation of a latent infection, or through viremia. (2)
- The most common clinical manifestations are fevers, headaches, seizures, focal neurological deficits, altered mental status, and ataxia. (3)
- WHO guidelines recommend starting antiretroviral therapy (ART) in all adults with HIV despite their CD4 count or WHO clinical stage. (4)

## Case Report

A 48 year old male presented to the emergency department for lethargy, fevers, and tachycardia. He had been less interactive for the past two days at his nursing home. He was diagnosed with HIV a few months prior. He was not started on antiretroviral therapy at that time for some unknown reason. Initially, it appeared that he had sepsis due to a UTI or pneumonia. He was started on vancomycin and Zosyn. Infectious disease wasn't consulted until two days into his admission despite his HIV history. During this hospital stay, his CD4 count was 4 and viral load was 176,360. Given the continuation of his altered mentation, stiff neck, and rigid extremities, it was recommended that he have a lumbar puncture. The lumbar puncture didn't yield enough fluid to have all the appropriate tests sent. It did show mild pleocytosis with WBC of 21 and RBC of 323 so there was a question for possible aseptic meningitis syndrome or encephalitis. He was started on acyclovir and Diflucan, as well as azithromycin and Bactrim by infectious disease.

In the meantime, an MRI was done and showed nonspecific patchy and confluent hypoattenuation in the periventricular and subcortical white matter, as well as in the bilateral cerebellar peduncles and pons. Differential diagnoses included moderate white matter microangiopathy, infectious/inflammatory processes, and demyelinating disease. The lumbar puncture was repeated with a greater fluid return and all requested labs were sent. HSV CSF IgM and IgG returned as positive. At this time, acyclovir was on national backorder so the pharmacy had difficulty obtaining it. He did end up receiving 19 total days of acyclovir.

Throughout this course, the patient's mental status improved somewhat but he was determined to be unsafe to swallow so a PEG tube needed to be placed. He was not started on any antiretroviral therapy until 22 days into his hospitalization. His West Nile Virus IgG was also positive in CSF. He was discharged back to his nursing home on Truvada, Sustiva, Bactrim, fluconazole, azithromycin, and acyclovir.

## Imaging

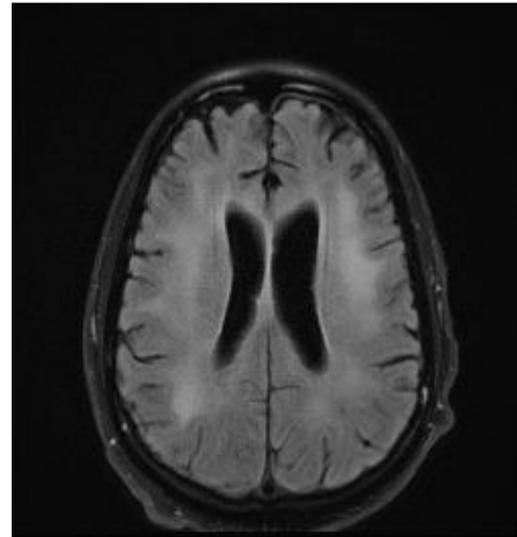


Figure 1: An MRI of the brain with and without contrast showing nonspecific, patchy, and confluent hypoattenuation in the periventricular and subcortical white matter.

## Discussion

- Studies have shown that initiating ART in patients with CD4 counts less than 200 as soon as possible can reduce the risk of AIDS-related morbidity and mortality. (4)
- HSV encephalitis is more prevalent in patients with decreased T cell-mediated immunity, especially those undergoing chemotherapy or transplant recipients. Though HIV patients are considered immunocompromised, HSV encephalitis is unusual. (5)
- HSV encephalitis is not considered an AIDS-defining illness. However, most reports of HSV encephalitis in patients with HIV had CD4 counts of less than 350. (5)
- Characteristic MRI findings for HSV encephalitis are temporal lobe lesions that are usually unilateral and cause some mass effect (3). Our patient had more nonspecific, patchy findings.
- Treatment is with intravenous acyclovir for at least 14 days. The recommendation is to start it early and avoid interruptions (4). Our patient started receiving acyclovir before his PCR results returned. However, he did have some interruptions with his treatment because acyclovir was on national backorder during that time. He received 19 total days of IV acyclovir and then was prescribed an additional seven days of oral acyclovir.

## Conclusion

- HSV encephalitis is not as common in HIV patients as one may think. Their immunocompromised state doesn't make them more prone to CNS involvement with HSV any more than an immunocompetent patient (5). Other causes of encephalitis that are much more common in HIV patients include cytomegalovirus, varicella zoster virus, and Epstein-Barr virus. Our patient also tested positive for West Nile virus.
- In patients with newly diagnosed HIV, good follow-up is needed so that antiretroviral therapy can be started as soon as possible. It's difficult to say if this patient's case would've turned out the same if he had been started on ART right away because of the lack of association between HSV encephalitis and HIV. With his very low CD4 count, it probably could have made a difference.
- The prognosis of HSV encephalitis improves when patients are started on acyclovir earlier in the disease course. Level of consciousness and the age of the patient seems to lead to a better prognosis as well (4). This patient was started on acyclovir before his CSF results came back positive, and though he had some interruptions in therapy, this early initiation of therapy may have led to his more favorable outcome.

## References

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