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A Novel Case of HHV-6 Meningoencephalitis in an Immunocompetent Adult

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Abstract:

We present a case of a 56-Year-old female who presented with HHV6 encephalitis. She initially presented with altered mental status. Our patient ultimately made a full recovery several days later with only some mild intermittent episodes of confusion. Currently there are no other case reports of HHV6 encephalitis in the adult population.

Case:

A 56-year-old female, with no past medical history, presented the ER initially with altered mental status and confusion. She was pulled over by the police for her erratic driving and brought in by EMS. On arrival she denies any complaints, does not know why she was pulled over and does not offer further insight. She was alert, awake, AAOx2 with a slight flat affect. Other than a BP 193/93, Her initial Vital signs and lab values were unremarkable.

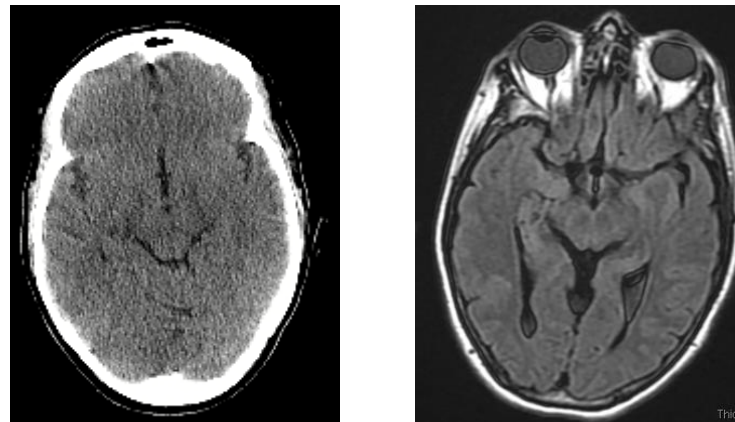
While in the ER the patient had an episode of her pulse oximeter dropping down to 70%, likely due to secretions and being unable to protect her airway. In an attempt to arouse her, she was given 1 mg IV Narcan, a subsequent dose of 2 mg Narcan, with dilation of her pupils but no significant improvement in her mental status. Ammonium smelling salt were attempted which irritated the patient but again with no improvement. The patient was subsequently intubated for her altered mental status and airway protection. She was intubated with 60 mg succinylcholine, 20 mg etomidate. She was sent for a CT scan of her head which was non. With no significant PMH, no signs of ingestion or drug use other than marijuana, and no other clear cause of her AMS, she was covered prophylactically with Rocephin, vancomycin, acyclovir, and Keppra and admitted to the ICU. While in the ICU she underwent IR guided LP that initially showed 17 RBC, 3 WBC, 52 Glucose, 59 protein. Her final CSF culture came back positive for HHV6 encephalitis. On hospital day 2 she began to improve, was extubated, and discharged home. Upon follow up visit with neurology she reported only some minimal episodes of confusion.

Discussion:

Encephalitis is a frequent presentation in the emergency rooms. However, it is a poorly studied topic. Study Estimates from 2000-2010 suggest that approximately 7 people per 100,000 will be diagnosed every year¹. Viruses are the most common pathogens elicited as the cause of Encephalitis. Other causes include bacterial, drugs, idiopathic, and autoimmune. Of the Viral pathogens, the most common pathogens are Non-Polio Enteroviruses (NPEV), HSV1/HSV-2, LCMV and Mumps, which account for an estimated 99% of all cases². Other uncommon causes are arthropod viruses (West Nile Virus, Chikungunya, Zika), and the Human Herpes Virus 6 (HHV-6), more commonly known as roseola virus.

Component	Ref Range & Units	Result
Haemophilus influenzae	Not Detected	Not Detected
Listeria monocytogenes	Not Detected	Not Detected
Neisseria meningitidis	Not Detected	Not Detected
Streptococcus agalactiae	Not Detected	Not Detected
Streptococcus pneumoniae	Not Detected	Not Detected
Cytomegalovirus (CMV)	Not Detected	Not Detected
Enterovirus	Not Detected	Not Detected
Herpes simplex Virus 1 (HSV-1)	Not Detected	Not Detected
Herpes simplex Virus 2 (HSV-2)	Not Detected	Not Detected
Human herpesvirus 6 (HHV-6)	Detected!! (Critical)	Detected!! (Critical)
Comment: The FilmArray ME panel does not distinguish between latent and active HHV-6 infection. Detection of this virus may indicate primary infection, secondary reactivation, or the presence of latent virus. Result should always be interpreted in conjunction with other clinical, laboratory, and epidemiological information.		
Human parechovirus	Not Detected	Not Detected
Varicella zoster virus (VZV)	Not Detected	Not Detected
Cryptococcus neoformans/gattii	Not Detected	Not Detected
Escherichia coli K1	Not Detected	Not Detected

Figure 1: Meningitis/encephalitis Cerebrospinal Fluid PCR Panel



Figures 2&3: Normal CT and MRI of the brain without contrast

Discussion Continued:

The reason why this case report is significant is because HHV6 encephalitis infection in immunocompetent adults is extremely rare. It has primarily been reported as a severe sequelae during initial infection in children^{3,4}, or as a reactivation in immunocompromised adults⁵⁻⁷. HHV6 is however, a very common disease of childhood. It is estimated that 64–83% of children by age 13 months⁸, and almost all children by 2 years old have been infected⁸⁻¹⁰. This may give some insight into its pathogenesis and how our patient was able to present so late in life. The viral particles are able to remain dormant in multiple areas of the body including brain tissue. Without knowing the patient's full history, we postulate that the patient had some unknown stressor that allowed the dormant particles to become reactivated. She may have some underlying undiagnosed autoimmune disorder or infection we are unaware of. HHV6 is transmitted through saliva. Although unlikely, it is also possible that she was never infected as a child and her extreme symptoms and presentation were from a primary infection. Possibly, due to her age and more robust immune system, she and did not show any of the classic symptoms that young children do.

Conclusion

We present a novel case of HHV6 encephalitis in a presumed immunocompetent Adult. Viral encephalitis is a common diagnosis in the ER, however, HHV6 encephalitis, especially in healthy adults is extremely rare and is not yet reported in the literature. Encephalitis is a serious disease that leads to high morbidity, mortality and often has residual lifelong effects on patients. Patients can present with a wide variety of nonspecific symptoms outside of the classic neck pain and fever and it is important for physicians to keep this rare but deadly disease on their differential diagnosis.

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