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Clinical Pearl
Diagnosis and Treatment of Viral Meningitis
Alexandra Leigh, MD

Viral meningitis is inflammation of the leptomeniges due to a viral agent. It is the most common cause of meningitis, with an annual incidence of 10 to 11 people per 100,000. Viral meningitis occurs most commonly in those under the age of 30, with a predominance in neonates and children. The disease is usually self-limiting, rarely requires hospitalization, and symptoms typically resolve in 7-10 days. Enterovirus is the most common etiologic agent and is responsible for 85 percent of viral meningitis cases. The peak season for enterovirus is during the summer months when it is hypothesized that warm weather aids in its spread [1].

The symptoms of viral meningitis are indistinguishable from those of bacterial meningitis or aseptic causes of meningitis. Classic symptoms are fever, headache, and neck stiffness (nuchal rigidity). Young children or infants may simply present with fever and irritability. Other symptoms include photophobia, myalgias, nausea and vomiting, diarrhea, lethargy, and even upper respiratory symptoms (which may precede or occur concomitantly with the classic symptoms) [2].

Evaluating Meningitis
Physical exam maneuvers for nuchal rigidity include the Kernig and Brudzinski signs. Kernig's is performed by having the supine patient, with hips and knees flexed, extend the leg passively. The test is positive if the leg extension causes pain. The Brudzinski's sign is positive when passive forward flexion of the neck causes the patient to involuntarily raise his knees or hips in flexion. Despite their historical significance, a positive result from either test has not been shown to be reliable indicators of meningitis.

It is critical to distinguish between bacterial and viral etiologies because the course of bacterial meningitis is rapid and potentially deadly. History and physical exam alone are not sufficient to confirm the diagnosis, especially in young children or infants. Meningitis is definitively diagnosed with a lumbar puncture, which in viral meningitis typically reveals clear cerebral spinal fluid (CSF) with elevated white blood cell counts predominated by lymphocytes, in contrast to the PMNs (polymorphonuclear leukocytes) that typify bacterial etiologies. CSF glucose levels are characteristically normal; protein may be normal or slightly elevated.

CSF analysis should include a gram stain, acid-fast stain, and culture to further aid in diagnosis. If available, polymerase chain reaction (PCR) for presence of genomic

material from likely viral pathogens can quickly assist in determining whether a patient's meningitis is bacterial or viral. PCR tests are currently available for enterovirus, cytomegalovirus, herpes simplex virus, and HIV pathogens. A positive PCR test for enterovirus in the emergency room can save a patient with mild symptoms from an unnecessary hospital admission, assuming proper support and provisions at home. Keep in mind that mild meningeal symptoms in the setting of prior antibiotic use may mask a fulminant cause. As with any potentially infectious picture, it is important to clarify immune status, inasmuch as mycobacterial and fungal causes are more likely in those with compromised immune systems.

Treating Viral Meningitis

Treatment for viral meningitis is primarily supportive, especially in the case of enterovirus. Some patients require hospitalization for fluid administration and pain relief, while others can be safely treated at home. Exceptions include varicella and herpes simplex virus meningitis, which, if severe, are treated with antiviral agents such as acyclovir.

References

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Alexandra Leigh, MD, is a third-year resident in internal medicine at the University of Alabama at Birmingham. She is a graduate of Princeton University and the University of Alabama School of Medicine. She looks forward to being a chief resident and hopes for a career in academic medicine.

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