Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Eastern Equine Encephalitis

Symptoms & Treatment

Symptoms

The incubation period for Eastern equine encephalitis virus (EEEV) disease (the time from infected mosquito bite to onset of illness) ranges from 4 to 10 days. EEEV infection can result in one of two types of illness, systemic or encephalitic (involving swelling of the brain, referred to below as EEE). The type of illness will depend on the age of the person and other host factors. It is possible that some people who become infected with EEEV may be asymptomatic (will not develop any symptoms).

Systemic infection has an abrupt onset and is characterized by chills, fever, malaise, arthralgia, and myalgia. The illness lasts 1 to 2 weeks, and recovery is complete when there is no central nervous system involvement. In infants, the encephalitic form is characterized by abrupt onset; in older children and adults, encephalitis is manifested after a few days of systemic illness. Signs and symptoms in encephalitic patients are fever, headache, irritability, restlessness, drowsiness, anorexia, vomiting, diarrhea, cyanosis, convulsions, and coma.

Approximately a third of all people with EEE die from the disease. Death usually occurs 2 to 10 days after onset of symptoms but can occur much later. Of those who recover, many are left with disabling and progressive mental and physical sequelae, which can range from minimal brain dysfunction to severe intellectual impairment, personality disorders, seizures, paralysis, and cranial nerve dysfunction. Many patients with severe sequelae die within a few years.

Treatment

No human vaccine against EEEV infection or specific antiviral treatment for clinical EEEV infections is available. Patients with suspected EEE should be evaluated by a healthcare provider, appropriate serologic and other diagnostic tests ordered, and supportive treatment provided.

Clinical Evaluation (for Health Care Providers)

Cerebrospinal fluid (CSF) findings include neutrophil-predominant pleocytosis and elevated protein levels; glucose levels are normal. Brain lesions are typical of encephalomyelitis and include neuronal destruction and vasculitis, which is perivascular and parenchymous at the cortex, midbrain, and brain stem. There is minimal involvement of the spinal cord.

EEEV is difficult to isolate from clinical samples; almost all isolates (and positive PCR results) have come from brain tissue or CSF. Serologic testing remains the primary method for diagnosing EEEV infection. Combined with a consistent clinical presentation in an endemic area, a rapid and accurate diagnosis of acute neuroinvasive EEEV disease can be made by the detection of EEEV-specific IgM antibody in serum or CSF. EEEV IgM tests are available commercially, in some state health department laboratories, and at CDC. A positive EEEV IgM test result should be confirmed by neutralizing antibody testing of acute- and convalescent-phase serum specimens at a state public health laboratory or CDC. To submit specimens for testing at CDC, please contact your state health department.

All EEEV disease cases should be reported to local public health authorities. Reporting can assist local, state and national authorities to recognize outbreaks of this rare disease and to institute control measures to limit future infections.

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