

Mosquito-borne Illnesses in Vermont

This spring has been one of the wettest on record, and mosquitoes may be abundant this summer in many parts of Vermont. Although mosquito-borne diseases are uncommon in Vermont, it is important to consider them as part of the differential diagnosis in patients with acute febrile illnesses, especially those with aseptic meningitis or encephalitis.

Two mosquito-borne diseases of concern in Vermont are West Nile virus (WNV) and Eastern equine encephalitis (EEE). West Nile virus (WNV) first appeared in the US in 1999 and in Vermont in 2000. Since then, eleven horses and three people with WNV infection have been reported to the Vermont Department of Health (VDH). The last reported human case was in 2003, and the last horse case was in 2005. However, WNV has been detected in a small number of mosquito pools or birds every year since.

EEE has never been reported in humans or domestic animals in Vermont, but it has caused illness in our bordering states and Quebec. In 2010, evidence of EEE virus infection was found in deer and moose in our state. In the fall of 2010, VDH partnered with the Vermont Agency of Agriculture, Food and Markets and the Centers for Disease Control and Prevention (CDC) on a deer and moose serosurvey project to look for evidence of EEE virus in Vermont. Deer and moose blood was collected from over 500 animals harvested during rifle season and sent to the CDC for testing. Approximately 11% of the deer samples and 28% of the moose samples tested positive for antibodies against EEE virus. This is the first time that evidence of EEE virus has ever been detected in Vermont.

Positive samples were found in deer or moose from every county except Grand Isle and Orange counties, where sample collection was limited. This is significant because deer have a relatively limited summer range, and the likely area of exposure is presumed to be close to where they were shot. Therefore, the EEE virus may be widespread in Vermont. In addition, some of the positive blood samples were from yearlings, which means exposure likely occurred in 2010.

Clinical Information

West Nile Virus

Eighty percent of WNV infections are subclinical. Approximately 20% of infections result in West Nile fever which is characterized by non-specific symptoms such as fever, headache and fatigue. Some people will develop a skin rash on the trunk, swollen lymph nodes or eye pain. Recovery is usually complete.

In about 1% of infections, neuroinvasive disease develops, and clinical syndromes ranging from febrile headache to aseptic meningitis to encephalitis may occur. This is most common in older patients. Symptoms may include fever, gastrointestinal symptoms, ataxia and extrapyramidal signs, optic neuritis, seizures, weakness, change in mental status, myelitis, polyradiculitis. A minority of patients with severe disease develop a maculopapular or morbilliform rash involving the neck, trunk, arms, or legs. A few patients develop flaccid paralysis.

Eastern Equine Encephalitis

Most infections with EEE virus are asymptomatic. Illness is rare but can be severe. Like WNV infection, there are two clinical syndromes that can occur. Systemic illness is characterized by an abrupt onset of fever, chills, malaise, arthralgia and myalgia. Symptoms usually last 1 to 2 weeks, and recovery is usually complete.

EEE virus infection can also cause an encephalitic illness. When this occurs in infants, the onset is usually abrupt. In children and adults, onset usually occurs after a few days of systemic illness. Symptoms include fever, headache, irritability, restlessness, drowsiness, anorexia, vomiting, diarrhea, cyanosis, convulsions and coma. Death occurs in about 33% of patients, usually within 2 to 10 days. Survivors often have disabling neurologic sequelae.

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