

# Venezuelan Equine Encephalitis

## Summary

- New World arboviral infection with mainly neurological symptoms
- Transmission via mosquitoes
- No vaccine available for people

## General

The virus only occurs in the New World. It belongs to the Alphaviridae. The virus is normally maintained enzootically in a cycle between small mammals and *Culex* mosquitoes, mainly those belonging to the subgenus *Melanoconium*. Rodents form the reservoir. This is an acute viral disease that is transferred from horses to man by various mosquitoes (*Aedes* and *Culex* sp.). In a minority of those infected this leads to a serious and sometimes fatal encephalitis. It is the main arbovirus (together with dengue) in (sub)tropical America. The infection occurs in Central America and in a sickle-shaped area in the north of South America. There are regular outbreaks and epidemics, such as in Mexico in '93 and '96. In 1995 there was an outbreak in Colombia with  $\pm 75,000$  cases (3,000 with neurological complications). Epidemics in man are always preceded by epidemics in horses. Encephalitis occurs in 90% of infected horses, 50% of which die.

## Clinical aspects

Asymptomatic infections are rare in man. Usually there is a flu-like syndrome lasting for 3 days. Fever, myalgia, headache, vomiting and diarrhoea are frequent and for this reason the disease is often assumed to be dengue. In a minority of the symptomatic patients (4% in children) this develops into encephalitis with various neurological symptoms. Confusion, stupor and convulsions can follow. There is leukopenia as well as an increased level of proteins and an increased number of lymphocytes in the cerebrospinal fluid. Sequelae are more frequent in children than in adults. Abortion is frequent in infected pregnant women. Diagnosis is clinical, epidemiological and serological.

## Prevention

In the case of an epidemic of VEE, horses should be vaccinated, and the vector should be controlled (insecticides). Most horses are not vaccinated because the vaccine is expensive. The vaccine is not in general use or readily available for man. For other encephalitis viruses such as Eastern Equine Encephalitis, Western Equine Encephalitis, St. Louis encephalitis, La Crosse Encephalitis, California Encephalitis, Jamestown Canyon and Cache Valley (now West Nile as well) surveillance is carried out in North America. This involves, among other things, using birds such as chickens or pheasants because the vectors preferably bite birds. Sera are taken from these sentinels every two weeks and tested for antibodies to VEE. Surveillance can also be carried out by catching mosquitoes. After the catch has been sorted, virus culture or PCR is then carried out on the insect collections. If the virus becomes too frequent, insecticides can be sprayed. If a sudden increase in mosquitoes is anticipated, such as after a severe rainstorm or hurricane, surveillance is increased.

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