

St. Louis Encephalitis

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St. Louis Encephalitis (SLE) virus is a flavivirus that is transmitted to humans and other vertebrates primarily by mosquitoes of the genus *Culex*. SLE virus circulates in the environment as a wild bird-mosquito cycle with wild mammals, domestic livestock and man infected as incidental hosts. Wildlife usually have inapparent infections with viremias lasting only few days. However, the clinical spectrum of disease in humans ranges from inapparent infection (most common in the young), to a mild febrile illness with headache, to aseptic meningitis and/or encephalitis progressing to death and come (more common in the elderly).¹ (http://www.doh.state.fl.us/disease_ctrl/epi).

SLE is not a common disease in Florida, and in most years few if any cases are reported. However, when it does occur there is the potential that it will cause an outbreak of serious proportions. After an outbreak of SLE caused over 315 cases and 55 deaths during 1959, 1961 and 1962 in the Tampa Bay area. The State Board of Health then established a special laboratory to study the etiology, distribution and transmission of SLE throughout the state.² Intensive environmental surveillance for SLE virus activity showed very little activity and only one confirmed and two presumptive human cases between 1964 and 1976.^{3,4} Then in 1977, an outbreak that began in Polk County and ultimately involved 20 counties resulted in 110 cases (78 confirmed) with eight deaths. In 1979-80, 12 sporadic human cases of SLE occurred in counties around the Tampa Bay area, the southwestern gulf coast and Palm Beach County on the southeastern coast.⁴ In 1980, a minor outbreak of SLE also caused four human cases in the panhandle at Ft. Walton Beach.^{5,6}

A major outbreak in 1990, that occurred between July and December caused 223 human cases of SLE (181 confirmed) with 11 deaths in 28 counties.^{7,8} The next year, only one case was reported in north Florida (Leon County) with none in 1992. Then another nine cases were reported from counties along the southwestern gulf coast during 1993-94 (1993 = 8 cases - 5 in Lee and 3 in Collier Counties; 1994 = 1 case in Charlotte County) with one case reported from Orange County in 1995. There were no reported cases in 1996. However, in 1997 sentinel chicken flocks documented widespread SLE activity throughout central Florida and 9 cases with one death were reported in 6 counties (Hillsborough 1, Polk 3, Brevard 1, Charlotte 1, Palm Beach 1 and Lee 2). Only two cases were reported in 1998 from Palm Beach and Dade Counties.

References

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1. *Surveillance and control of Selected Arthropod-borne Diseases in Florida*. DOH Epidemiology 1999.
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3. *St. Louis Encephalitis in Florida: Ten Years of Research, Surveillance and Control Programs*, Fl. St. Bd. Hlth, Monograph 12, 1969.
4. Nelson, DB, et al. *St. Louis Encephalitis - Florida 1977. Patterns of a widespread outbreak*. Am. J. Trop. Med. Hyg. 1983;32:412-16.
5. *SLE and Other Selected Arthropod-borne viruses*. HRS Manual HRSM 150-2, 1987.
6. McCaig, LF, et al. *Epidemiologic aspects of a St. Louis Encephalitis outbreak in Fort Walton Beach, Florida in 1980*. Am. J. Trop. Med. Hyg. 1994;50:387-91.
7. Mehan, P, et al.. *An Epidemic of St. Louis Encephalitis - Florida, 1990 (an abstract)* J. Fl. Mosq. Cont. Assn. 1991, 62:45
8. CDC. *Update: SL Encephalitis - Florida and Texas, 1990*. MMWR 1990;39:756-9.

Diagnostic Consultations, Case definitions and Reporting Criteria

Every suspect case of SLE, particularly those occurring in the late summer and early fall months, must be considered as a sentinel event that might signal an impending outbreak. The Department of Health, Bureau of Epidemiology has responsibility for coordinating intra and inter agency efforts to provide surveillance for and control of SLE outbreaks through out the state. It is important to promptly report suspect cases of SLE or any of the arboviruses to county health departments. This needs to be done for two reasons. First, so that the state laboratory can conduct confirmatory tests on clinical specimens from the patient and secondly, so and epidemiologic investigation to determine the most likely place of exposure can be initiated as soon as possible.

More detailed information on SLE activity patterns, mosquito vectors, personal prevention measures, timely updates on reported cases by county and Special Medical Alerts posted during outbreaks can be obtained at (DOH Web Site links for Arbovirus Compendium and Epi Update)

The Florida Department of Health, Bureau of Epidemiology (850) 488-2905 provides 24-hour diagnostic consultation services, including support for access to laboratory diagnostic services and a consumer information hot line (Enter 800 #) when outbreaks occur.

The arboviral encephalitides present somewhat differently but reported cases have a febrile illness of variable severity associated with neurologic symptoms ranging from headache to aseptic meningitis or encephalitis. SLE cases reported to the Florida Department of Health must meet a case classification and include a completed *St. Louis/Eastern Equine Case Report* form that is available at all county health departments.

St. Louis Encephalitis

ICD Reporting Code 06230

Clinical Description

Symptoms can include headache, confusion, or other alteration in sensorium, nausea and vomiting. Signs may include fever, meningismus, cranial nerve palsies, paresis or paralysis, sensory deficits, altered reflexes, convulsions, abnormal movements, and coma.

Laboratory Criteria for Diagnosis

- Fourfold or greater change in serum antibody titer, or
- Isolation of virus from or demonstration of viral antigen or genomic sequences in tissue, blood, cerebrospinal fluid (CSF), or other body fluid, or
- Specific IgM antibody by enzyme immunoassay (EIA) antibody captured in CSF or serum. Serum IgM antibodies alone should be confirmed by demonstration of IgG antibodies by another serologic assay. (e.g., neutralization or hemagglutination inhibition (HAI))

Comment

Arboviral encephalitis cannot be distinguished clinically from other central nervous system (CNS) infections

Case Classification >

Confirmed: a clinically compatible case that is laboratory confirmed

Probable: a clinically compatible case occurring during a period when SLE transmission is likely, and with the following supportive serology: a stable (\leq twofold change) elevated antibody titer to SLE (e.g. ≥ 320 by hemagglutination inhibition, ≥ 128 by complement fixation, ≥ 256 by immunofluorescence, and ≥ 160 by neutralization, or ≥ 400 by enzyme immunoassay IgM)

Note! Acute (at onset) and convalescent (2 to 4 weeks after onset) sera from reported and suspect SLE cases should be acquired and sent to the State Laboaaory for confirmatory testing as soon as possible.