LYMPHOCYTIC CHORIOMENINGITIS

[LCM]

SPECIES: Hamsters, mice, other rodents

AGENT: Arenavirus Of many latent viruses present in mice, only LCM naturally infects humans. LCM can easily be transmitted from animals to humans. Virus isolated by Armstrong and Lillie during investigation of a St. Louis Encephalitis outbreak in 1933.

RESERVOIR AND INCIDENCE: Worldwide in wild mice (M. musculus). This disease is principally confined to the eastern seaboard and northeastern states in the U.S. Wild mice infect the lab mouse. Mouse and hamster are the only species in which long term, asymptomatic infection is known to exist. *LCM virus is present in experimental mouse tumors which is a second source of infection for humans. This was first recognized in a transplantable leukemia of C58 mice. The disease can also be transmitted to laboratory animals via inoculation of infected tissue culture cells. The infection also occurs in guinea pigs, rabbits, rats, canines, swine, and primates.

TRANSMISSION: Infection in mice is maintained by congenital infection followed by lifelong carriage and excretion of virus in saliva, urine, and feces. Human infections are probably from contaminated food and dust, the handling of dead mice, and mouse bites. Bloodsucking arthropod vectors such as ticks, lice, and mosquitos may transmit the disease. Person to person transmission does not occur.

DISEASE IN ANIMALS: The clinical signs of LCM depend on the host's resistance and age when infected, although the various categories of the disease are not always clearly delineated. Animals infected in utero or during the first 48 hours postpartum may develop a transient viremia but recover completely within a few weeks. Other animals similarly infected may develop a persistent tolerant infection (PTI) that continues asymptomatically for 6 or more months. Animals infected after the first few days, when the virus will be recognized as foreign, often overcome the infection completely, but an acute, usually fatal syndrome can develop. Signs of acute infection in mice continue for 1-2 weeks and include decreased growth, rough hair coat, hunched posture, blepharitis, weakness, photophobia, tremors, and convulsions. The terminal stage of the PTI, which occurs over several weeks to 5 to 12 month old mice, is characterized by weight loss, blepharitis, and impaired reproductive performance and runted litters. The important necropsy signs are microscopic. Visceral organs, including the liver, kidneys, lungs, pancreas, blood vessels, and meninges, are infiltrated by lymphocytes. A glomerulonephritis of probable immune complex origin is a characteristic feature of terminal PTI.

DISEASE IN MAN: The features may include influenza-like illness for up to 2 weeks, possibly with orchitis. Sometimes meningitis, paralysis and coma follow. Joint pains occur during convalescence.

DIAGNOSIS: CF or virus isolation.
**PREVENTION/CONTROL:** serologic monitoring. Infection can be eradicated by cesarean derivation. Prevent wild mice from entering facilities. Control ectoparasites and roaches. Restrict flow of traffic into and out of LCM infected colonies. Protective clothing and proper care when handling infected animals or tissues, & basic hygienic practices. Screen tissue culture cell lines and murine tumor lines and animals, periodic serologic testing of at-risk personnel. Protective clothing, sanitation, and personal hygiene important.

**BIOSAFETY LEVEL:** BL-3 for infected hamsters

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