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Occurrence and Transmission of Colorado Tick Fever Virus

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About the Study

Colorado Tick Fever virus is one of the zoonotic viruses of genus coltivirus. Colorado tick fever or Colorado fever is a recoverable virus infection transmitted by ticks in the Rocky Mountains. Leukopenia, headache, back pain and biphasic fever are the main symptoms of this infection.

The early sample of genus Coltivirus is Colorado tick fever virus. Coltiviruses consists of 12 segments and double stranded RNA genome. Colorado tick fever virus is an arbovirus transmitted by ticks (Dermacentor andersoni).

The viruses namely Eyach, another coltivirus have been isolated in Central Europe.Colorado tick fever virus exists in the western provinces of Canada, mostly in the rocky mountains. Most human face cases of this disease these are seen in Colorado and these are a seasonal infection occurred mostly in spring and summer. A large number of mammals can be infected, which has been recorded by antibody tests and virus isolation. Ground squirrels, western chipmunks, wood rats, and Peromyscus species (deer mice) are the dominant reservoirs of this virus. The Colorado tick fever virus exists in a cycle between ticks and mammals. A transstadial viral persistence in D. andersoni has been detected, but there is no evidence for transovarial transmission.

A hard-shelled tick known as D. andersoni can be found at elevations between 1,500 and 3,000 m, is the most important vector which is same as the distribution of Colorado tick fever virus infections in humans and mammals. This infection is spread from Human-to-human by the transfusion of blood several months after acute disease.

After an incubation period of 3 to 7 days, the disease begins abruptly with fever up to 38 to 40°C, headaches, retro-orbital pain, myalgias (especially in the back and legs), photophobia, and nausea. The objective signs of this infection are pink eye, reddened mucous membranes of the throat, and slight spleen enlargement and lymph nodes. Some of the patients have a spotty or maculopapular rash on the body and limbs. Most of the patients experience a biphasic fever with a 2-day interval when patients feel well again. The second febrile stage restarts with discomfort, illness and more severe pain. This disease is seen rarely, only in children, including meningitis, the central nervous system and encephalitis. Due to the presence of viruses in the blood, the abnormal flow of blood is a characteristic of this infection. The virus can be detected for up to 120 days within erythrocytes. A clinical pathology of relative lymphocytosis reveals leukopenia. The virus has a tendency for the cells in the hemopoietic system, particularly affecting granulocyte, thrombocyte, and erythrocyte development. Cells which are present in the bone marrow experience myelosuppression.

Colorado tick fever should be suspected when cases in an area of endemicity, or after a stay in such a location, become sick 3 to 7 days after a tick bite. The diagnosis can be verified by virus isolation from heparinized blood inoculated intracerebrally into suckling mice. As the viremia lasts for over 120 days, the virus can be detected in blood throughout the disease. By fluorescent antibody a rapid diagnosis is possible by the detection of virus in erythrocytes. A seminested RT-PCR for viral detection can be used for diagnosis before antibodies appear. It's also important to determine patient infection in erythrocytes. Primers for a 528-bp fragment of the DNA of the S2 segment have been published by Johnson and different authors. They're also useful for the finding of other coltiviruses. QI Amp viral RNA kit is used for RNA extraction. PCR is recommended also for finding of virus in blood donators. Applicable literature is cited at the end of this section. Virus-specific IgM antibodies can be detected by ELBA and they disappear after 6 weeks of the disease attack.

Conclusion

Rocky Mountain spotted fever is the primary discriminational opinion. It's also transmitted by D. andersoni and it occurs in the same locality, in addition to other regions in the United States. It is the most common disease in Colorado. A biphasic fever for Colorado tick fever and a spotty exanthema for Rocky Mountain spotted fever are typical. The remedy for Colorado tick fever is peculiar. The prognosis is nearly always favorable.

Inactivated and downgraded virus vaccines have been developed and tested but haven't been certified and weren't extensively used because of the mildness of the disease. The most important prophylaxis is solid apparel and use of repellents at a height of 1500 and 3000 m in the Rocky Mountains. Infected people shouldn't give blood for at least six months because of the patient viremia.