West Nile Fever

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West Nile Fever

- West Nile virus first isolated 1937 in West Nile district, Uganda
- Japanese encephalitis reconvalescens serum could neutralize West Nile virus
- Virus antigenically related to Japanese encephalitis and St. Louis encephalitis virus
- Belongs to the flavi-virus family

West Nile Fever

- Until 1999 endemic in Africa, Middleeast Europe, West and Central Asia
- Introduced into United States 1999 and subsequently spread to worldwide distribution

West Nile Virus

- Epidemic outbreaks worldwild reported since the 1950s
- Large epidemic 2002/2003 in USA with 3000 reported cases
- Presently the single most important cause of arbo viral disease in USA
- 2003 blood donor screening: 735.000 cases

West Nile Fever

- West Nile virus lineage 1 worldwide and associated with neuroinvasive diasease
- West Nile virus lineage 2 only in subsaharan Africa: Asymptomatic or West Nile fever only

West Nile Fever

- Infections of humans are epizootic. The reservoir are birds
- Transmission occurs when sufficient numbers of mosquitoes can bite both birds and humans, mosquitoes become infected and allow transmission to humans
- Human to human infection does not occur except when associated with transfusion, organ donation or rarely materno-foetal/-infant transmission
- Materno-foetal transmission associated with chorio-rhitinitis and cerebral damage

West Nile Fever

- Children 4-5 times more likely to become infected during epidemics than adults.
- Approximately 20% of infected develop West Nile Fever.
- Incubation period usually 2-6 days (up to 14 days)
- Influenza like febrile illnes with abrupt unset of fever, 38-40^{o} and fatigue, malaise, anorexia, headache, myalgias and weakness. Macular papular rash and lymph adenopathy may occur.
- Duration of illness 4-6 days, reconvalescence several weeks

West Nile Fever

- Neuroinvasive disease possibly in 0.3-1% of fever cases:
- Meningitis, encephalitis, acute flaccid paralysis
- Chorioretinitis and uveitis may occur, Guillan-Barré syndrome and polyradiculitis is described

West Nile Fever

Outcome:

- Recovery from meningitis complete.
- Fifty % of children with encephalitis have neurological sequelae
- Outcome of acute flaccid paralysis correlates with degree of initial paralysis.

West Nile Fever

Outcome:

- Deaths in children are rare, but in some African outbreaks significant pediatric mortality rate have been documented.

West Nile Fever

Diagnosis by PCR of blood and CSF (viremia from or just before onset until 4th to 6th day).

Detection of virus specific antibodies:

- IgM in serum and CSF (80% positive by the 8th day)
- Cross reaction with Japanese encephalitis and St. Louis encephalitis required special methodology

West Nile Fever

- Treatment primarily supportive
- Ribavirin has in vitro effect
- Interferon-alfa beneficial in cell cultures

West Nile Fever

Prevention:

- Usual mosquito abatment measures
- Attenuated recombinant subunite vaccine under development
- Reduction of bird population

Rift Valley Fever

- Belongs to Bonyaviridae
- Is primarily a disease of sheep and cattle
- Has selective affinity for cells of the liver which undergo eosinofilic degeneration
- Causes a short but severe disease and most infected pregnant cattle abort

Rift Valley Fever

- Humans usually acquire infection from aerosols generated from body fluid and tissue of animals dying of the disease less commonly from bites from infected mosquitoes during cattle epidemics

Rift Valley Fever

- The disease was first described around the rift valley of Kenya in 1912
- In 1944 the virus was isolated from mosquitoes in Western Uganda
- In 1977 an extensive epizootic episode of rift valley fever occcured in lower Egypt with 200.000 infected humans and 600 deaths.

Rift Valley Fever

- Rift valley fever has been a cause of haemorragic fever in various parts of Africa since (Mauretania 1987, Senegal 1990, Egypt 1993, Yemen af Saudi Arabia 2000)

Rift Valley Fever

Clinical manifestations:

- Incubation period 3-7 days
- Chills, myalgia, joint pain, headache and biphasic fever lasting approximately one week, abdominal pain, vomiting, flushing, bradycardia and sometimes retinitis may occur. Retinitis may cause a visual defect that is usually reversible

Rift Valley Fever

- Meningeal symptoms and CSF findings of lymphocytic meningitis may occur
- Haemorrhagic fever with a fatality rate of 15% develops in approximately 1% of the patients.
- Diagnosis:
- Isolation of the virus in cell culture or detection of IgM antibodies by ELISA

Rift Valley Fever

- Treatment is symptomatic
- Prevention:
- Vaccination of sheep and cattle, mosquito preventive measures.