

West Nile fever is caused by the West Nile virus, which is an RNA virus of the Flavivirus family. The virus is serologically closely related to the St. Louis encephalitis virus and the Japanese encephalitis virus, and there is also some relationship to dengue virus, yellow fever virus and the tick-borne encephalitis (TBE) virus.

Incidence

The West Nile virus was first isolated in 1937 from the blood of a febrile woman from the West Nile province of Uganda. In 1957, the virus was described as a cause of meningoencephalitis in humans in Israel. Since then, West Nile fever has spread to large parts of the tropical and subtropical regions of the world, and outbreaks of the disease have also occurred in countries with a continental climate and high summer temperatures. Thus, in recent years, there have been relatively large outbreaks of the disease in Romania, with 393 human cases in 1996, in Russia, with > 800 human cases in 1999, and in Israel, with > 400 human cases in 2000. In 1999, the disease was diagnosed for the first time in the United States, where it has subsequently spread from New York to most of the United States and southern Canada. In 2002 there have been 3949 human cases with 254 deaths in the United States, and in Canada, up to the end of November 2002, 141 cases and two deaths were registered. In 2000, the disease occurred in horses in the Camargue area of France for the first time in more than 35 years. Human cases have not been diagnosed in Western Europe.

Spread of the virus

Wild birds living in the vicinity of water are the main host for virus propagation. Presumably, because of adaptation between virus and host over a long period of time, these birds do not become ill, despite the fact that they develop protracted, severe viraemia. Migratory birds living in tropical and subtropical areas can therefore spread the virus to new areas, and it must be considered likely that they may introduce the virus to temperate areas of the world. Mosquitoes that have the capacity to transfer the virus from migratory birds to local birds are required for

WEST NILE FEVER

the virus to become established in the fauna. For this to occur, the virus must be able to propagate in the mosquito's salivary glands. This requires an average 24-hour temperature of more than 22^o C for more than 12 days. This may occur in summer in temperate regions with a continental climate.

The prerequisites described for the establishment of West Nile virus in the fauna can hardly be fulfilled in areas where a coastal climate prevails, such as Denmark. Therefore, outbreaks are not likely to occur in this country, even though migratory birds probably frequently introduce the virus, and suitable mosquitoes are present. Thus, in local bird species such as crows, pigeons or zoo birds, no fatal infections have appeared. These were among the earliest signs of West Nile virus in the United States.

Mode of infection

A wide range of blood-sucking arthropods, primarily various species of Culex mosquito, can transfer West Nile virus. In this way, the virus is transferred from viraemic birds to other birds, to mammals, particularly horses, and to humans. Mammals, including humans, develop only mild, transient viraemia, thus constituting what are known as "dead-end hosts" for the virus. Under normal circumstances, West Nile virus is not transmitted from animals to humans or from person to person, but infection by organ transplantation and blood transfusion has been observed in connection with the outbreak in the United States. Furthermore, one case of probable infection by breastfeeding has been observed.

Course of the disease in humans

About 80% of all human infections have an asymptomatic course. The disease appears after an incubation period of 2-10 days, starting with rapidly rising fever, rigors, general malaise, headaches and pain behind the eyes. A maculopapular rash can be seen in approximately half of the patients after 2-5 days. Spontaneous remission is observed in the majority of patients after 3-5 days. Less than 1% develop serious illness, and serious complications in the form of encephalitis occur in one out of 150-320 human cases.

Furthermore, a polio-like course of disease, with acute flaccid paralysis, has recently been described in a few patients in the United States. Treatment is symptomatic, and the disease is seldom fatal, but death may occur, particularly among elderly and debilitated patients.

Diagnostics

The diagnosis is established by detection of IgM and IgG antibodies in a blood sample. Detection of the virus using PCR is possible only during the first days after onset of the disease because of the transience of the viraemic phase in humans. The tests can be requested from the Statens Serum Institut and the analysis is performed at the Bernhard-Nocht-Institute for Tropical Medicine in Hamburg.

Prophylaxis

Primary prevention of mosquito bites, in the form of mosquito repellents, mosquito nets and clothing that covers as much of the skin as possible, is recommended on visits to areas with a risk of infection. Prolonged immunity seems to occur after natural infection. No vaccine is available against West Nile virus, but an experimental vaccine is being tested.

(P. C. Grauballe, Department of Virology, H. Schmitz, Department of Virology, Bernhard-Nocht-Institute for Tropical Medicine, Hamburg)

EUROPEAN TRAINING PROGRAMME FOR EPIDEMIOLOGISTS

Once again it is possible to apply for admission to a two-year education programme for epidemiologists, EPIET (European Programme for Intervention Epidemiology Training). The course starts in September 2003 and includes field epidemiology, outbreak investigation, disease surveillance and control of infectious diseases besides other topics. Accepted applicants will be stationed in a surveillance institution within an EU country, Norway or the WHO. Information regarding application, remuneration and so on may be obtained from the Department of Epidemiology or via www.EPIET.org. The deadline for application is Friday 28 February 2003. (Department of Epidemiology)

Patients with confirmed *Listeria monocytogenes* infection

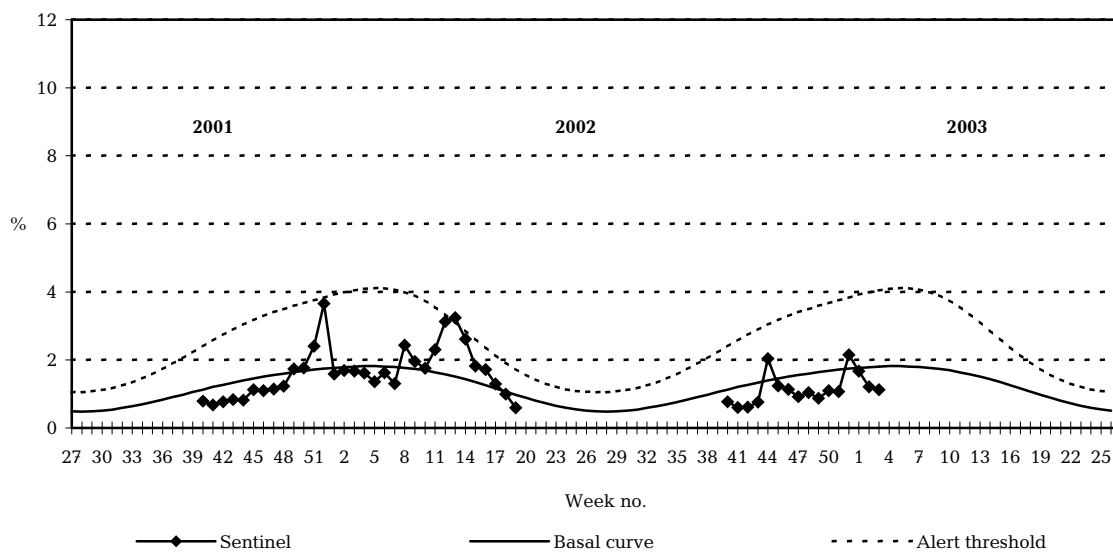
4th quarter of 2002 compared with the 4th quarter of 2001, and the total years of 2002 and 2001

	4th quarter 2002	4th quarter 2001	Total 2002	Total 2001
Mother/child infection	-	1	2	3
Septicaemia	4	7	19	25
Meningitis	-	3	5	10
Other	-	-	3	-
Total	4	11	29	38

(Dept. of G-I Infections)

Sentinel surveillance of influenza activity

Weekly percentage of consultations, 2001/2002/2003



Sentinel: Influenza consultations as percentage of total consultations

Basal curve: Expected frequency of influenza consultations under non-epidemic conditions

Alert threshold: Possible incipient epidemic

(Dept. of Epidemiology)