FACTSHEET
JAPANESE ENCEPHALITIS

Expertenkomitee für Reisemedizin
Comité d'experts pour la médecine des voyages
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Key aspects briefly summarized

- Viral disease transmitted by night-biting mosquitoes in rural/suburban areas.
- Very rare in travelers.
- Mostly mild or without symptoms; severe illness is rare but has a high mortality.
- Vaccine available for those at increased risk, such as long-term travelers to endemic areas.

Disease

Japanese encephalitis is caused by the Japanese encephalitis virus (JEV), a flavivirus, which is spread by mosquitoes. Epidemics of Japanese encephalitis were first described in Japan from the 1870s onward. It is the main cause of viral encephalitis in the Asia-Pacific region.

Occurrence / Risk areas

JEV is endemic in tropical regions of Eastern and Southern Asia and the Western Pacific regions. Epidemics are reported in these regions in subtropical and temperate climate zones. In 2016, a first autochthonous human case was reported in Angola, Africa. The virus exists naturally in a transmission cycle between mosquitoes, pigs and water birds. Birds may be responsible for the spread of JEV to new geographical areas. Humans mainly become infected in rural or suburban areas, when staying in close proximity to pigs.

Transmission

JEV is transmitted through the bite of female Culex mosquitoes (mainly *Culex tritaeniorrhynchus*), which are active throughout the night, indoors and outdoors. For most travelers to Asia, the risk is very low but varies based on destination, season, length of travel and activities.

Symptoms

Most people infected are asymptomatic or experience only mild symptoms with fever and headache. About 1/250 people develop severe symptoms after 4-14 days of getting infected, as the infection spreads to the brain, characterized by an abrupt onset of high fever, headache, neck stiffness, disorientation, coma, seizures and paralysis. Up to 1 in every 3 persons developing severe symptoms consequently die. Permanent sequelae, such as behavioural changes, muscle weakness, or recurrent seizures occur in 30%–50% of those with encephalitis.

Diagnosis

The diagnosis can be confirmed by serology in cerebrospinal fluid and serum, IgM antibodies usually become detectable 3-8 days after onset of symptoms.

Treatment

There is no directed antiviral treatment available. Treatment consists of supportive care to relieve symptoms.

Prevention

Mosquito bite prevention from dusk to dawn (Culex are active during the night) – sleeping under a mosquito net or in an air-conditioned room; repellants on exposed skin; wearing long clothes; treating clothes with insecticide. Vaccination is recommended in travelers at increased risk of infection (longer periods of travel in endemic regions, travel during the JEV transmission season, staying in rural areas especially near rice paddies or pig farms and participating in outdoor activities). The inactivated vaccine IXIARO® is given in two doses (ideally spaced 28 days apart, though the second dose can be given as early as 7 days after the first dose) before travel. In case of continuous risk or re-exposure, a booster dose can be given after 12 months, and then every 10 years. For children 12 months to 18 years, the use is "off-label". Reactions to the vaccine are generally mild and may include pain and tenderness at the injection site, headache, muscle aches, and low-grade fever.

Further Information

- WHO Factsheet Japanese Encephalitis: https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis
- Solomon et al., Japanese Encephalitis, BMJ 2000: https://jnnp.bmj.com/content/jnnp/68/4/405.full.pdf
- CDC Japanese Encephalitis: https://www.cdc.gov/japaneseencephalitis/index.html