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Competitive Exams: Japanese Encephalitis

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Japanese encephalitis is a potentially severe viral disease that is spread by infected mosquitoes in the agricultural regions of Asia. It is one of several mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and death. It can be a risk to travellers to rural areas where the disease is common. There is no specific treatment for Japanese encephalitis but a vaccine is recommended for travellers whose itineraries might put them at risk for Japanese encephalitis. All travellers should take precautions to avoid mosquito bites to prevent Japanese encephalitis and other mosquito-borne diseases.

Japanese encephalitis is a disease that is spread to humans by infected mosquitoes in Asia. It is one of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death.

Infectious Agent

Japanese encephalitis is caused by the Japanese encephalitis virus, an arbovirus, which is an arthropod-borne virus. Arboviruses are a large group of viruses that are spread by certain arthropods, most commonly blood-sucking insects. Japanese encephalitis is spread by infected mosquitoes.

Distribution

Japanese encephalitis is found throughout rural areas in Asia and can also occur near urban areas in some developing Asian countries. This is a seasonal disease that usually occurs in the summer and fall in the temperate regions of China, Japan, and Korea. Countries which have had major epidemics in the past, but which have controlled the disease primarily by vaccination, include China, Korea, Japan, Taiwan and Thailand. Other countries that still have periodic epidemics are Vietnam, Cambodia, Myanmar, India, Nepal, and Malaysia.

Mode of Infection

Japanese encephalitis virus has a complex life cycle involving domestic pigs, birds and a specific type of mosquito, *Culex tritaeniorhynchus* that lives in rural rice-growing and pig-farming regions. The mosquito breeds in flooded rice fields, marshes, and standing water around planted fields. The virus can infect humans, most domestic animals, birds, bats, snakes, and frogs. After infection, the virus invades the central nervous

system, including the brain and spinal cord. Mosquitoes become infected by sucking blood from domestic pigs and wild birds infected with the Japanese encephalitis virus. Infected mosquitoes then transmit the virus to humans and animals during the feeding process. The virus multiplies in the blood systems of domestic pigs and wild birds. Among persons who are infected by a mosquito bite, only 1 in 50 will develop an illness. Japanese encephalitis is the leading cause of viral encephalitis in Asia, where 30,000 to 50,000 cases are reported each year.

Symptoms

Most infected persons develop mild symptoms or no symptoms at all. In people who develop a more severe disease, it starts as a flu-like illness, with fever, chills, tiredness, headache, nausea, and vomiting. Confusion and agitation can also occur in the early stage. The illness can progress to a serious infection of the brain (encephalitis) and can be fatal in 30 % of cases. Among the survivors, another 30 % will have serious brain damage, including paralysis. Mild infections may occur without apparent symptoms other than fever with headache but in the case of more severe infections there is headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis.

Symptoms usually appear 6 – 8 days after the bite of an infected mosquito, incubation period being 5 – 15 days.

Diagnosis

Diagnosis is based on tests of blood or spinal fluid.

Treatment

There is no specific treatment for Japanese encephalitis. Antibiotics are not effective against viruses, and no effective anti-viral drugs have been developed. Care of patients centres on treatment of symptoms and complications.

Prevention

Vaccination is recommended only for persons who plan to travel in the infection prone areas for 4 weeks or more and in special circumstances such as an ongoing outbreak of disease.

Because of the potential for other mosquito-borne diseases in Asia, all travellers should take steps to avoid mosquito bites. The mosquitoes that transmit Japanese encephalitis feed mainly outside during the cooler hours at dusk and dawn. Travellers should minimize outdoor activities at these times, use mosquito repellent on exposed skin and stay in well-screened rooms. Travellers to rural areas should use a bed-net and aerosol room with insecticides.