CONDITION

Summer encephalitis

Summer encephalitis is mosquito-borne brain inflammation usually caused by Japanese encephalitis virus.

WHAT IT IS
Mosquito-borne brain inflammation caused by Japanese encephalitis virus

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Fever, severe headache, confusion, seizures

WHAT CAUSES IT
Japanese encephalitis virus infection from mosquito bites

HOW IT IS DIAGNOSED
Virus-specific IgM testing of blood or spinal fluid

MAIN TREATMENT
Supportive hospital care and rehabilitation

CAN IT BE CURED?
No - no virus-specific cure, though recovery is possible

IS IT AN EMERGENCY?
Yes - new confusion, seizures, or reduced consciousness

LONG-TERM OUTLOOK
Full recovery possible; some have lasting neurological disability

Overview

"Summer encephalitis" is an older name usually referring to Japanese encephalitis , an infection caused by Japanese encephalitis virus. The virus is spread by mosquitoes in parts of Asia and the western Pacific.

The name comes from the seasonal pattern seen in some places. In temperate areas, infections are more common during summer and early autumn. In tropical areas, transmission may happen throughout the year and often increases during the rainy season. Encephalitis occurring in summer can also have other causes, so the season alone does not identify the infection.

Encephalitis means inflammation of the brain. Most people infected with Japanese encephalitis virus have no symptoms. A small proportion develop inflammation around or within the brain.

This can affect consciousness, movement, speech and other brain functions.

Someone with possible encephalitis needs urgent assessment in hospital. Although there is no medicine that directly clears this virus, hospital care can support the body, manage seizures and reduce complications while the immune system responds.

Symptoms

Symptoms usually begin several days after an infected mosquito bite. A person cannot normally tell which bite caused the infection.

Mild infection may cause a fever and headache without obvious brain inflammation. Severe illness may begin with:

Children may be more likely to have seizures or a sudden change in behaviour. Some people develop tremor, rigid muscles or unusual movements because the infection can affect parts of the brain that control movement.

These symptoms are not unique to Japanese encephalitis. Meningitis, other viral infections, bacterial infections, stroke and several non-infectious conditions can cause similar problems. Medical testing is needed to find the cause.

- Fever and a strong headache
- Nausea or vomiting
- Neck stiffness
- Confusion, unusual sleepiness or difficulty waking
- Seizures
- Weakness, abnormal muscle stiffness or difficulty moving
- Loss of consciousness

Causes and risk factors

Japanese encephalitis virus belongs to the flavivirus family, which also includes West Nile, dengue and yellow fever viruses. It is mainly carried by Culex mosquitoes.

The virus circulates between mosquitoes and animals, particularly pigs and water birds. A mosquito can become infected after feeding on an infected animal and then pass the virus through another bite.

Humans usually do not have enough virus in their blood to infect mosquitoes. For this reason,

people are considered "dead-end hosts." Japanese encephalitis does not normally spread through coughing, touching, sharing food or routine contact.

Risk is linked to both location and exposure. Factors that may increase exposure include:

The overall risk for most short-term travellers is low. Risk may be higher for people spending longer periods in affected rural areas or doing frequent outdoor activities. Public health travel advice considers the destination, season, trip length and planned activities.

- Living in or visiting an area where the virus circulates
- Spending extended time in rural or farming areas
- Outdoor activity during evening or night, when many carrier mosquitoes bite
- Staying near rice fields, wetlands or pig farming
- Travel during a local transmission season

Diagnosis

Possible encephalitis is assessed in hospital. The medical team will ask about symptoms, recent travel, mosquito exposure and vaccination history. A neurological examination checks awareness, movement, reflexes and other brain functions.

A lumbar puncture , sometimes called a spinal tap, is usually important. A needle is used to collect a small sample of the fluid surrounding the brain and spinal cord. This fluid can show signs of inflammation and can be tested for antibodies called IgM that the immune system makes against Japanese encephalitis virus. Blood may also be tested.

A test performed very early can sometimes be negative because antibodies have not yet reached a detectable level. Further testing may be needed if suspicion remains. Specialised laboratories may use additional antibody tests to separate Japanese encephalitis from related flavivirus infections.

Brain scans such as MRI can show areas of inflammation and help exclude other causes. However, a scan cannot confirm Japanese encephalitis by itself. An electroencephalogram, or EEG, may be used to assess seizures and the brain's electrical activity.

Treatment and management

There is no antiviral treatment proven to remove Japanese encephalitis virus. Treatment is supportive, meaning it protects essential body functions and treats problems caused by the

inflammation.

Hospital care may include:

Before the cause is known, doctors may begin treatments for other serious infections that can look similar, such as bacterial meningitis or herpes simplex encephalitis. These medicines do not treat Japanese encephalitis, but delaying treatment for those other infections could be harmful.

Rehabilitation may start in hospital and continue after discharge. Depending on the effects, this may involve physiotherapy for movement, occupational therapy for daily activities, and speech and language therapy for communication or swallowing. Psychological and educational support can also be important.

- Fluids, nutrition and careful monitoring of body salts
- Oxygen or breathing support when needed
- Medicines to control seizures, pain or fever
- Management of pressure or swelling within the skull
- Help preventing complications from immobility or swallowing problems

Complications

Severe brain inflammation can affect breathing, swallowing or consciousness. Some people die during the acute illness despite hospital care.

Survivors may have temporary or lasting neurological problems. These can include:

The pattern is different for each person. A serious early illness does not predict the exact degree of later recovery.

- Muscle weakness, stiffness, tremor or difficulty walking
- Seizures or epilepsy
- Problems with memory, attention, speech or learning
- Changes in mood, behaviour or emotional control
- Difficulty swallowing or completing everyday tasks

Prevention

The virus cannot always be avoided in places where it circulates, but vaccination and reducing

mosquito bites can lower the risk.

Japanese encephalitis vaccines are available. Vaccination recommendations are based on where you are going, how long you will stay, the season and the activities you plan. It may be recommended for people living in affected areas and for some travellers with greater exposure. A travel health appointment well before departure allows time to discuss whether vaccination is appropriate.

Vaccination does not protect against every infection carried by mosquitoes. Bite prevention remains important:

Mosquito exposure may continue after dark and overnight. Prevention measures are most useful when followed consistently rather than only when mosquitoes are easy to see.

There is no vaccine that treats an infection after symptoms have started.

- Use an effective insect repellent according to its label
- Wear loose-fitting long sleeves, long trousers and socks
- Stay in rooms with screens or air conditioning when possible
- Sleep under a mosquito net where accommodation is not well screened
- Use permethrin-treated clothing or equipment as directed, but not on skin

Living with it and what to expect

The immediate illness is usually managed in hospital. Recovery after discharge may take months, and improvements can continue over a longer period. Some people recover fully, while others have ongoing difficulties with movement, seizures, communication, memory or behaviour.

Progress may be uneven. Fatigue can make symptoms more noticeable, and a person may manage one task well but struggle with another. Rehabilitation goals are often adjusted as abilities change.

Routine follow-up may include neurological review, seizure management, rehabilitation and checks of swallowing, mood, learning or daily functioning. Children may need support at school because attention, behaviour or learning problems can become clearer after they return to the classroom.

Families and carers may also need practical and emotional support. Lasting changes in independence or behaviour can affect the whole household. Follow-up services can help with equipment, home adjustments, education and plans for returning to work or school.

When to get medical help

Seek emergency medical care now for a person with fever or headache who develops:

Do not wait for a planned appointment if these symptoms are present. Encephalitis and several conditions that resemble it need rapid hospital assessment.

After discharge, attend routine follow-up for persistent weakness, memory problems, mood or behaviour changes, swallowing difficulty, or problems returning to school or work. Seek prompt medical advice if recovery worsens, seizures recur or new neurological symptoms appear.

A person planning travel to an affected region can arrange a non-urgent travel health appointment to discuss vaccination and mosquito protection. This is best done before departure rather than after arriving.

- New confusion, disorientation or unusual behaviour
- A seizure
- Severe drowsiness, difficulty waking or loss of consciousness
- New weakness, trouble speaking or difficulty walking
- Neck stiffness with fever
- Breathing or swallowing difficulty

Common questions

Is summer encephalitis the same as Japanese encephalitis?

The term usually refers to Japanese encephalitis, especially in older writing. However, "summer encephalitis" is not a precise modern diagnosis. Other infections can cause encephalitis during summer, so testing is needed to identify the cause.

Can I catch it from another person?

Not through normal contact. Japanese encephalitis virus is mainly transmitted through mosquito bites. People usually do not develop enough virus in their blood to pass it back to mosquitoes.

Does every infected mosquito bite cause encephalitis?

No. Most people infected with Japanese encephalitis virus develop no symptoms. Only a small proportion develop brain inflammation. It is not possible to predict from the bite itself who will become ill.

Can I get it outside summer?

Yes. The season depends on the location. Transmission is often seasonal in temperate regions but may occur throughout the year in tropical areas, with peaks linked to rainfall and mosquito numbers.

Is there a vaccine for summer encephalitis?

There are vaccines against Japanese encephalitis. They do not prevent encephalitis from every possible cause. Whether vaccination is advised for travel is based on destination, trip length, season and likely mosquito exposure.

Will I recover completely?

Complete recovery is possible, but it cannot be guaranteed. Some people have lasting problems with movement, seizures, communication, memory or behaviour. Rehabilitation and follow-up can support recovery and independence.

Sources

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