

Meningoencephalitis

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What is meningoencephalitis?

Meningoencephalitis means inflammation of the brain and its protective wrappings (**meninges**). Breaking down the word gives:

- **Meningo** - meaning meninges, the protective membranes of the brain
- **encephal** - short for *encephalon*, an Ancient Greek word that is used in medicine to mean the brain
- **itis** - meaning inflammation.

Causes of meningoencephalitis

Meningoencephalitis may begin as meningitis or encephalitis that then progresses to involve both the brain tissue and the meninges.

It can be caused by infection, such as by bacteria (e.g., *streptococcus pneumoniae* and *Neisseria meningitidis*), a virus (e.g., herpes simplex virus, rabies, varicella-zoster virus (chicken pox), and West Nile virus), or by fungi or protozoa.

Meningoencephalitis can also be caused by autoimmunity, where the body attacks its own tissues. The most common type is [anti-NMDA encephalitis](#).

Symptoms

People with meningoencephalitis may experience a variety of symptoms which vary according to the cause and disease course.

Patients will experience features associated with meningitis such as neck stiffness, severe headaches, and sensitivity to light. Patients will also experience features of encephalitis such as confusion, reduced consciousness, seizures, and coma.

If the meningoencephalitis is caused by infection, the patient will likely experience fevers, uncontrollable shaking, nausea and vomiting, and feeling generally unwell. If it is caused by immune system, symptoms such as psychiatric, movement and sleep disturbances may be present.

Diagnosis

Diagnosing meningoencephalitis can be challenging. Doctors use a range of information to make the diagnosis, including:

- The symptoms that a patient experiences.
- The history of the illness.
- Blood tests that may show raised markers of inflammation. Specialist antibody blood tests can be helpful in the diagnosis of autoimmune meningoencephalitis.
- Brain scans using CT or MRI.

- Lumbar puncture: where a needle is inserted into the back to get cerebrospinal fluid (the fluid that bathes the brain and spinal cord). This can help diagnose meningoencephalitis and isolate the bacteria, virus or antibody that is causing it or is associated with it.
- Electroencephalography (EEG), where electrodes pick up the electrical activity of the brain.

Treatment

The treatment of meningoencephalitis depends on the cause. If it is caused by an infection, then antibiotics or antiviral medication can be used. Steroids are also used to reduce the inflammation in the brain.

If the cause is autoimmune, a combination of steroids and other immunosuppressant drugs is typically used.

Due to how serious meningoencephalitis can be, patients are almost always treated on an intensive care unit (ICU).

Outcomes

Meningoencephalitis is a serious condition and unfortunately some patients do not survive, and those that do can be left with disabilities of various degrees and manifestations including cognitive, emotional, physical, and behavioural difficulties.

Early diagnosis and treatment are crucial to maximise chances of recovery.

FS076V1 Meningoencephalitis

Date created: August 2024 / Last updated: September 2024 / Review date: September 2027

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