



[Home](#) → [Medical Encyclopedia](#) → Brain abscess

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## Brain abscess

A brain abscess is a collection of pus, immune cells, and other material in the brain, caused by a bacterial or fungal infection.

### Causes

Brain abscesses commonly occur when bacteria or fungi infect part of the brain. As a result, swelling and irritation (inflammation) develop. Infected brain cells, white blood cells, live and dead bacteria or fungi collect in an area of the brain. Tissue forms around this area and creates a mass or abscess.

The germs that cause a brain abscess can reach the brain through the blood. Or, they enter the brain directly, such as during brain surgery. In some cases, a brain abscess develops from an infection in the sinuses.

The source of the infection is often not found. However, the most common identified source is a lung infection. Less often, a heart infection is the cause.

The following raise your chance of developing a brain abscess:

- A weakened immune system (such as in people with HIV/AIDS)
- Chronic disease, such as cancer
- Medicines that suppress the immune system (corticosteroids or chemotherapy)
- Congenital heart disease

### Symptoms

Symptoms may develop slowly, over a period of several weeks, or they may develop suddenly. They may include:

- Changes in mental status, such as confusion, slow response or thinking, unable to focus, or sleepiness
- Decreased ability to feel touch or pain (sensory loss)
- Fever and chills
- Headache, seizures, or stiff neck
- Language problems
- Loss of muscle function, typically on one side
- Vision changes

- Vomiting
- Weakness in a limb (such as an arm or leg)

## Exams and Tests

A brain and nervous system (neurological) exam will usually show signs of increased pressure inside the skull and problems with brain function.

Tests to diagnose a brain abscess may include:

- Blood cultures
- Chest x-ray
- Complete blood count (CBC)
- Head CT scan
- Electroencephalogram (EEG)
- MRI of head
- Testing for the presence of antibodies to certain germs

A needle biopsy is usually performed to identify the cause of the infection.

## Treatment

A brain abscess is a medical emergency. Pressure inside the skull may become high enough to be life threatening. You will need to stay in the hospital until the condition is stable. Some people may need life support.

Medicine such as an antibiotic, rather than surgery, is recommended if you have:

- A small abscess less than 0.79 inches (in) or 2 centimeters (cm)
- An abscess deep in the brain
- An abscess and meningitis
- Several abscesses (rare)
- Shunts in the brain for hydrocephalus (in some cases, the shunt may need to be removed temporarily or replaced)
- An infection called toxoplasmosis in a person with HIV/AIDS

You may be prescribed several different types of antibiotics to make sure treatment works.

Antifungal medicines may also be prescribed if the infection is likely caused by a fungus.

Surgery is needed if:

- Increased pressure in the brain continues or gets worse
- The brain abscess does not get smaller after medicine
- The brain abscess contains gas (produced by some types of bacteria)
- The brain abscess might break open (rupture)

- The brain abscess is large (more than 0.79 in or 2 cm)

Surgery consists of opening the skull, exposing the brain, and draining the abscess. Lab tests are often done to examine the fluid. This helps identify the cause of the infection, so that the right antibiotics or antifungal medicine can be prescribed.

Needle aspiration guided by CT or MRI scan may be needed for a deep abscess. During this procedure, medicines may be injected directly into the mass.

Certain diuretics (medicines that reduce fluid in the body) and steroids may be used to reduce brain swelling.

## Outlook (Prognosis)

If untreated, a brain abscess is almost always deadly. With treatment, the death rate is about 10% to 30%. The earlier treatment is received, the better.

Some people may have long-term brain or nerve damage after a brain abscess or surgery.

## Possible Complications

Complications may include:

- Brain damage
- Meningitis that can be severe and life threatening
- Return (recurrence) of the infection
- Seizures

## When to Contact a Medical Professional

Go to a hospital emergency room or call 911 or the local emergency number if you have symptoms of a brain abscess.

## Prevention

You can reduce the risk of developing a brain abscess by getting treated for infections or health problems that can cause them.

Some people, including those with certain heart disorders, may receive antibiotics before dental or other procedures to help reduce the risk of infection.

## Alternative Names

Abscess - brain; Cerebral abscess; CNS abscess

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