CONDITION

Gayet-wernicke syndrome

Gayet-Wernicke syndrome is an acute brain condition caused by severe vitamin B1 deficiency.

WHAT IT IS
Acute brain dysfunction from severe vitamin B1 deficiency

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Confusion, unsteady walking, abnormal eye movements, drowsiness

WHAT CAUSES IT
Severe thiamine deficiency

HOW IT IS DIAGNOSED
Clinical assessment with supportive MRI and blood tests

MAIN TREATMENT
Urgent injectable thiamine and nutritional support

CAN IT BE CURED?
Sometimes - early treatment may reverse brain dysfunction

IS IT AN EMERGENCY?
Yes - suspected symptoms need immediate treatment

LONG-TERM OUTLOOK
Often improves, but lasting memory problems can occur

Overview

Gayet-Wernicke syndrome is an acute brain condition caused by a severe lack of thiamine, also called vitamin B1. In much of the medical literature, it is called Wernicke encephalopathy .

Your brain needs thiamine to turn food into usable energy. Because the body stores only a limited amount, deficiency can develop when intake is very low, absorption is poor, or the body's needs increase. Some areas of the brain are especially sensitive to the resulting loss of energy.

The condition can affect awareness, balance, coordination, and eye movement. It is a medical emergency because treatment works best when started immediately. Clinicians may give thiamine before test results are available because delaying treatment can lead to permanent brain injury.

Gayet-Wernicke syndrome is often linked with long-term heavy alcohol use, but it is not limited to people who drink alcohol. It can also occur after prolonged vomiting, severe undernutrition, weight-loss surgery, cancer treatment, and other conditions that interfere with nutrition.

Symptoms

Symptoms may appear over hours or days. They can be subtle, and not everyone develops the well-known combination of confusion, eye problems, and difficulty walking.

Changes in thinking or awareness may include:

Problems with movement may include an unsteady, wide-based walk. You may have difficulty standing or walking without help. Poor coordination can affect the arms as well as the legs.

Eye symptoms can include rapid, repetitive eye movements, called nystagmus . One or both eyes may not move normally, or double vision may develop. The eyelids may droop.

Other possible features include weakness, low body temperature, low blood pressure, a fast heartbeat, or numbness and pain caused by nerve damage. Severe cases may lead to seizures, loss of consciousness, or coma.

The absence of one symptom does not rule the condition out. Some people mainly show confusion, while others first develop balance or eye problems.

- Confusion, disorientation, or difficulty concentrating
- Unusual sleepiness, reduced alertness, or lack of interest
- Short-term memory problems
- Behaviour that seems different from usual

Causes and risk factors

Gayet-Wernicke syndrome is caused by severe thiamine deficiency. Thiamine is found in many foods, but the body does not keep large reserves. Deficiency is more likely when several nutritional problems occur together.

Long-term heavy alcohol use is an important risk factor. Alcohol may reduce food intake, interfere with thiamine absorption and storage, and make it harder for the body to use the vitamin. Liver disease and repeated vomiting can add to the risk.

Other situations associated with thiamine deficiency include:

A large carbohydrate or glucose load increases the body's need for thiamine. In someone who

is already severely deficient, this can bring out or worsen neurological symptoms. Emergency treatment for dangerously low blood sugar should not be delayed, but thiamine should be given promptly when deficiency is suspected.

Gayet-Wernicke syndrome is not usually an inherited condition. Individual biological differences may affect susceptibility, but inadequate available thiamine is the central problem.

- Persistent vomiting, including severe vomiting during pregnancy
- Severe food restriction, starvation, or an eating disorder
- Weight-loss surgery or other surgery affecting digestion
- Cancer, chemotherapy, or serious long-term illness
- Dialysis or other causes of major nutrient loss
- Prolonged nutrition given through a vein without enough thiamine
- Rapid refeeding after a period of severe undernutrition

Diagnosis

There is no single test that can reliably confirm or exclude Gayet-Wernicke syndrome. Diagnosis is mainly clinical, meaning it is based on symptoms, medical history, nutrition, alcohol use, examination findings, and the level of risk.

A clinician may check your alertness, memory, eye movements, coordination, reflexes, and ability to stand or walk. Information from relatives or friends can be helpful if confusion makes it difficult for you to describe what has changed.

Blood tests may measure thiamine or related enzyme activity. They can also look for low magnesium, abnormal salts, infection, liver problems, or other causes of confusion. A normal thiamine result does not reliably rule out the condition, especially after treatment has begun.

An MRI scan may show changes in parts of the brain commonly affected by thiamine deficiency. However, a normal MRI does not exclude Gayet-Wernicke syndrome. CT scans are less useful for detecting its typical brain changes, although they may help identify another emergency, such as bleeding.

Clinicians may also consider stroke, head injury, infection, medication effects, intoxication, alcohol withdrawal, low blood sugar, or other vitamin deficiencies. When suspicion is significant, treatment is usually started without waiting for scans or laboratory results.

Treatment and management

The main treatment is urgent thiamine given into a vein or muscle. Injectable treatment is used because it reaches the bloodstream reliably and works faster than tablets when deficiency is severe or absorption is uncertain.

Treatment often begins in hospital. The amount and length of treatment are chosen according to symptoms, risk factors, response, and local clinical guidance. This article cannot provide an individual dosing plan.

Fluids and food may need to be introduced carefully, particularly after severe undernutrition. Magnesium may be checked and replaced because the body needs it to use thiamine properly. Other vitamin and mineral deficiencies may also require treatment.

Clinicians will address the reason the deficiency developed. This may involve treatment for vomiting, support after weight-loss surgery, cancer care, nutritional rehabilitation, or help with alcohol dependence. If physical dependence on alcohol is possible, suddenly stopping without medical support can cause dangerous withdrawal.

Some people continue oral thiamine and other nutritional supplements after the emergency phase. Physiotherapy can help with balance, strength, and safe walking. Occupational therapy may help with daily tasks, while memory rehabilitation and structured support may be needed if cognitive problems remain.

Improvement after thiamine supports the diagnosis, but lack of rapid improvement does not necessarily disprove it. Some symptoms take longer to recover, and established brain injury may not fully reverse.

Complications

Without timely treatment, Gayet-Wernicke syndrome can cause lasting brain damage. One important complication is Korsakoff syndrome , a long-term disorder that mainly affects the ability to form new memories. A person may repeat questions or forget recent events while older memories and social conversation appear less affected.

Some people unconsciously fill gaps in memory with incorrect details. This is called confabulation . It is not deliberate lying.

Other possible complications include:

Early treatment lowers the risk of permanent injury, but it cannot guarantee full recovery.

- Persistent problems with balance and coordination

- Falls and related injuries
- Ongoing eye movement problems
- Peripheral nerve damage causing pain, numbness, or weakness
- Choking or breathing complications when alertness is reduced
- Coma or death in severe untreated cases

Prevention

Many cases can be prevented by recognising and treating thiamine deficiency before brain symptoms appear. Prevention is tailored to the reason someone is at risk.

People with prolonged vomiting, severe food restriction, malabsorption, or major weight loss need prompt medical and nutritional assessment. After weight-loss surgery, taking the recommended vitamins and reporting repeated vomiting early are especially important.

Hospitals may provide preventive thiamine to people who are severely undernourished, dependent on alcohol, or at risk during refeeding. This is a clinical decision based on the person's circumstances.

If you drink heavily or may be physically dependent on alcohol, seek medical help to reduce or stop safely. Alcohol withdrawal can itself be an emergency, so unsupported sudden withdrawal may be unsafe.

A balanced diet helps prevent ordinary deficiency, but food alone is not an adequate treatment once neurological symptoms have developed. Suspected Gayet-Wernicke syndrome requires urgent medical care and injectable thiamine.

Living with it and what to expect

Recovery differs according to how early treatment begins, how severe the deficiency was, and whether there are other health problems. Eye movement abnormalities may begin improving within hours or days. Confusion and balance problems often take longer.

Over the following weeks and months, walking, concentration, and independence may continue to improve. Rehabilitation can help you work around symptoms and rebuild practical skills. Recovery is not always steady, and fatigue or illness may make difficulties more noticeable.

Some people recover with few lasting effects. Others have ongoing balance problems or need

a walking aid. If Korsakoff syndrome develops, memory difficulties may remain for months or years and can be permanent. A predictable routine, written reminders, supervised medication, and support with meals or money may help.

Avoiding another period of thiamine deficiency is important because repeated episodes can cause further injury. Follow-up may include nutritional monitoring, continued supplements, treatment of digestive problems, and alcohol support when relevant.

Routine follow-up is appropriate for ongoing memory problems, mild balance difficulties, nutrition planning, or arranging rehabilitation. New confusion, worsening walking, or new eye movement problems should not wait for a routine appointment.

When to get medical help

Seek emergency medical help for sudden or worsening confusion, severe unsteadiness, abnormal eye movements, double vision, marked drowsiness, collapse, a seizure, or loss of consciousness. This is especially important if the person has been vomiting, eating very little, losing substantial weight, or drinking heavily.

Do not assume that confusion in someone who drinks alcohol is simply intoxication. Alcohol withdrawal, head injury, low blood sugar, infection, and Gayet-Wernicke syndrome can look similar and may occur together.

Someone who is confused or unable to walk safely should not drive. Stay with them if it is safe to do so, and tell emergency staff about recent food intake, vomiting, surgery, alcohol use, and any supplements or medicines.

Arrange prompt, non-emergency medical review for ongoing poor appetite, repeated vomiting, unexplained weight loss, increasing forgetfulness, or gradual balance problems. These symptoms have many possible causes, but nutritional deficiency should be considered.

Common questions

Is Gayet-Wernicke syndrome the same as Wernicke encephalopathy?

Yes. Gayet-Wernicke syndrome is another name for the acute neurological condition usually called Wernicke encephalopathy. It is different from Korsakoff syndrome, although the two can occur as part of the same spectrum of thiamine-related brain injury.

Can you get it without drinking alcohol?

Yes. Any situation causing severe thiamine deficiency can lead to the condition. Examples

include prolonged vomiting, severe undernutrition, an eating disorder, cancer, dialysis, or digestive surgery. Alcohol dependence is an important risk factor, but it is not required.

Can a blood test rule it out?

No. Blood tests can support the assessment and identify related problems, but a normal result does not safely exclude Gayet-Wernicke syndrome. Treatment may start before results are available.

Will thiamine tablets treat it?

Tablets may be used for prevention or follow-up in some circumstances. Suspected acute Gayet-Wernicke syndrome is usually treated with thiamine injected into a vein or muscle because rapid, reliable absorption is needed.

How quickly do people recover?

Eye symptoms may improve first, sometimes within hours or days. Confusion and problems with walking may take weeks or longer. Some people have lasting balance or memory difficulties, particularly when treatment was delayed.

Is Wernicke-Korsakoff syndrome permanent?

The acute Wernicke stage may improve substantially with prompt thiamine. Korsakoff syndrome involves more established memory injury and is more likely to be long term, although rehabilitation and continued abstinence from alcohol can still support improvement and independence.

Sources

- European Federation of Neurological Societies: Guidelines for diagnosis, therapy and prevention of Wernicke encephalopathy , European Journal of Neurology , 2010
- Royal College of Physicians report on alcohol: Guidelines for managing Wernicke's encephalopathy in the accident and emergency department , Alcohol and Alcoholism , 2002
- Wernicke-Korsakoff Syndrome , National Institute of Neurological Disorders and Stroke
- Wernicke encephalopathy: a medical emergency , CMAJ , 2014
- Don't seek, don't find: The diagnostic challenge of Wernicke's encephalopathy , Annals of Clinical Biochemistry , 2021