CONDITION

Infantile spasms

Infantile spasms are brief seizures that occur in clusters during early childhood and can affect development.

WHAT IT IS
Brief seizures occurring in clusters during infancy

BODY SYSTEM
Brain and nervous system

MAIN SYMPTOMS
Body crunches, stiffening, clusters, developmental slowing

WHAT CAUSES IT
Brain differences, genetic changes, metabolic disorders, or unknown

HOW IT IS DIAGNOSED
Video EEG showing seizures and abnormal brain activity

MAIN TREATMENT
Hormonal therapy or anti-seizure medicine

CAN IT BE CURED?
Sometimes - spasms stop, but underlying causes may remain

IS IT AN EMERGENCY?
Sometimes - breathing trouble or seizure over five minutes

LONG-TERM OUTLOOK
Strongly influenced by cause and response to treatment

Overview

Infantile spasms are a type of seizure that begins in babies or young children. A seizure happens when there is a sudden burst of abnormal electrical activity in the brain.

The movements are often very brief and may look less dramatic than many people expect a seizure to look. A baby may suddenly bend forward, throw out their arms, stiffen, or make a small head-nodding movement. Spasms commonly happen in clusters, with one movement every few seconds.

They most often begin during the first year of life, although they can start later. Clinicians may describe the seizures as "epileptic spasms." When spasms occur with a particular abnormal brain-wave pattern and developmental problems, the older term "West syndrome" may be used.

Infantile spasms matter because frequent abnormal brain activity can interfere with development. Early recognition, testing, and effective treatment are linked to better outcomes. Even subtle or uncertain episodes deserve prompt medical assessment.

Symptoms

Each spasm usually lasts only one or two seconds. Several may happen close together over a few minutes. Clusters are especially common soon after a child wakes, although they can occur at other times.

The movement may involve the whole body or be more noticeable on one side. Common patterns include:

Some spasms are easy to mistake for reflux, colic, hiccups, a normal startle reflex, or ordinary baby movements. Repetition in a similar pattern is an important clue. Spasms are usually not caused by touching the baby, loud noises, or feeding, although they may happen around those times by chance.

Development may also change. A baby may stop gaining skills, lose skills they had already learned, interact less, smile less, or become less interested in their surroundings. These changes can be gradual and may not be present when the spasms first begin.

A phone video of an episode can help a medical team understand what happened. Record one only if it is safe to do so, and do not delay getting help to make a video.

- Sudden bending at the waist, sometimes with the arms lifting
- Brief stiffening or straightening of the arms and legs
- Repeated head drops, nods, or small shoulder movements
- Eyes briefly rolling upward or becoming fixed
- A short cry, grimace, or startled expression with each movement

Causes and risk factors

Infantile spasms do not have one single cause. They can happen when an underlying condition affects how the brain formed or functions.

Possible causes include:

Tuberous sclerosis complex is one genetic condition strongly linked with infantile spasms. It can cause noncancerous growths in the brain and other organs.

Sometimes testing does not find a cause. This does not mean that anyone caused the spasms or that something was missed during pregnancy or parenting. In some children, a genetic explanation may become clear only after newer testing or medical knowledge becomes available.

The underlying cause is important because it may affect treatment choices, development, the chance of other seizure types, and the support a child may need over time.

- A difference in brain structure that developed before birth
- A brain injury around birth or later in infancy
- A genetic change affecting brain development or nerve-cell function
- A metabolic condition that affects how the body uses nutrients or energy
- An infection or, less commonly, another condition affecting the brain

Diagnosis

Infantile spasms are diagnosed from the pattern of events and an electroencephalogram, or EEG. An EEG uses small sensors placed on the scalp to record the brain's electrical activity. It does not send electricity into the child.

Video EEG records movement and brain activity at the same time. It may capture a spasm and show whether abnormal electrical activity occurs with it. Between seizures, some children have a highly disorganised EEG pattern called hypsarrhythmia. Not every child has this exact pattern, so its absence does not always rule out infantile spasms.

Because spasms can be brief or subtle, prolonged recording may be needed. Recording during sleep and after waking is often helpful.

Once the diagnosis is established, further tests look for an underlying cause. These may include:

These additional tests help explain why the spasms developed. They do not replace the clinical assessment and EEG used to confirm the seizure type.

- Magnetic resonance imaging, or MRI, to examine brain structure
- Genetic testing, often using a blood or saliva sample
- Blood, urine, or spinal fluid tests for selected metabolic or infectious causes
- Eye, skin, heart, or other examinations when a particular condition is suspected

Treatment and management

Treatment should begin promptly after the diagnosis. The goal is to stop all spasms and improve the abnormal EEG activity, not simply to make the clusters less frequent.

Established first treatments include hormonal therapy and vigabatrin. Hormonal therapy may involve adrenocorticotropic hormone, called ACTH, given by injection, or an oral corticosteroid. These medicines change hormone and immune activity in ways that can suppress the spasms.

Vigabatrin is an anti-seizure medicine. It is an important treatment for spasms associated with tuberous sclerosis complex and may be used in other circumstances. The choice of treatment takes account of the likely cause, test results, possible side effects, availability, and the child's overall health.

These treatments require close monitoring. Hormonal therapy can affect blood pressure, blood sugar, infection risk, mood, sleep, and the body's own hormone production. Vigabatrin can damage peripheral vision, although this can be difficult to measure in a baby. The care team will explain the monitoring that is practical for the child's age.

Parents and caregivers are usually asked to keep a record of suspected spasms. An early repeat EEG helps show whether treatment has stopped the abnormal brain activity. A child can appear better while abnormal activity continues, so visible improvement alone may not confirm that treatment has worked.

If the first treatment is not effective, another established therapy may be tried. Further options can include other anti-seizure medicines or a medically supervised ketogenic diet, which is very high in fat and low in carbohydrate.

For a small number of children, spasms come from a specific area of abnormal brain tissue that can be safely removed or disconnected. Assessment for epilepsy surgery may then be appropriate, particularly when medicines have not worked. This involves detailed brain imaging and seizure testing at a specialist centre.

Developmental, feeding, movement, hearing, vision, and family support may be needed alongside seizure treatment.

Complications

Infantile spasms can affect learning and development, especially when abnormal brain activity continues. Some children lose previously learned skills. Others continue to develop but at a slower pace.

Possible longer-term complications include:

The severity of these problems is not the same for every child. The underlying cause often has a major effect on the outcome. Prompt, effective seizure control may reduce additional harm, but it cannot always reverse effects caused by an existing brain or genetic condition.

- Further clusters or a return of spasms after initial control
- Other seizure types or ongoing epilepsy
- Learning, communication, movement, or behaviour difficulties
- Feeding or sleep problems related to the underlying condition
- Side effects from treatment

Prevention

Most cases of infantile spasms cannot be prevented. Many causes involve genetic changes, differences in early brain development, or events that could not have been predicted or avoided.

There is no routine screening test that can rule out future infantile spasms in a healthy baby. Some children with known conditions that raise the risk, such as tuberous sclerosis complex, may have planned neurological follow-up.

Recognising possible spasms quickly does not prevent them from starting. It may, however, shorten the time to diagnosis and treatment.

Living with it and what to expect

Infantile spasms usually do not continue in the same form throughout childhood. Many children stop having spasms after treatment, but some have a relapse or later develop different seizure types. Ongoing epilepsy care may therefore be needed even after the spasms have stopped.

Development over the following months and years is influenced by the underlying cause, how the brain has been affected, and how quickly the abnormal seizure activity responds to treatment. Some children make steady developmental progress after treatment. Others need long-term help with learning, communication, movement, feeding, or daily activities.

Follow-up commonly includes neurological reviews and repeat EEGs. Children may also benefit from physiotherapy, occupational therapy, speech and language support, developmental services, or educational planning. These services can support skills and participation even when the underlying condition cannot be removed.

Keeping a simple record of unusual movements, medicines, side effects, and developmental changes can make follow-up appointments more useful. Videos can help when new events are brief or difficult to describe.

Caring for a child with seizures can affect sleep, work, travel, and family routines. Written emergency instructions and clear guidance about what events to record can make day-to-day care more manageable.

When to get medical help

Contact a medical professional urgently the same day if a baby has repeated, similar crunching, stiffening, head-dropping, or arm-throwing movements. This remains urgent even if the baby seems well between episodes. If prompt community assessment is not available, attend an emergency department.

Also seek urgent assessment if a child with known infantile spasms develops new seizure movements, begins having clusters again, loses skills, becomes much less responsive, or has concerning treatment side effects.

Call emergency services if:

During a seizure, place the child on a safe surface and protect them from injury. Do not restrain their movements or put anything in their mouth. Follow any individual seizure plan already provided.

Routine questions about development, sleep, therapy, or planned monitoring can usually wait for the child's regular follow-up appointment unless there is a sudden change.

- A seizure lasts five minutes or longer
- Repeated seizures occur without the child recovering between them
- The child has trouble breathing, turns blue, or does not wake normally
- A seizure happens in water or causes a serious injury
- You believe the child is seriously unwell

Common questions

What do infantile spasms look like?

They often look like repeated body crunches, brief stiffening, head drops, or sudden arm movements. Each movement may last only a second or two, but several usually occur close

together. Subtle spasms may look like a startle, reflux, or a small nod.

Are infantile spasms painful?

There is no clear evidence that each spasm causes pain. A baby may cry, appear startled, or become unsettled during a cluster, but those reactions do not necessarily mean pain. Frequent seizures and disrupted sleep can still cause distress.

Can a baby grow out of infantile spasms?

The spasms may eventually stop or change into another seizure type, but waiting for a baby to grow out of them is unsafe. Ongoing abnormal brain activity can affect development. Suspected spasms need urgent assessment and, when confirmed, prompt treatment.

Can infantile spasms be mistaken for reflux?

Yes. Reflux can cause arching, crying, or movements around feeding. Infantile spasms are more likely to occur as repeated, similar movements in a cluster, often after waking. Appearance alone may not separate them, which is why video EEG is important.

Will my child develop normally after infantile spasms?

Some children make good developmental progress, while others have lasting difficulties. The outlook is strongly influenced by the underlying cause and response to treatment. It is often not possible to predict an individual child's course when spasms first begin.

Can infantile spasms come back after treatment?

Yes. Relapse can occur, and other seizure types may appear later. New clusters or repeated unusual movements should be recorded if safe and reported promptly, even if earlier treatment seemed successful.

Sources

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