CONDITION

Low calcium level - infants

A low calcium level in an infant means there is less calcium in the blood than expected for the baby's age.

WHAT IT IS
Lower-than-expected blood calcium in a newborn

BODY SYSTEM
Blood, muscles, nerves, bones, and heart

MAIN SYMPTOMS
Jitteriness, poor feeding, muscle spasms, seizures

WHAT CAUSES IT
Newborn adaptation, prematurity, illness, or hormone and vitamin problems

HOW IT IS DIAGNOSED
Blood tests measuring total or ionized calcium

MAIN TREATMENT
Calcium replacement and treatment of the underlying cause

CAN IT BE CURED?
Sometimes - temporary cases resolve as calcium stabilises

IS IT AN EMERGENCY?
Sometimes - seizures or breathing problems need emergency care

LONG-TERM OUTLOOK
Most temporary cases resolve; persistent causes need ongoing care

Overview

A low calcium level in an infant is called neonatal hypocalcemia. It means the amount of calcium in a newborn's blood is below the expected range. The level considered low can differ according to the baby's age, whether they were born early, and which type of calcium was measured.

Calcium helps nerves send signals and muscles contract. It is also important for the heartbeat, blood clotting, and bone development. Most calcium is stored in bones, while a small amount circulates in the blood.

After birth, a baby's calcium level normally falls before the body begins regulating it independently. In some babies, the level falls further than expected. This may be a brief part of adapting to life outside the womb, or it may be related to another medical condition.

Doctors may measure total calcium or ionized calcium. Ionized calcium is the active form available to the body's cells. Total calcium can be affected by albumin, a protein in the blood, so an ionized calcium test may give a clearer picture in some situations.

Many babies with a mildly low level have no symptoms. A more significant or persistent reduction can affect feeding, movement, breathing, or heart rhythm. It may require prompt treatment and tests to find the cause.

Symptoms

Low calcium does not always cause visible symptoms. It may be found through blood tests performed because a baby was born early, is unwell, or has other risk factors.

When symptoms occur, they can include:

Jitteriness is not specific to low calcium. Low blood sugar, infection, medication exposure, and several other newborn conditions can look similar. A blood test is needed to tell whether calcium is involved.

A seizure may appear as repeated jerking, stiffening, staring, lip smacking, unusual eye movements, or a period when the baby does not respond normally. Any possible seizure in an infant needs emergency assessment.

- Jitteriness, trembling, or repeated twitching
- Irritability or unusual sleepiness
- Poor feeding or difficulty coordinating sucking
- Muscle stiffness, spasms, or jerking movements
- Breathing pauses, noisy breathing, or breathing difficulty
- Seizures

Causes and risk factors

Doctors often group neonatal hypocalcemia by when it begins.

Early-onset hypocalcemia usually develops during the first few days after birth. It is often connected with the baby's adjustment from receiving calcium through the placenta to regulating calcium independently.

It is more likely in babies who:

Premature babies have less time to build calcium stores before birth. Their hormone and

kidney systems may also be less mature.

Late-onset hypocalcemia begins after the first few days. Possible causes include a high phosphate load, low magnesium, vitamin D deficiency, kidney problems, or reduced activity of the parathyroid glands. These small glands in the neck produce parathyroid hormone, which helps control calcium.

A baby may temporarily have low parathyroid hormone activity if the birth mother's calcium was unusually high during pregnancy. Rarely, persistent hypocalcemia is related to an inherited or genetic condition affecting the parathyroid glands, kidneys, bones, or vitamin D system. One example is 22q11.2 deletion syndrome, which can affect development of the parathyroid glands.

Incorrectly prepared formula can disturb a baby's mineral balance. Standard infant formula should be mixed exactly as directed. Breastfeeding itself is not a usual cause of neonatal hypocalcemia.

- Were born prematurely
- Were smaller than expected at birth
- Were born to a mother with diabetes
- Experienced significant stress or reduced oxygen around birth
- Have a serious infection or other major illness

Diagnosis

A blood test confirms a low calcium level. The test may measure total calcium, ionized calcium, or both. Because collection and laboratory factors can affect a result, the medical team may repeat the test.

The baby's symptoms, gestational age, feeding history, health after birth, and timing of the low result help guide further testing. Tests may measure:

Low magnesium can make hypocalcemia difficult to correct because magnesium helps parathyroid hormone work normally.

An electrocardiogram, or ECG, may be used if the calcium level is very low or there are concerns about heart rhythm. This painless test records the heart's electrical activity.

If the low level persists or there are other physical or medical findings, testing may look for a hormone disorder or genetic condition. Blood tests from the birth mother may also be helpful in some cases.

- Magnesium, phosphate, glucose, and albumin
- Parathyroid hormone
- Vitamin D
- Kidney function
- Calcium and other minerals in urine

Treatment and management

Treatment is based on the calcium level, symptoms, the baby's age, and the cause. A baby with a mildly low result and no symptoms may need close monitoring and repeat blood tests rather than immediate calcium treatment.

Babies with symptoms or a substantially low level may receive calcium through a vein. This is usually given slowly in a hospital where the heart rate and intravenous line can be watched closely. Calcium can affect the heartbeat if given too quickly, and leakage from the intravenous line can damage nearby tissue.

A stable baby may receive calcium by mouth. This can be given as a liquid through the mouth or a feeding tube. The medical team will decide when it can be reduced or stopped based on repeat test results.

Treatment may also include:

Some babies with inadequate parathyroid hormone activity need a special active form of vitamin D. This requires specialist supervision because both low and high calcium levels can cause problems.

Do not give a baby calcium, vitamin D, or other supplements unless they have been recommended for that baby. Do not change formula concentration or stop breastfeeding because of one test result without medical guidance.

- Magnesium replacement if magnesium is low
- Vitamin D treatment when deficiency or abnormal vitamin D processing is involved
- Management of an underlying kidney, hormone, or genetic condition
- Carefully planned feeding changes if phosphate intake is contributing

Complications

Severely low calcium can cause seizures, breathing problems, muscle spasms, or an abnormal heart rhythm. These complications are uncommon in babies whose low level is recognised and treated promptly.

Persistent hypocalcemia may affect bone mineralisation, especially when it is connected with vitamin D deficiency, kidney disease, or a hormone disorder. Ongoing treatment must be monitored because excessive calcium or vitamin D can lead to high blood calcium or calcium deposits in the kidneys.

A brief, treated episode does not usually cause lasting problems by itself. When a baby has other conditions, such as extreme prematurity, a serious infection, or a genetic syndrome, their longer-term health may be influenced more by that underlying condition.

The outlook after a seizure depends on its cause, severity, and duration. Low calcium is one treatable cause, but doctors may need to check for other explanations as well.

Prevention

Not every case can be prevented. Early-onset hypocalcemia often results from prematurity, illness, or the normal challenges of adapting after birth. Inherited causes cannot be prevented by feeding choices or routine infant care.

Good pregnancy care can help identify maternal diabetes, vitamin D deficiency, parathyroid disease, and other conditions that may affect a newborn's calcium balance. Pregnancy supplements should be taken only as advised, because excessive amounts can also be harmful.

Prepare infant formula exactly according to the manufacturer's instructions. Do not dilute it, make it more concentrated, or use unmodified cow's milk as a newborn's main drink.

For babies with recognised risk factors, blood testing and observation can identify low calcium before complications develop. This does not prevent the initial fall, but it can prevent a significant low level from going untreated.

Living with it and what to expect

Many early cases improve within days as the baby's parathyroid glands, kidneys, and feeding become established. Calcium treatment, if needed, may be brief. Blood tests are usually repeated to make sure the level remains stable after treatment is reduced.

Late-onset cases may take longer to correct because the medical team must identify and

manage the cause. If low magnesium, vitamin D deficiency, or feeding-related mineral imbalance is responsible, the calcium level often improves after that problem is addressed.

A baby with a parathyroid, kidney, or genetic condition may need follow-up over months or years. Care may involve a pediatrician and a children's hormone, kidney, or genetics specialist. Follow-up can include blood and urine tests, growth checks, and adjustments to supplements.

Do not stop prescribed treatment just because your baby appears well. Calcium can fall again without obvious early symptoms. Treatment should be changed after follow-up testing.

Most babies who have a short-lived episode feed, grow, and develop normally. A persistent underlying condition may affect what follow-up is needed, but it does not mean every child will have major limitations.

When to get medical help

Call emergency services if your baby:

Seek urgent same-day medical advice if your baby has new or worsening jitteriness, repeated twitching, poor feeding, repeated vomiting, unusual sleepiness, or marked irritability. These symptoms have several possible causes and need assessment rather than home treatment.

If your baby is already being monitored for low calcium, contact their medical team promptly if symptoms return, medicine is repeatedly vomited, or you cannot give the prescribed treatment.

Routine follow-up is used to check calcium and related mineral levels, review feeding and growth, and decide when treatment can safely be reduced. Keep these appointments even when your baby looks well.

- Has a possible seizure
- Stops breathing, struggles to breathe, or turns blue or grey
- Becomes limp, unresponsive, or unusually difficult to wake
- Develops severe or repeated muscle spasms

Common questions

Is low calcium in a newborn dangerous?

A mild decrease may cause no symptoms and may correct as the baby adapts after birth. A more severe decrease can affect the brain, muscles, breathing, or heart rhythm. The blood

level, symptoms, and cause determine how urgent it is.

Why did my baby's calcium drop after birth?

Calcium transfer through the placenta stops at birth, and the baby's hormone system must take over. Prematurity, maternal diabetes, birth stress, illness, low magnesium, vitamin D problems, or reduced parathyroid hormone activity can make this transition harder.

Can breastfeeding cause low calcium?

Breastfeeding is not a usual cause of neonatal hypocalcemia, and you should not stop without medical advice. In some situations, the baby's vitamin D status or another mineral imbalance may need attention, but this requires proper testing.

How long does low calcium last in babies?

Temporary early-onset hypocalcemia may settle within days. Late-onset or persistent hypocalcemia can require treatment for weeks, months, or longer. The course is mainly determined by the underlying cause and the results of follow-up tests.

Will my baby need calcium supplements for life?

Most babies with temporary hypocalcemia do not. Lifelong or long-term treatment may be needed when the parathyroid glands do not work adequately or when another continuing condition affects calcium control.

Can low calcium come back?

It can return if treatment is stopped before the cause has resolved, if magnesium remains low, or if there is an ongoing hormone, kidney, vitamin D, or genetic condition. Repeat blood tests help show when the level is stable.

Sources

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