CONDITION

Hypercalcemia

Hypercalcemia is a higher-than-normal level of calcium in the blood.

WHAT IT IS
Excess calcium in the blood

BODY SYSTEM
Hormones, kidneys, bones, heart, and nervous system

MAIN SYMPTOMS
Thirst, frequent urination, constipation, weakness

WHAT CAUSES IT
Overactive parathyroids, cancer, medicines, or excess vitamin intake

HOW IT IS DIAGNOSED
Repeat calcium testing, albumin or ionized calcium, and PTH

MAIN TREATMENT
Fluids and treatment of the underlying cause

CAN IT BE CURED?
Sometimes - treating the cause can normalize calcium

IS IT AN EMERGENCY?
Sometimes - confusion, severe dehydration, or abnormal heartbeat

LONG-TERM OUTLOOK
Often good when the cause is found and treated

Overview

Hypercalcemia means there is more calcium than normal in your blood. Calcium helps your muscles, nerves, heart, and bones work. However, too much circulating calcium can interfere with these systems and place extra strain on the kidneys.

Hypercalcemia ranges from a mild laboratory finding to a serious condition. Mild cases may cause no symptoms and may be found during routine blood tests. A high level that develops quickly is more likely to cause noticeable symptoms than a similar level that has risen slowly.

Hypercalcemia is a condition rather than a single disease. Finding the cause is important because treatment and long-term outlook are closely linked to that cause. Common explanations include overactive parathyroid glands, some cancers, certain medicines, and excessive intake of calcium or vitamin D.

A single high result does not always confirm ongoing hypercalcemia. Dehydration, changes in blood proteins, and laboratory factors can affect the result. Repeat or more specific testing may be needed.

Symptoms

Mild hypercalcemia often causes no symptoms. When symptoms occur, they can be vague and may resemble many other health problems.

Possible symptoms include:

The kidneys try to remove excess calcium through urine. This can make you urinate more, lose fluid, and become dehydrated. Dehydration can then make the calcium concentration rise further.

More severe hypercalcemia can affect brain function and heart rhythm. It may cause marked confusion, severe weakness, repeated vomiting, or reduced alertness. These symptoms need urgent assessment.

Symptoms alone cannot show whether your calcium is high. A blood test is required.

- Increased thirst and frequent urination
- Constipation, nausea, reduced appetite, or abdominal discomfort
- Tiredness, muscle weakness, or difficulty concentrating
- Bone pain or kidney stones
- Low mood, irritability, confusion, or unusual sleepiness

Causes and risk factors

The parathyroid glands are small glands in the neck. They produce parathyroid hormone, usually called PTH, which helps control calcium levels.

Primary hyperparathyroidism occurs when one or more of these glands release too much PTH. This increases calcium release from bone, calcium absorption from food, and calcium retention by the kidneys. It is a common cause of persistent hypercalcemia found during outpatient testing.

Some cancers can raise calcium. They may release hormone-like substances that affect calcium control, involve the bones, or increase production of an active form of vitamin D. Cancer-related hypercalcemia may develop quickly, but a high calcium result does not by itself

mean that you have cancer.

Other possible causes include:

Familial hypocalciuric hypercalcemia is an inherited condition that usually causes lifelong, mild hypercalcemia. People with it often have few or no symptoms. Identifying it matters because parathyroid surgery usually does not correct the calcium level.

Dehydration can increase the measured calcium concentration. However, persistent hypercalcemia should not simply be assumed to result from dehydration without further assessment.

- High intake of calcium or vitamin D, including some supplements
- Medicines such as thiazide diuretics or lithium
- Granulomatous conditions, including sarcoidosis and some infections
- An overactive thyroid or reduced adrenal gland function
- Long periods of very limited movement, especially with high bone turnover
- Rare inherited conditions affecting how the kidneys handle calcium

Diagnosis

Hypercalcemia is confirmed with blood testing. Your clinician may repeat the test, particularly if the increase is mild or unexpected.

Most blood tests measure total calcium. Some calcium is attached to albumin, a protein in the blood. If your albumin level is unusually high or low, total calcium may not reflect the amount that is biologically active. A corrected calcium calculation or an ionized calcium test may help. Ionized calcium measures the active, unbound form directly.

PTH is usually the key next test. A raised or unexpectedly normal PTH alongside high calcium suggests that the parathyroid glands are driving the problem. A low PTH points toward another cause, such as cancer, vitamin-related conditions, or certain illnesses.

Other tests may include kidney function, phosphate, magnesium, and vitamin D levels. A urine calcium test can help distinguish primary hyperparathyroidism from familial hypocalciuric hypercalcemia.

Further testing is guided by your results, symptoms, medicines, and medical history. It may include thyroid tests, tests for specific proteins, or imaging. Imaging is not usually used to prove that primary hyperparathyroidism exists. It may be used later to locate an abnormal parathyroid gland if surgery is being considered.

Treatment and management

Treatment depends on how high the calcium is, how quickly it rose, your symptoms, kidney function, and the underlying cause.

Mild hypercalcemia without concerning symptoms may be managed through follow-up testing and treatment of the cause. Your healthcare team may review prescription medicines, over-the-counter products, and supplements. Do not stop a prescribed medicine or make major supplement changes without discussing it with the prescriber.

Drinking enough fluid may help prevent dehydration when this is safe for you. Some people with heart or kidney conditions need limits on fluid intake, so general advice about drinking more may not be appropriate for everyone.

Moderate or severe symptomatic hypercalcemia is often treated in hospital. Treatment may include intravenous fluid, which is fluid given into a vein. Medicines can then be used to reduce calcium release from bone or address the process causing the high level.

Calcitonin can lower calcium relatively quickly, but its effect becomes weaker after a short period. Bisphosphonates and denosumab reduce calcium release from bone and are particularly relevant in cancer-related hypercalcemia. Steroid medicines may be used for selected vitamin D-related causes. Dialysis, which filters the blood, is reserved for certain severe situations, such as when other treatment is unsuitable or kidney failure limits fluid treatment.

If primary hyperparathyroidism is the cause, surgery to remove the overactive gland or glands may provide a cure. Surgery is not necessary or suitable for everyone. Monitoring may include calcium levels, kidney health, and bone density.

Treating an associated cancer, hormone condition, infection, or medicine-related cause is central to longer-term control.

Complications

Persistent or severe hypercalcemia can affect several organs.

The kidneys may develop stones, calcium deposits, or reduced function. Frequent urination can contribute to dehydration. Long-term excess PTH can weaken bones and increase fracture risk.

Very high calcium can interfere with electrical signals in the heart and may cause an abnormal rhythm. It can also affect the brain, leading to confusion, extreme sleepiness, or, rarely, loss of consciousness.

Complications are not inevitable. Risk is influenced by the calcium level, how long it remains high, how quickly it changes, and the condition responsible for it.

Prevention

Hypercalcemia cannot always be prevented. Primary hyperparathyroidism, cancer-related changes, and inherited calcium conditions are not caused by everyday choices.

Avoid taking more calcium or vitamin D than recommended for you. Tell your healthcare team about all supplements, antacids, and non-prescription products because several products may contain the same ingredients.

If you take a medicine that can affect calcium, routine blood monitoring may be appropriate. Continue it as prescribed unless the prescriber recommends a change.

Staying adequately hydrated may reduce dehydration-related worsening and lower kidney stone risk for some people. This advice needs to be adjusted if you have been told to restrict fluids because of heart, kidney, or liver disease.

Living with it and what to expect

What happens over months and years depends mainly on the cause.

A temporary rise related to dehydration, a supplement, or a treatable illness may settle after the problem is corrected. Calcium levels are usually rechecked to make sure they remain normal.

Primary hyperparathyroidism often causes mild, long-lasting hypercalcemia. Some people have surgery, while others are monitored. Follow-up may include blood tests, kidney assessment, and bone-density scans. Symptoms such as tiredness are not specific, so changes in how you feel may not always track closely with the calcium result.

Familial hypocalciuric hypercalcemia is usually lifelong and mild. It often needs observation rather than calcium-lowering treatment. Family testing may sometimes help confirm the diagnosis.

Cancer-related hypercalcemia can return if the underlying cancer remains active. Its course is tied closely to the type of cancer and its response to treatment.

Keep an up-to-date list of medicines and supplements. Attend planned blood tests even if you feel well, because calcium can change without obvious symptoms. If your calcium is stable and only mildly raised, this follow-up is generally routine rather than an emergency.

When to get medical help

Arrange routine medical follow-up if a blood test shows high calcium, even if you feel well. You should also seek advice if you develop ongoing thirst, frequent urination, constipation, unexplained weakness, or recurrent kidney stones.

Seek urgent same-day medical advice if you have a known high calcium level and develop repeated vomiting, worsening dehydration, marked weakness, increasing drowsiness, or new confusion.

Call emergency services if you are difficult to wake, faint, have a seizure, develop severe confusion, or have chest pain or a fast or irregular heartbeat. These signs can occur when hypercalcemia is severely affecting the brain, circulation, or heart, although they can also have other causes.

Common questions

Can high calcium be caused by diet?

Ordinary food intake rarely causes persistent hypercalcemia by itself. Large amounts of calcium-containing products, vitamin D, or certain antacids can contribute. Hormone conditions and other illnesses are more common explanations for a continuing high level.

Does high calcium mean I have cancer?

No. Cancer is one possible cause, but primary hyperparathyroidism is another important cause. PTH and other tests help identify which explanation is more likely.

Can dehydration cause high calcium?

Dehydration can concentrate the blood and increase the measured calcium level. Hypercalcemia can also cause dehydration by making you urinate more. A repeat test after assessment and appropriate fluid replacement may help clarify the situation.

What calcium level is dangerous?

There is no single result that describes the risk for everyone. The actual level, speed of increase, symptoms, kidney function, and underlying cause all matter. Severe symptoms need urgent care even if you do not know the number.

Will hypercalcemia go away?

Sometimes. It may resolve when dehydration, a medicine-related problem, or another treatable cause is corrected. It may persist when caused by primary hyperparathyroidism or an inherited condition. Cancer-related hypercalcemia can improve with treatment but may return.

Should I stop calcium or vitamin D supplements?

Do not make an individual treatment change based only on general information. Contact the clinician who ordered the blood test or recommended the supplement. They can review the amount, the reason you take it, and your laboratory results.

Sources

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