CONDITION

Idiopathic hypercalciuria

Idiopathic hypercalciuria is an unexplained tendency to pass too much calcium in urine.

WHAT IT IS
Excess calcium in urine without an identifiable medical cause

BODY SYSTEM
Kidneys and urinary system

MAIN SYMPTOMS
Often none, kidney stone pain, blood in urine, painful urination

WHAT CAUSES IT
Unknown, often with an inherited tendency

HOW IT IS DIAGNOSED
Urine calcium testing and exclusion of other causes

MAIN TREATMENT
Fluids, dietary changes, and sometimes medication

CAN IT BE CURED?
No, the underlying tendency often persists

IS IT AN EMERGENCY?
Sometimes, when an infected kidney is blocked

LONG-TERM OUTLOOK
Usually manageable with monitoring and stone prevention

Overview

Idiopathic hypercalciuria means that more calcium than expected passes into your urine, without another medical condition clearly explaining it. "Idiopathic" means the cause is not known. "Hypercalciuria" means high calcium in the urine.

This is different from having high calcium in your blood. Most people with idiopathic hypercalciuria have a normal blood calcium level.

Calcium in urine can join with substances such as oxalate or phosphate and form crystals. These crystals may grow into kidney stones. The condition may also be linked with lower bone mineral density because calcium balance involves the kidneys, intestines, and bones.

Some people discover idiopathic hypercalciuria during testing for a kidney stone. Others are tested because of repeated urinary symptoms, blood in the urine, or concerns about bone

strength. A high urine calcium result alone does not establish the diagnosis. Other causes must first be considered.

Symptoms

Idiopathic hypercalciuria itself usually causes no noticeable symptoms. Symptoms are more likely when calcium crystals form a stone or irritate the urinary tract.

Possible symptoms include:

Kidney stone pain often comes in waves and may change location as the stone moves. Small stones may pass with mild symptoms or no symptoms.

Children can also have idiopathic hypercalciuria. Possible signs include abdominal or side pain, blood in the urine, urinary frequency, or new bedwetting. These symptoms have many possible causes, so testing is needed rather than assuming that urine calcium is responsible.

- Pain in the side, back, lower abdomen, or groin
- Blood in the urine, which may look pink, red, or brown
- Pain or burning when urinating
- A frequent or urgent need to urinate
- Nausea or vomiting during a kidney stone episode

Causes and risk factors

The exact cause is unknown. Research suggests that idiopathic hypercalciuria involves a combination of inherited traits and the way the intestines, bones, and kidneys handle calcium.

The body may absorb more calcium from food, release more calcium from bone, or return less calcium from the urine to the blood. More than one of these processes may occur in the same person.

The tendency often runs in families, but it is not usually caused by one predictable inherited change. Diet can influence how much calcium appears in urine without being the original cause.

Factors that can increase urine calcium or stone risk include:

Sodium is especially relevant because the kidneys handle sodium and calcium together. When more sodium leaves the body in urine, calcium loss in urine can also rise.

Eating calcium-rich foods is not usually the cause. In fact, severely restricting dietary calcium may increase the absorption of oxalate from the intestine and may be harmful to bone health.

Several other conditions can cause high urine calcium. These include an overactive parathyroid gland, excessive vitamin D, some kidney disorders, prolonged immobility, and certain inflammatory or hormone-related conditions. When one of these explains the result, it is not considered idiopathic hypercalciuria.

- A high-sodium diet
- High intake of animal protein
- Not drinking enough fluid
- A family history of calcium kidney stones
- Certain medicines or supplements

Diagnosis

Diagnosis usually begins with a urine test. A 24-hour urine collection measures the calcium and other substances passed during a full day. One or more collections may be needed because diet, fluid intake, and collection errors can affect the result.

The laboratory interprets urine calcium using its reference range and the clinical setting. The result is considered alongside urine volume, sodium, oxalate, citrate, uric acid, acidity, and markers showing whether the collection was likely complete.

Blood tests may check:

These tests help rule out other explanations for excess urine calcium. Your medical history is also important, including previous stones, fractures, diet, supplements, medicines, and family history.

If you have symptoms or a history of stones, imaging may be used to look for stones or calcium deposits in the kidneys. Ultrasound avoids radiation. A CT scan provides more detail but uses radiation, so the choice depends on the situation.

Bone density testing is not required for everyone. It may be considered if there are fractures, other osteoporosis risks, or concern about long-term bone loss.

- Calcium and other mineral levels
- Kidney function
- Parathyroid hormone
- Vitamin D when clinically relevant
- Blood salts and bicarbonate

Treatment and management

Management aims to lower the chance of kidney stones while protecting bone health. The plan is based on your urine results, stone history, diet, other medical conditions, and medicines.

Drinking enough fluid dilutes the urine, making it harder for crystals to join together. Fluid needs are not identical for everyone. Climate, physical activity, pregnancy, heart conditions, and kidney function may affect what is appropriate.

Dietary changes often focus on sodium. Reducing heavily salted and processed foods can lower urine sodium and may reduce urine calcium. Food labels can help identify breads, sauces, takeaways, cured meats, and packaged foods with high sodium content.

Most people should continue to get a normal amount of calcium from food rather than following a very low-calcium diet. Food calcium also binds oxalate in the intestine, which can reduce the amount reaching the urine. Calcium supplements may affect stone risk differently from calcium in meals, so their need and timing should be reviewed individually.

Moderating large amounts of meat and other animal protein may help some people. A balanced eating pattern that includes fruit and vegetables can also support healthy levels of citrate, a natural substance that helps stop crystals from growing.

Medicine may be considered when dietary and fluid measures are not enough, particularly after repeated stones or when urine calcium remains high. Options include:

These medicines are not suitable for everyone. Follow-up blood tests may be needed to monitor kidney function, potassium, sodium, blood pressure, or other effects. Repeat 24-hour urine testing can show whether treatment is changing stone risk.

- Thiazide or thiazide-like medicines , which reduce calcium loss in urine
- Potassium citrate , when urine citrate is low or another urine abnormality supports its use

Complications

The main complication is calcium kidney stones. Stones can return, especially when urine remains concentrated or other stone-forming factors are present.

A stone may block urine flow from a kidney. Obstruction can cause significant pain and, when combined with infection, requires urgent treatment. Repeated obstruction or infection can damage kidney function, although this is not the usual outcome for someone whose condition is monitored and managed.

Calcium may sometimes build up within kidney tissue, called nephrocalcinosis. This is different

from a single stone and may require further investigation.

Idiopathic hypercalciuria is also associated with lower bone mineral density in some people. This does not mean everyone with the condition will develop osteoporosis or have a fracture. Bone health is influenced by age, hormones, activity, nutrition, medicines, and other medical conditions.

Prevention

The underlying idiopathic tendency cannot currently be prevented. However, kidney stones and other complications can often be made less likely.

Helpful measures may include:

Do not stop medically recommended calcium or vitamin D on your own. If a supplement may be affecting urine calcium, its dose, purpose, and timing can be reviewed.

- Drinking enough to keep urine well diluted
- Reducing excess dietary sodium
- Keeping a normal calcium intake from food
- Avoiding extreme or unbalanced diets
- Completing follow-up urine and blood tests
- Taking prescribed preventive medicine consistently

Living with it and what to expect

Idiopathic hypercalciuria often persists over months or years, although urine calcium can rise or fall with diet, fluid intake, age, and treatment. A single normal follow-up result does not always mean the tendency has permanently disappeared.

Many people have no daily symptoms between kidney stone episodes. Some never form a stone. Others have recurrent stones and need ongoing dietary management, medicine, or both.

Follow-up may include repeat 24-hour urine collections, blood tests, and occasional imaging. The schedule is usually based on whether you have formed stones, whether treatment has changed, and whether results remain outside the desired range.

If medicine lowers urine calcium and you remain stone-free, treatment may still need periodic review. It should not be assumed that medicine must continue forever or that it can safely be stopped without reassessment.

Protecting bone health also matters over the long term. Regular weight-bearing activity, adequate nutrition, and avoiding unnecessary calcium restriction can support bones. Whether you need a bone density scan depends on your broader fracture risk rather than urine calcium alone.

Most people can continue their normal work, exercise, travel, and family life. Planning regular access to drinks can be useful during hot weather, long journeys, or strenuous activity.

When to get medical help

Arrange routine medical follow-up if you have repeated stone symptoms, visible blood in your urine, ongoing urinary discomfort, or difficulty following the recommended fluid or dietary plan. Follow-up is also important if you develop side effects from medicine or have been asked to repeat blood or urine tests.

Seek prompt medical assessment for severe or persistent side pain, repeated vomiting, difficulty passing urine, or pain that is not controlled.

Get urgent or emergency help if kidney stone symptoms occur with:

Fever with a blocked urinary system may mean that infected urine cannot drain from the kidney. This needs urgent treatment.

- Fever or shaking chills
- Confusion, marked weakness, or fainting
- An inability to pass urine
- Severe pain with persistent vomiting

Common questions

Is idiopathic hypercalciuria the same as high blood calcium?

No. Idiopathic hypercalciuria refers to excess calcium in urine, while blood calcium is usually normal. High blood calcium suggests a different problem and needs separate evaluation.

Does high urine calcium mean I will get kidney stones?

No. It raises the chance of calcium stones, but stone formation also depends on urine volume and levels of oxalate, citrate, uric acid, sodium, and other substances. Some people with high urine calcium never develop stones.

Should I stop eating dairy or other calcium-rich foods?

Usually not. Very low dietary calcium can increase urine oxalate and may weaken bones. Most people are advised to get a normal amount of calcium from food, but individual needs can differ.

Can idiopathic hypercalciuria cause osteoporosis?

It is associated with lower bone mineral density in some people, but it does not automatically cause osteoporosis. Your overall bone risk includes age, hormone status, family history, nutrition, activity, medicines, and previous fractures.

Will I need medicine for the rest of my life?

Not necessarily. Some people manage their risk with fluids and dietary changes, while others benefit from long-term medicine. The need for treatment is reviewed using stone history, urine results, and side effects.

Can children have idiopathic hypercalciuria?

Yes. It may be found during evaluation of blood in the urine, abdominal pain, urinary symptoms, or kidney stones. Children need age-appropriate testing and assessment for other possible causes.

Sources

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