CONDITION

Hypertension-related kidney disease

Kidney damage caused or worsened by long-term high blood pressure.

WHAT IT IS
Chronic kidney damage linked to high blood pressure

BODY SYSTEM
Kidneys, heart and circulation

MAIN SYMPTOMS
Often none, ankle swelling, fatigue, foamy urine

WHAT CAUSES IT
High blood pressure damaging kidney blood vessels

HOW IT IS DIAGNOSED
Repeated blood pressure, blood creatinine, and urine albumin tests

MAIN TREATMENT
Blood pressure control and kidney-protective medicines

CAN IT BE CURED?
No, established kidney damage is usually permanent

IS IT AN EMERGENCY?
Sometimes, with chest pain, breathlessness, or stroke signs

LONG-TERM OUTLOOK
Often stable with control; some cases progress

Overview

Hypertension-related kidney disease is long-term kidney damage associated with high blood pressure. It is sometimes called hypertensive kidney disease or hypertensive nephrosclerosis.

Your kidneys filter waste and extra water from your blood. They contain many tiny blood vessels. When blood pressure stays high, these vessels can thicken, narrow, and become scarred. This can reduce the kidneys' ability to filter blood and control fluid balance.

The relationship also works in the other direction. Damaged kidneys may retain salt and water or alter hormones involved in blood pressure. This can make blood pressure harder to control, creating a cycle of worsening blood pressure and kidney function.

High blood pressure and chronic kidney disease often occur together, but that does not prove one caused the other. Diabetes, inherited conditions, inflammation, medicines, and other

kidney conditions can also be involved. There is usually no single test that proves high blood pressure was the cause. Diagnosis depends on your history, test results, and whether another explanation is more likely.

The condition matters because kidney damage can progress without noticeable symptoms. It also increases the risk of heart attack, stroke, heart failure, and severe loss of kidney function. Regular monitoring and effective blood pressure treatment can reduce these risks.

Symptoms

Early hypertension-related kidney damage usually causes no symptoms. You may feel well even when blood pressure is high or tests show reduced kidney function. Symptoms alone cannot show how well your kidneys are working.

When kidney damage becomes more advanced, possible symptoms include:

These symptoms have many possible causes. Having one does not mean you have kidney disease. Blood and urine tests are needed to assess kidney function.

High blood pressure itself is also usually symptomless. Headaches, dizziness, or nosebleeds can occur for many reasons and are not reliable ways to judge your blood pressure.

- Swelling around the ankles, feet, hands, or eyes
- Tiredness, weakness, or trouble concentrating
- Foamy urine, which can be associated with protein in the urine
- Needing to urinate more often, especially at night
- Poor appetite, nausea, itching, or muscle cramps
- Shortness of breath caused by fluid buildup or anaemia

Causes and risk factors

Long-term high pressure inside the kidneys' small blood vessels can damage their walls and reduce blood supply to kidney tissue. Scarred filtering units cannot be restored easily, so the kidneys may gradually lose function.

Risk is greater when blood pressure remains above your agreed target for a long time. It may also be higher with:

Some people have several causes of kidney damage at the same time. For example, diabetes and high blood pressure can both affect the kidneys.

Social and environmental factors also matter. Access to healthcare, affordable medicines, nutritious food, safe places for activity, and reliable blood pressure monitoring can affect both risk and treatment.

Some medicines can strain the kidneys or raise blood pressure. Non-steroidal anti-inflammatory drugs like ibuprofen or naproxen , or NSAIDs, are one example. These include ibuprofen and naproxen. Risk is greater with frequent use, dehydration, or existing kidney impairment. Do not stop a prescribed medicine without medical advice, but ask whether over-the-counter products are safe for you.

- Diabetes
- Heart or blood vessel conditions
- Smoking
- Older age
- A family history of high blood pressure or kidney conditions
- Previous acute kidney injury
- Excess body weight or a high-salt diet
- Conditions that make blood pressure difficult to control

Diagnosis

Assessment normally starts with repeated blood pressure measurements. One high reading does not establish persistent hypertension because pain, stress, illness, caffeine, and measurement technique can affect the result. Home or 24-hour monitoring may help show your usual blood pressure.

A blood test measures creatinine, a waste product filtered by the kidneys. The result is used to estimate your glomerular filtration rate, or eGFR. This estimate shows how effectively the kidneys are filtering blood.

A urine albumin-to-creatinine ratio, or UACR, looks for albumin in the urine. Albumin is a blood protein that normally stays in the bloodstream. A raised result can be an early sign that the kidney filters are damaged.

Results are often repeated. Chronic kidney disease means that reduced kidney function or another marker of kidney damage has been present for more than three months. A temporary change during dehydration, infection, or another illness may be acute rather than chronic.

Other tests may include urine testing for blood, blood tests for diabetes and electrolyte levels,

and an ultrasound to examine kidney size and structure. A kidney biopsy, in which a small tissue sample is examined, is not routinely needed. It may be considered when the pattern is unusual or another kidney condition is suspected.

Treatment and management

Treatment aims to control blood pressure, protect remaining kidney function, and lower heart and stroke risk. It cannot usually reverse established scarring, but it may slow or prevent further loss of function.

Blood pressure medicines are central to treatment. Angiotensin-converting enzyme inhibitors like lisinopril or ramipril, known as ACE inhibitors, and angiotensin receptor blockers, known as ARBs, can lower blood pressure and reduce albumin leakage from the kidneys. Other types of blood pressure medicine may be added when needed.

ACE inhibitors and ARBs can change creatinine and potassium levels. Blood tests are therefore commonly checked after treatment begins or the dose changes. This monitoring is expected and helps show whether treatment remains safe.

SGLT2 inhibitors were first developed for diabetes but can protect kidney and heart function in some people with chronic kidney disease, including some without diabetes. They are not suitable for everyone. Other treatment may include diuretics like furosemide or hydrochlorothiazide , which help the body remove extra salt and water, and cholesterol-lowering medicine to reduce cardiovascular risk.

Your blood pressure goal should be based on your overall health, kidney test results, age, symptoms, and how blood pressure is measured. Taking medicine consistently is important even when you feel well. If side effects or cost make this difficult, discuss them rather than quietly stopping treatment.

Management may also include limiting sodium, staying physically active within your abilities, avoiding smoking, and working toward a sustainable weight if appropriate. Fluid, protein, or potassium restrictions are not automatically needed. They should be based on your kidney function, blood results, and professional dietary advice.

Advanced kidney failure may require dialysis or a kidney transplant. Dialysis removes waste and extra fluid from the blood. Only a minority of people with chronic kidney disease reach this stage, and progression is not inevitable.

Complications

Possible complications depend on the amount of kidney damage and how quickly it progresses.

Reduced kidney function can cause fluid retention, difficult-to-control blood pressure, changes in potassium or acid levels, and anaemia. Anaemia means there are not enough healthy red blood cells to carry oxygen. Chronic kidney disease can also affect bone and mineral balance.

The condition raises the risk of heart attack, stroke, heart failure, and other blood vessel problems. Cardiovascular protection is therefore part of kidney treatment, not a separate issue.

Some people develop end-stage kidney failure, also called kidney failure requiring replacement therapy. Others have stable or slowly changing kidney function for many years. Regular eGFR and urine albumin tests help identify the direction of change.

Prevention

Hypertension-related kidney damage cannot always be prevented. High blood pressure may be influenced by age, inherited factors, other health conditions, and circumstances that are not fully under your control.

If you have high blood pressure, keeping it within your agreed range can lower the chance of kidney damage. This usually involves taking prescribed medicine, attending monitoring appointments, and following a realistic eating and activity plan.

Reducing sodium may help lower blood pressure. Much dietary sodium comes from packaged, restaurant, and takeaway foods rather than salt added at the table. Avoiding smoking and managing diabetes can also protect the kidneys and circulation.

Ask before using NSAID painkillers, herbal products, or supplements if you have kidney impairment. "Natural" products are not automatically safe for the kidneys, and some can interact with blood pressure medicines.

Living with it and what to expect

The course differs from person to person. Some people have mild abnormalities that remain stable for years. Others lose kidney function gradually, especially when blood pressure remains difficult to control or diabetes and heart conditions are also present.

Follow-up commonly includes blood pressure checks, blood tests for eGFR and electrolytes, and urine tests for albumin. The timing is based on the severity and stability of your results. A

single change matters less than the pattern across several tests.

Home blood pressure monitoring can help, provided the cuff fits correctly and the monitor has been validated. Keep a record rather than changing medicines based on one reading. Blood pressure can move up and down during the day.

Illnesses that cause vomiting, diarrhoea, fever, or poor fluid intake can temporarily affect kidney function. Seek advice about what to do with your medicines during significant illness rather than making permanent changes yourself.

Most people continue their usual work, relationships, travel, and activities. Treatment often becomes part of a routine involving daily medicines and periodic tests. If kidney function declines, earlier planning allows time to discuss treatment choices and practical support without assuming that dialysis will be needed.

When to get medical help

Call emergency services if a very high blood pressure reading occurs with chest pain, severe shortness of breath, new confusion, fainting, a seizure, sudden vision loss, or signs of stroke. Stroke signs include facial drooping, arm weakness, or difficulty speaking. These symptoms may indicate damage to the heart, brain, lungs, or other organs.

Seek urgent medical advice if repeated readings are extremely high even without symptoms, or if you develop a sudden major reduction in urine, rapidly worsening swelling, or breathlessness. Bring your readings and medicine list if possible.

Arrange routine follow-up if your home readings are often above your agreed range, swelling or foamy urine persists, or medicine side effects make treatment difficult. Routine kidney monitoring remains important even when you feel well.

Common questions

Can kidney damage from high blood pressure be reversed?

Established kidney scarring is usually permanent. However, blood pressure control and kidney-protective treatment may reduce urine albumin and slow or stop further decline. Temporary changes caused by dehydration or illness may improve when the cause is treated.

How do I know if high blood pressure has affected my kidneys?

You usually cannot tell from symptoms. Blood creatinine with an eGFR calculation and a urine albumin test are the main checks. Repeated results show whether an abnormality is persistent.

Does foamy urine mean my kidneys are damaged?

Not always. Urine may foam because it is concentrated or hits the toilet water quickly. Persistent foam can be associated with protein in the urine, so it is reasonable to request a urine test rather than relying on appearance.

Will I need dialysis?

Most people with chronic kidney disease do not require dialysis. The likelihood is influenced by current kidney function, urine albumin, other health conditions, and the rate of change over time. Your trend is more informative than one test result.

Can I take ibuprofen if I have kidney disease?

NSAIDs such as ibuprofen can reduce blood flow to the kidneys and may worsen kidney function or blood pressure. Risk is greater during dehydration and with some blood pressure medicines. Ask a pharmacist or clinician about safer pain-relief options for your circumstances.

Can I exercise with hypertension-related kidney disease?

Regular activity is generally helpful for blood pressure and heart health. The suitable type and intensity depend on your fitness, symptoms, and other conditions. Stop and seek medical help for chest pain, severe breathlessness, faintness, or sudden weakness.

Sources

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