CONDITION

Lupus nephritis

Lupus nephritis is kidney inflammation caused by the immune system activity of systemic lupus.

WHAT IT IS
Immune-driven kidney inflammation caused by systemic lupus

BODY SYSTEM
Kidneys and urinary system

MAIN SYMPTOMS
Foamy urine, swelling, high blood pressure, fatigue

WHAT CAUSES IT
Lupus immune activity damaging kidney filters

HOW IT IS DIAGNOSED
Urine and blood tests, usually a kidney biopsy

MAIN TREATMENT
Immune-suppressing medicines and kidney-protective care

CAN IT BE CURED?
No - remission is often achievable

IS IT AN EMERGENCY?
Sometimes - with severe breathlessness or very little urine

LONG-TERM OUTLOOK
Many achieve remission; some develop lasting kidney damage

Overview

Lupus nephritis is inflammation of the kidneys caused by systemic lupus erythematosus, usually called lupus or SLE. Lupus is an autoimmune condition, meaning the immune system mistakenly attacks the body's own tissues.

The kidneys filter waste and extra water from the blood. They also help control blood pressure, balance minerals and support red blood cell production. In lupus nephritis, immune activity damages the kidneys' tiny filters, called glomeruli. Protein or blood can then leak into the urine, and kidney function may decline.

Lupus nephritis does not always cause noticeable symptoms at first. It may be found through routine urine or blood tests during lupus care. Early recognition matters because treatment can reduce inflammation, protect remaining kidney function and lower the chance of

permanent scarring.

The condition can range from mild to severe. Some people respond well and enter remission, meaning kidney inflammation becomes inactive or much less active. Others have repeated flares or lasting kidney damage and need long-term monitoring.

Symptoms

Some people have no obvious symptoms, especially early on. Changes may first appear in urine tests, blood tests or blood pressure readings.

Possible symptoms include:

Foam in the toilet does not always mean there is protein in the urine. The speed of the urine stream and cleaning products can also cause bubbles. A urine test is needed to identify protein.

Symptoms of lupus elsewhere in the body may occur at the same time. These can include joint pain, skin rashes, mouth ulcers, fever, chest pain or unusual tiredness. However, kidney inflammation can worsen without a clear flare in other lupus symptoms.

- Foamy or frothy urine caused by protein leaking into it
- Swelling around the feet, ankles, legs, hands or eyelids
- Blood in the urine, which may look pink, red or brown
- High blood pressure
- Passing less urine than usual
- Tiredness, nausea or reduced appetite if kidney function worsens
- Rapid weight gain caused by fluid retention

Causes and risk factors

Lupus nephritis is caused by abnormal immune activity related to SLE. Immune proteins and antibodies form clusters known as immune complexes. These can collect in kidney tissue and trigger inflammation.

It is not caused by something you ate, poor hygiene or a lack of exercise. It is not contagious.

Only people with lupus develop lupus nephritis, but it is difficult to predict exactly who will be affected. Genes, hormones, immune-system differences and environmental exposures may all contribute. Kidney involvement may appear near the time lupus is diagnosed or later.

Lupus nephritis is more often reported, and may be more severe, among people from some Black, Hispanic or Latino, Asian, and Indigenous populations. Ancestry, genetics, unequal access to care and other social factors may all influence these differences. Race alone does not determine what will happen to an individual.

Factors linked with a greater risk of kidney damage include severe inflammation, delayed treatment, repeated flares, high blood pressure and ongoing protein loss in the urine. Taking prescribed treatment consistently can be difficult because of side effects, cost or practical barriers. Tell your care team if any of these are affecting you; changing the plan or arranging support may help.

Diagnosis

Regular urine, blood and blood pressure checks are important if you have lupus because kidney inflammation may be silent.

A urine test can look for protein, red blood cells and cellular casts. Casts are tiny tube-shaped particles formed inside the kidneys. A laboratory may also measure how much protein is being lost, using either a spot urine sample or a timed collection.

Blood tests measure creatinine, a waste product filtered by the kidneys. Creatinine is used to estimate the glomerular filtration rate, or eGFR, which gives an approximate measure of kidney function. Other blood tests may measure complement proteins and antibodies linked with lupus activity. These results can support the diagnosis but cannot show the full pattern of kidney injury.

A kidney biopsy is usually recommended when test results suggest significant lupus nephritis. During a biopsy, a clinician uses a needle to remove a very small sample of kidney tissue, usually with ultrasound guidance and local anaesthetic. A laboratory examines the sample under a microscope.

The biopsy can show:

These findings help guide treatment. A biopsy is not needed in every situation, and occasionally it cannot be done safely. Diagnosis then relies on the overall clinical and laboratory picture.

- The pattern, or class, of lupus nephritis
- How much inflammation is currently active
- How much permanent scarring is present

- Whether another kidney problem may be contributing

Treatment and management

Treatment aims to control immune inflammation, reduce protein loss, protect kidney function and prevent flares. The plan is based on biopsy findings, kidney function, other health conditions, pregnancy plans and how you respond to treatment.

More active lupus nephritis is often treated in two stages. Initial treatment uses stronger immune-suppressing therapy to bring the inflammation under control. Maintenance treatment continues for longer to keep the condition quiet and reduce the chance of relapse.

Medicines may include corticosteroids like prednisone or hydrocortisone together with other treatments that reduce immune activity. Options include mycophenolate, cyclophosphamide, calcineurin inhibitors, azathioprine and biologic medicines such as belimumab. These medicines work in different ways, and not all are suitable for every person.

Hydroxychloroquine is commonly used as part of lupus care unless there is a reason it cannot be taken. Regular eye screening is needed during long-term use because retinal damage, although uncommon, is a recognised risk.

Treatment may also include medicines to lower blood pressure and reduce protein leakage through the kidneys. Diuretics like furosemide or hydrochlorothiazide , sometimes called water tablets, can help the body remove extra fluid. Cholesterol treatment and measures to lower the risk of blood clots may be appropriate for some people.

Immune-suppressing medicines can increase susceptibility to infection and may require blood tests to check blood counts, liver function and kidney function. Some can affect fertility or cause harm during pregnancy. Discuss pregnancy plans before conception so treatment can be reviewed safely. Do not stop lupus medicines suddenly without medical advice, as this may trigger a flare.

Monitoring usually includes urine protein, creatinine, eGFR, blood pressure and lupus activity tests. Improvement may take months. Falling urine protein is often an important sign that treatment is working, even if it has not yet returned to normal.

Supportive care also matters. Limiting excess salt may help with swelling and blood pressure. Avoiding smoking supports blood vessel and kidney health. Ask before taking non-steroidal anti-inflammatory drugs like ibuprofen or naproxen , or NSAIDs, such as ibuprofen, because they can worsen kidney function in some circumstances.

Complications

Ongoing inflammation can scar the kidneys. Chronic kidney disease means kidney function remains reduced for at least several months. It can progress slowly, remain stable or worsen after further flares.

A small proportion of people develop kidney failure, also called end-stage kidney disease. At that stage, dialysis or a kidney transplant may be needed. Dialysis filters waste and fluid from the blood when the kidneys can no longer do enough. Kidney transplantation can provide good long-term kidney function, although lupus and general health need to be assessed first.

Other possible complications include:

These complications are not inevitable. Controlling inflammation, blood pressure and urine protein can lower risk.

- Severe high blood pressure
- Fluid collecting in the lungs
- Increased risk of heart and blood vessel problems
- Blood clots, especially with heavy protein loss or antiphospholipid antibodies
- Infections related to immune-suppressing treatment
- Treatment effects involving bones, blood cells, fertility or other organs

Prevention

Lupus nephritis cannot always be prevented. There is no proven way to prevent the inherited and immune factors that contribute to lupus.

If you already have lupus, regular urine tests, kidney blood tests and blood pressure checks can identify kidney involvement before symptoms appear. Taking lupus treatment as agreed and reporting possible flares promptly may reduce the chance of severe or repeated inflammation.

General kidney-protective steps include avoiding smoking, managing blood pressure and checking before using medicines or supplements that could affect the kidneys. These measures support kidney health but cannot guarantee that lupus nephritis will not develop or return.

Living with it and what to expect

Lupus nephritis usually requires care over years. Treatment is often most intensive during the

first months, followed by longer-term maintenance and monitoring. Appointments and blood or urine tests may be frequent at first, then become less frequent if the condition is stable.

Many people reach partial or complete kidney remission and continue their usual work, education, relationships and family life. Remission does not necessarily mean lupus has gone away. Monitoring and treatment may still be needed because inflammation can return without obvious symptoms.

Some people have relapses after a period of stability. A relapse may show up as rising urine protein, blood in the urine, increased creatinine, swelling or higher blood pressure. It does not always mean treatment has failed permanently, but the plan may need to change.

Permanent scarring does not usually reverse. Even so, treatment may preserve the kidney function that remains and slow further damage. Your long-term outlook is influenced by the biopsy pattern, response to treatment, blood pressure, repeat flares and amount of existing scarring.

Living with uncertainty and prolonged treatment can be tiring. Medication side effects, changes in appearance, infection precautions and concerns about fertility or pregnancy may affect emotional wellbeing. Practical and psychological support can be an important part of care.

When to get medical help

Arrange a routine or prompt medical review if you notice new foamy urine, ankle or facial swelling, visible blood in your urine, higher blood pressure or unexplained weight gain. Also seek advice if known lupus symptoms are returning or medication side effects are difficult to manage.

Contact your care team promptly if you are passing much less urine than usual, swelling is increasing quickly, or you develop fever or infection symptoms while taking immune-suppressing medicine.

Seek emergency care for:

These symptoms can have several causes and do not always mean lupus nephritis is worsening, but they need urgent assessment.

- Severe trouble breathing, especially with swelling
- Chest pain, fainting or confusion
- Very little or no urine with worsening illness

- A seizure, sudden weakness or difficulty speaking
- Signs of a severe allergic reaction, such as facial swelling and breathing difficulty

Common questions

Can lupus nephritis go away?

It can enter remission, meaning kidney inflammation and protein loss improve greatly or become inactive. Lupus itself remains a long-term condition, so continued monitoring is important. Some people experience later flares.

Does lupus nephritis always lead to kidney failure?

No. Many people respond to treatment and do not develop kidney failure. Risk is higher when inflammation is severe, treatment response is limited, flares recur or substantial scarring is already present.

What does foamy urine look like?

It may have persistent layers of small bubbles that do not disappear quickly. Appearance alone cannot confirm protein loss, so a urine test is needed.

Why do I need a kidney biopsy?

A biopsy shows the type and severity of kidney injury. It can separate active inflammation, which may respond to immune treatment, from permanent scarring. This information helps guide the treatment approach.

Can I become pregnant with lupus nephritis?

Pregnancy may be possible, but it is safest when lupus nephritis has been stable and kidney function and blood pressure are well controlled. Some medicines must be changed well before pregnancy. Pre-pregnancy planning with lupus, kidney and pregnancy specialists is important.

Can lupus nephritis come back after a kidney transplant?

It can recur in a transplanted kidney, but clinically significant recurrence is uncommon. Transplant teams also assess lupus activity, cardiovascular health and infection risk when planning transplantation.

Sources



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