Chronic kidney disease

Overview

Chronic kidney disease, also called chronic kidney failure, involves a gradual loss of kidney function. The kidneys filter wastes and excess fluids from the blood, which are then removed in the urine. Advanced chronic kidney disease can cause dangerous levels of fluid, electrolytes and wastes to build up in the body.

Treatment for chronic kidney disease focuses on slowing the progression of kidney damage, usually by controlling the cause. But, even controlling the cause might not keep kidney damage from progressing. Chronic kidney disease can progress to end-stage kidney failure, which is fatal without artificial filtering (dialysis) or a kidney transplant.

Symptoms

Depending on how severe it is, loss of kidney function can cause:

- Nausea and Vomiting
- Loss of appetite
- Fatigue and weakness
- Sleep problems
- Increased or decreased urine output.
- Decreased mental sharpness
- Muscle cramps
- Swelling of feet and ankles
- Dry, itchy skin
- High blood pressure (Hypertension) that's difficult to control
- Shortness of breath, if fluid builds up in the lungs
- Chest pain, if fluid builds up around the lining of the heart

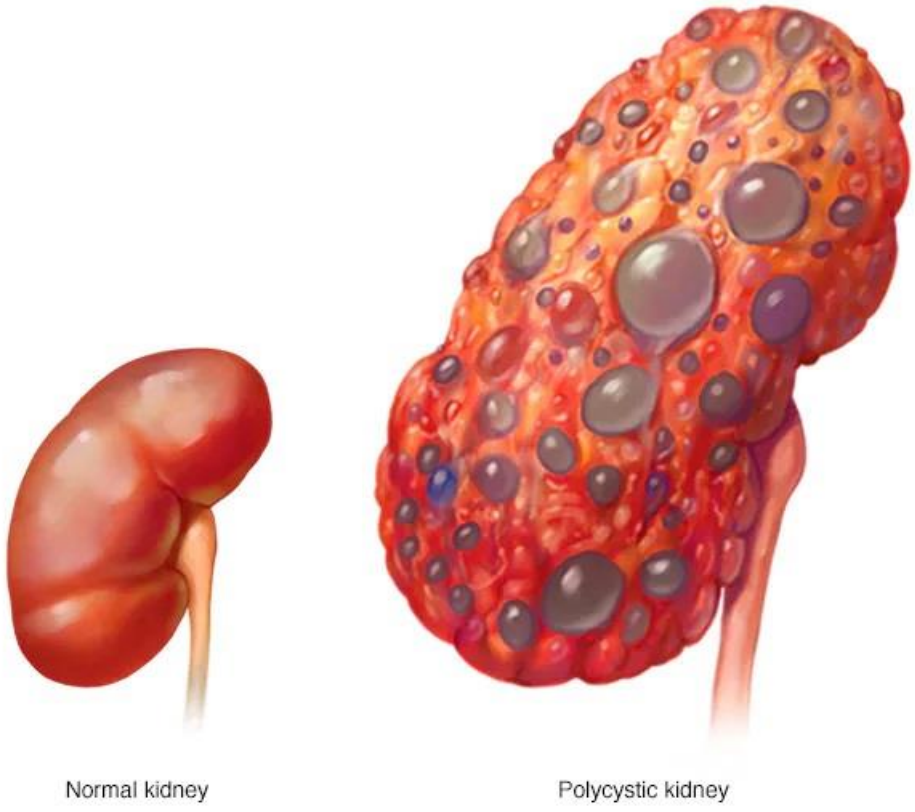
Signs and symptoms of kidney disease are often nonspecific. This means they can also be caused by other illnesses.

Causes

Chronic kidney disease occurs when a disease or condition impairs kidney function, causing kidney damage to worsen over several months or years.

Diseases and conditions that cause chronic kidney disease include:

- Type 1 or type 2 diabetes
- High blood pressure
- Glomerulonephritis, an inflammation of the kidney's filtering units (glomeruli)
- Interstitial nephritis, an inflammation of the kidney's tubules and surrounding structures
- Polycystic kidney disease or other inherited kidney diseases
- Prolonged obstruction of the urinary tract, from conditions such as enlarged prostate, kidney stones and some cancers
- Vesicoureteral reflux, a condition that causes urine to back up into the kidneys
- Recurrent kidney infection, also called pyelonephritis



Normal kidney

Polycystic kidney

Risk factors

Factors that can increase the risk of chronic kidney disease include:

- Diabetes
- High blood pressure
- Cardiovascular disease
- Smoking
- Obesity
- Being Black
- Family history of kidney disease
- Abnormal kidney structure
- Older age
- Frequent use of medications that can damage the kidneys

Complications

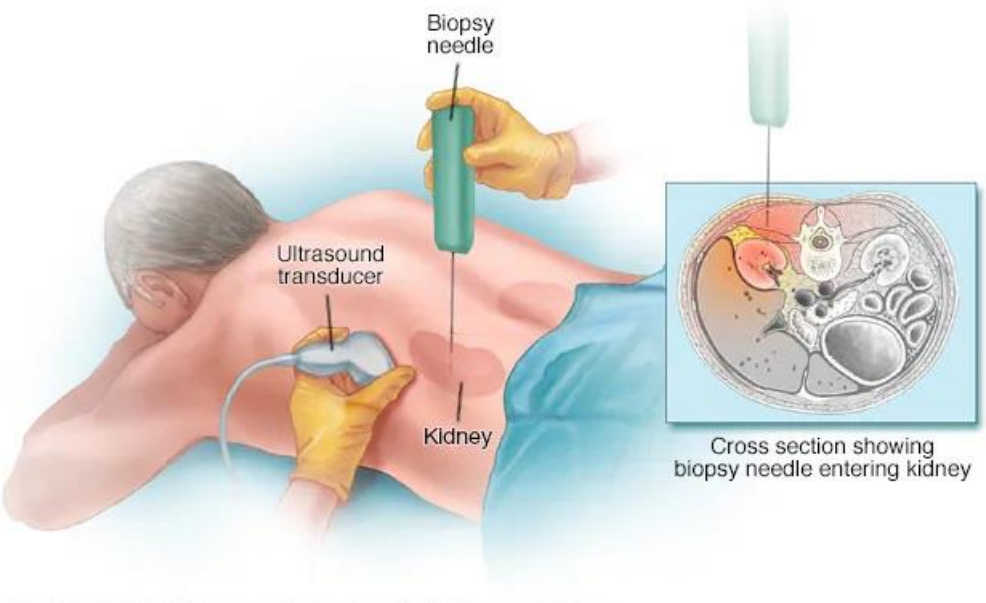
Chronic kidney disease can affect almost every part of the body. Potential complications include:

- Fluid retention, which could lead to swelling in the arms and legs, high blood pressure, or fluid in the lungs (pulmonary edema)
- A sudden rise in potassium levels in the blood (hyperkalemia), which could impair the heart's function and can be fatal
- Anemia
- Heart disease
- Weak bones and an increased risk of bone fractures
- Decreased sex drive, erectile dysfunction or reduced fertility
- Damage to the central nervous system, which can cause difficulty concentrating, personality changes or seizures
- Decreased immune response, which makes the body more vulnerable to infection
- Pericarditis, an inflammation of the saclike membrane that envelops the heart (pericardium)
- Pregnancy complications that carry risks for the mother and the developing fetus
- Irreversible damage to the kidneys (end-stage kidney disease), eventually requiring either dialysis or a kidney transplant for survival.

Diagnosis

For kidney disease diagnosis, certain tests and procedures to determine how severe the kidney disease is (stage). Tests might include:

- **Blood tests.** Kidney function tests look for the level of waste products, such as creatinine and urea, in the blood.
- **Urine tests.** Analyzing a sample of the urine can reveal abnormalities that point to chronic kidney failure and help identify the cause of chronic kidney disease.
- **Imaging tests.** Ultrasound to assess the kidneys' structure and size. Other imaging tests might be used in some cases.
- **Kidney biopsy.** a, which involves removing a sample of kidney tissue. Kidney biopsy is often done with local anesthesia using a long, thin needle that's inserted through the skin and into the kidney. The biopsy sample is sent to a lab for testing to help determine what's causing the kidney problem.



Treatment

Depending on the cause, some types of kidney disease can be treated. Often, though, chronic kidney disease has no cure.

Treating the cause

Treatment options vary depending on the cause. But kidney damage can continue to worsen even when an underlying condition, such as diabetes mellitus or high blood pressure, has been controlled.

Treating complications

Kidney disease complications can be controlled to makes the patient more comfortable. Treatments might include:

- **High blood pressure medications.** Also, diuretics and a low-salt diet.
- **Medications to treat anemia.** Supplements of the hormone erythropoietin (Eprex vial) sometimes with added iron, help produce more red blood cells. This might relieve fatigue and weakness associated with anemia.
- **Medications to lower cholesterol levels.** medications called statins to lower serum cholesterol. People with chronic kidney disease often have high levels of bad cholesterol, which can increase the risk of heart disease.
- **Medications to protect the bones.** Calcium and vitamin D supplements can help prevent weak bones and lower the risk of fracture. Also, medications known as a phosphate binder to lower the amount of phosphate in the blood and protect the blood vessels from damage by calcium deposits (calcification).
- **A lower protein diet to minimize waste products in the blood.** As the body processes protein from foods, it creates waste products that kidneys must filter from the blood. To reduce the amount of work the kidneys must do, it is better to eat less protein.

Treatment for end-stage kidney disease

If the kidneys can't keep up with waste and fluid clearance on their own and complete or near-complete kidney failure happens, which is called end-stage kidney disease. At that point, dialysis or a kidney transplant is needed.

- **Dialysis.** Dialysis artificially removes waste products and extra fluid from the blood when the kidneys can no longer do this. In hemodialysis, a machine filters waste and excess fluids from the blood.

  In peritoneal dialysis, a thin tube inserted into the abdomen fills the abdominal cavity with a dialysis solution that absorbs waste and excess fluids. After a time, the dialysis solution drains from the body, carrying the waste with it.

- **Kidney transplant.** A kidney transplant involves surgically placing a healthy kidney from a donor into the body. Transplanted kidneys can come from deceased or living donors.

  After a transplant, the patient needs to take medications for the rest of life to keep the body from rejecting the new organ.