

RENAL FAILURE



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By

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INTRODUCTION:

Renal failure, also known as kidney failure. It is a condition in which the kidneys are no longer able to filter waste products and excess fluids from the blood effectively. This can lead to a buildup of harmful toxins in the body and can cause serious health problems.

TYPES: There are two main types of renal failure: acute and chronic.

Acute renal failure: It occurs suddenly and is often caused by a sudden decrease in blood flow to the kidneys.

Chronic renal failure: It develops over a period of time and is usually the result of long-term damage to the kidneys, such as from high blood pressure or diabetes.

CAUSES/ETIOLOGY:

- **Diabetes:** Uncontrolled high blood sugar levels can damage the blood vessels in the kidneys, leading to kidney damage and eventually, kidney failure.
- **High blood pressure:** High blood pressure can damage the blood vessels in the kidneys, reducing their ability to filter waste products and fluids from the blood.
- **Infections:** Certain infections, such as glomerulonephritis and pyelonephritis, can damage the kidneys and cause renal failure.
- **Medications:** Certain medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs) and some antibiotics, can cause kidney damage and renal failure, especially if taken in high doses or over a long period of time.

- **Autoimmune diseases:** Autoimmune diseases, such as lupus and IgA nephropathy, can cause inflammation and damage to the kidneys.
- **Kidney stones:** Large kidney stones can block the flow of urine from the kidneys, causing damage and eventually renal failure.
- **Congenital abnormalities:** Some people are born with congenital abnormalities of the kidneys or urinary tract that can lead to renal failure.
- **Chronic kidney disease:** Chronic kidney disease (CKD) is a condition in which the kidneys gradually lose function over time, eventually leading to renal failure.

PATHOPHYSIOLOGY:

- The kidneys are responsible for filtering waste products and excess fluids from the blood and excreting them through urine.
- There are two main types of renal failure: acute and chronic. Acute renal failure develops rapidly over a short period, usually within hours or days. It can be caused by a sudden loss of blood flow to the kidneys, injury or trauma to the kidneys, severe dehydration, or exposure to toxins or drugs that damage the kidneys.
- Chronic renal failure, on the other hand, develops over a period of months or years and is usually caused by underlying health conditions such as diabetes, high blood pressure, or glomerulonephritis (inflammation of the kidneys).
- When the kidneys are damaged or fail to function properly, waste products and fluids can accumulate in the body including urea and creatinine, leading to a range of health problems.

CLINICAL MENIFESTATION/SIGN & SYMPTOMS:

- Decreased urine output
- Swelling in the legs, ankles, or feet
- Fatigue or weakness
- Shortness of breath
- Loss of appetite
- Nausea or vomiting
- Confusion or difficulty concentrating
- Itching or dry skin
- Muscle cramps or twitching
- High blood pressure
- Bone pain
- Increased risk of infection

DIAGNOSIS:

- Physical examination
- Family history & Medical history.
- **Blood tests:** Blood tests are often the first step in diagnosing kidney disease. The doctor will look at the levels of creatinine and blood urea nitrogen (BUN) in the blood, which are waste products that the kidneys normally filter out. High levels of these substances in the blood may indicate that the kidneys are not functioning properly.

- **Urine tests:** Urine tests can help detect protein or blood in the urine, which may indicate kidney damage. The doctor may also test for the presence of other substances in the urine, such as glucose or ketones, which can indicate other disease conditions.
- **Imaging tests:** Imaging tests, such as an ultrasound, CT scan, or MRI, can provide detailed images of the kidneys and surrounding structures. These tests can help the doctor identify any abnormalities or damage to the kidneys.
- **Kidney biopsy:** In some cases, a kidney biopsy may be necessary to diagnose kidney disease. This involves removing a small sample of kidney tissue and examining it under a microscope to look for signs of damage or disease.

PHARMACOLOGICAL MANAGEMENT:

- **Diuretics:** These medications can help increase urine output and reduce swelling in the body, which can be helpful in managing symptoms of renal failure. (Furosemide, Hydrochlorothiazide)
- **ACE inhibitors and ARBs:** These medications are often used to help control blood pressure and reduce the risk of further kidney damage in people with renal failure.

ACE inhibitors:

1. Enalapril
2. Lisinopril
3. Ramipril
4. Benazepril
5. Captopril

ARBs:

1. Losartan

2. Valsartan
3. Irbesartan
4. Candesartan
5. Olmesartan

- **Phosphate binders:** These medications can help lower the level of phosphorus in the blood, which can be high in people with renal failure. (Calcium carbonate, Sevelamer)
- **Erythropoietin-stimulating agents (ESAs):** These medications can help stimulate the production of red blood cells in people with anemia, which is a common complication of renal failure. (Epoetin alfa, Darbepoetin alfa)
- **Calcium and vitamin D supplements:** These supplements may be used to help maintain bone health in people with renal failure, who are at increased risk of developing osteoporosis. (Calcium carbonate, Calcium citrate, Vitamin D3)

NON PHARMACOLOGICAL MANAGEMENT/PREVENTION:

- **Manage underlying health conditions:** Conditions such as high blood pressure, diabetes, and heart disease can increase the risk of developing renal failure. Managing these conditions through lifestyle changes, medication, and regular monitoring can help prevent or slow the progression of renal failure.
- **Maintain a healthy lifestyle:** Eating a healthy diet, maintaining a healthy weight, and getting regular exercise can help reduce the risk of developing renal failure.
- **Avoid toxins and harmful substances:** Exposure to certain toxins, such as heavy metals and chemicals, can damage the kidneys and increase the risk of renal failure. Avoiding these

substances or wearing protective gear when working with them can help reduce the risk.

- **Stay hydrated:** Drinking enough water and other fluids can help keep the kidneys functioning properly and reduce the risk of kidney damage.
- **Manage medication use:** Certain medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs) and some antibiotics, can damage the kidneys and increase the risk of renal failure. Managing medication use and avoiding unnecessary medications can help reduce the risk.
- **Regular check-ups:** Regular check-ups with a healthcare provider can help detect early signs of kidney damage and allow for prompt treatment to prevent further damage.
- **Use heat therapy:** Applying heat to the lower abdomen or lower back can help reduce menstrual pain. You can use a heating pad, hot water bottle, or take a warm bath.
- **Consider hormonal contraceptives:** Hormonal contraceptives, such as birth control pills, patches, or vaginal rings, can help regulate menstrual cycles and reduce the amount of prostaglandins produced, which can help alleviate menstrual pain.