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Generally, renal diseases progress to a final stage as end-stage renal disease (ESRD) and function is substituted by renal replacement therapy (RRT), hemodialysis, peritoneal dialysis, or transplantation. National and international registries of patients on RRT are useful for providing information on the prevalence of renal diseases in a given country. Data combined from different sources show that more than 1.5 million people worldwide are on RRT, 80 percent of whom live in Japan, Europe, and North America

Diseases can have an impact on the elimination of wastes and on the conservation of an appropriate amount and quality of body fluid. Many of the manifestations of renal disease can be accounted for in terms of disturbance of these two functions, and the alleviation of symptoms in those renal diseases that cannot be cured depends on knowledge of how these two functions are affected. Renal system diseases, any of the diseases or disorders that affect the human urinary system. They include benign and malignant tumours, infections and inflammations, obstruction by calculi.

Diseases of the renal system include:

- Genetic Diseases
- Glomerulonephritis
- Infections, Stones and Obstructive Uropathy
- Acute Renal Failure
- Diabetes
- Hypertension

### **GENETIC DISEASES**

While most renal disorders are not hereditary, some kidney conditions have known inherited genetic components. Common hereditary kidney disorders include:

- Autosomal Dominant Polycystic Kidney Disease: This is a generally late-onset condition that leads to progressive cyst development.
- Tuberos Sclerosis: This is a renal disorder that affects many of the body's systems from

the eyes to the central nervous system.

- Alport Syndrome: This is a condition involving inflammation of the kidneys leading to chronic renal failure (hereditary nephritis), deafness and eye abnormalities.
- Von-Hippel Lindau Syndrome: This is a hereditary cancer syndrome that can lead to tumours in a number of organs including the kidneys, cerebellum, spine, eye, inner ear, adrenal glands and the pancreas.

## **GLOMERULONEPHRITIS**

Glomerulonephritis is an inflammation of the glomeruli, which are structures in your kidneys that are made up of tiny blood vessels. These knots of vessels help filter the blood and remove excess fluids. If the glomeruli are damaged, the kidneys will stop working properly, and it can result in kidney failure. Sometimes called nephritis, glomerulonephritis is a serious illness that can be life-threatening and requires immediate treatment. Glomerulonephritis can be both acute, or sudden, and chronic or long term. This condition used to be known as Bright's disease.

Acute glomerulonephritis can be a response to an infection such as strep throat or an abscessed tooth. It may be due to problems with your immune system overreacting to the infection. Certain illnesses are known to trigger acute glomerulonephritis, including:

- Strep throat
- Systemic lupus erythematosus, which is also called lupus
- Goodpasture syndrome, a rare autoimmune disease in which antibodies attack the kidney and lungs
- Amyloidosis, which occurs when abnormal proteins that cause harm build up in the organs and tissues
- Granulomatosis with polyangiitis (formerly known as Wegener's granulomatosis), a rare disease that causes inflammation of blood vessels
- Polyarteritis nodosa, a disease in which cells attack arteries.

## **OBSTRUCTIVE UROPATHY**

Obstructive uropathy is a condition in which the flow of urine is blocked. This causes the urine to back up and injure one or both kidneys. Obstructive uropathy occurs when urine cannot drain through the urinary tract. Urine backs up into the kidney and causes it to become swollen. This condition is known as hydronephrosis. Obstructive uropathy can affect one or both kidneys. It can occur suddenly, or be a long term problem. Causes of obstructive uropathy include:

- Bladder stones
- Kidney stones

- Benign prostatic hyperplasia (enlarged prostate)
- Bladder or ureteral cancer
- Colon cancer
- Cervical cancer
- Uterine cancer
- Scar tissue that occurs inside or outside of the ureters
- Scar tissue that occurs inside the urethra
- Problems with the nerve that supply the bladder

### **ACUTE RENAL FAILURE**

Acute renal failure occurs when the kidneys suddenly become unable to filter waste products from the blood. When the kidneys lose their filtering ability, dangerous levels of wastes may accumulate, and the blood's chemical make-up may get out of balance. Acute renal failure can be fatal and requires intensive treatment. However, acute kidney failure may be reversible. Symptoms include:

- Decreased urine output, although occasionally urine output remains normal
- Fluid retention, causing swelling in the legs, ankles or feet
- Shortness of breath
- Fatigue
- Confusion
- Nausea
- Weakness
- Irregular heartbeat
- Chest pain or pressure
- Seizures or coma in severe cases

Diseases and conditions that may slow blood flow to the kidneys and lead to kidney injury include:

- Blood or fluid loss
- Blood pressure medications
- Heart attack

- Heart disease
- Infection

Diseases, conditions and agents that may damage the kidneys and lead to acute kidney failure:

- Blood clots in the veins and arteries in and around the kidneys
- Cholesterol deposits that block blood flow in the kidneys
- Glomerulonephritis, inflammation of the tiny filters in the kidneys (glomeruli)
- Haemolytic uremic syndrome, a condition that results from premature destruction of red blood cells
- Infection
- Lupus, an immune system disorder causing glomerulonephritis
- Medications such as chemotherapy drugs, antibiotics and dyes used during imaging tests

## **COMPLICATIONS**

- **Fluid build-up:** Acute kidney failure may lead to a build-up of fluid in the lungs, which can cause shortness of breath.
- **Chest pain:** If the lining that covers the heart (pericardium) becomes inflamed, one may experience chest pain.
- **Muscle weakness:** When the body's fluids and electrolytes (the body's blood chemistry) are out of balance, muscle weakness can result.
- **Permanent kidney damage:** Occasionally, acute kidney failure causes permanent loss of kidney function, or end-stage renal disease. People with end-stage renal disease require either permanent dialysis which is a mechanical filtration process used to remove toxins and wastes from the body or a kidney transplant to survive.
- **Death.**

## **DIABETES**

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the blood's systems, especially the nerves and blood vessels. There are 3 types of diabetes:

- **Type 2 diabetes** (formerly called non-insulin-dependent, or adult onset)
- **Type 1 diabetes** (formerly called insulin-dependent, juvenile or childhood-onset)
- **Gestational diabetes:** Gestational diabetes is hyperglycaemia with blood glucose values

above normal but below those diagnostic of diabetes. Gestational diabetes occurs during pregnancy.

## **HYPERTENSION**

Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, the major blood vessels in the body. Hypertension is when the blood pressure is too high. Blood pressure is written as two numbers. The first (systolic) number represents the pressure in blood vessels when the heart contracts or beats. The second (diastolic) number represents the pressure in the vessels when the heart rests between beats.