

NAME: ALIVIDE DEBORAH SEWANU
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TOPIC: DISEASES OF THE RENAL SYSTEM

Causes of Diseases of the Kidney and Urinary System

Kidney disease leading to ESRD(end-stage renal disease) has many causes. The prevalence varies by country, region, ethnicity, gender, and age.

Genetic Diseases

Knowledge of inherited kidney disease has changed radically with advances in molecular biology and gene-sequencing technology. The characterization of inherited kidney diseases has improved, and novel mutations leading to selective renal defects have been described.

Inherited kidney diseases are rare, with the exception of autosomal dominant polycystic kidney disease.

Glomerulonephritis

Glomerulonephritides are a group of kidney diseases that affect the glomeruli. They fall into two major categories: *glomerulonephritis* refers to an inflammation of the glomeruli and can be primary or secondary, and *glomerulosclerosis* refers to scarring of the glomeruli. Even though glomerulonephritis and glomerulosclerosis have different causes, both can lead to ESRD.

Infections, Stones, and Obstructive Uropathy

Infections of the urinary tract are a common health problem worldwide and can be categorized as either uncomplicated or complicated.

Uncomplicated infections include bladder infections such as cystitis, seen almost exclusively in young women. Among sexually active women, the incidence of cystitis is 0.5 episodes per person annually, and recurrence develops in 27 to 44 percent of cases. Acute, uncomplicated pyelonephritis, involving the kidney, is less frequent in women than is cystitis. Males are less susceptible to acute, uncomplicated infections of the bladder or the kidney, with an incidence of five to eight episodes per 10,000 men annually. Even though uncomplicated urinary tract infections are considered benign, they have significant medical and financial implications estimated at approximately US\$1.6 billion per year .

Benign Prostatic Hypertrophy

Benign prostatic hypertrophy is a major cause of lower urinary tract symptoms and leads to obstructive renal failure and ESRD. By age 80, 80 percent of men have benign prostatic hypertrophy. The World Health Organization quotes a mortality rate of 0.5 to 1.5 per 100,000. The actual incidence of benign prostatic hypertrophy is difficult to assess because of the lack of epidemiological data. In the developed world, the incidence varies between 0.24 and 10.90 per 1,000 annually from age 50 to 80, and

the probability of prostate surgery for benign prostatic hypertrophy ranges from 1.4 to 6.0 percent.

Acute Renal Failure

Acute renal failure refers to a sudden and usually temporary loss of kidney function that may be so severe that RRT is needed until kidney function recovers. Even though acute renal failure can be a reversible condition, it carries a high mortality rate. Acute renal failure is a prominent feature of major earthquakes, where many suffer from crush syndrome accompanied by severe dehydration and rapid release of muscle cell contents, including potassium. Kidney function shuts down unless body fluid and blood pressure are rapidly corrected and frequent hemodialysis is available.

Diabetes

Diabetes is one of the most common noncommunicable diseases. With the serious complication of nephropathy, diabetes has become the single most important cause of ESRD. Diabetes may account for one-third of all ESRD cases.

Family-based studies and segregation analyses suggest that inherited factors play a major role in people's susceptibility to diabetic renal complications

Hypertension

Hypertension and kidney disease are closely related. Most primary renal diseases eventually produce hypertension. Arterial hypertension accelerates many forms of renal disease and hastens the progression to ESRD. Recent studies have firmly established the importance of continuous blood pressure reduction to slow the progression of many forms of renal injury, particularly glomerular disease. Over the long term, damage to the heart and cardiovascular system resulting from hypertension represents the major cause of morbidity and mortality among ESRD patients