

Al-Mustaqbal University College



Pathophysiology 3rd stage Disorders of Renal System

Part 3

Dr. Hasanain Owadh

Nephrotic Syndrome

Nephrotic syndrome is the loss of 3.5 g or more of protein in the urine per day.

Under normal circumstances, virtually no protein is lost in the urine.

Nephrotic syndrome usually indicates severe glomerular damage.

Diabetic nephropathy is the most common cause of nephrotic syndrome.

In individuals who do not have diabetes, different glomerular diseases may account for the disorder.

Thromboembolic complications are common.

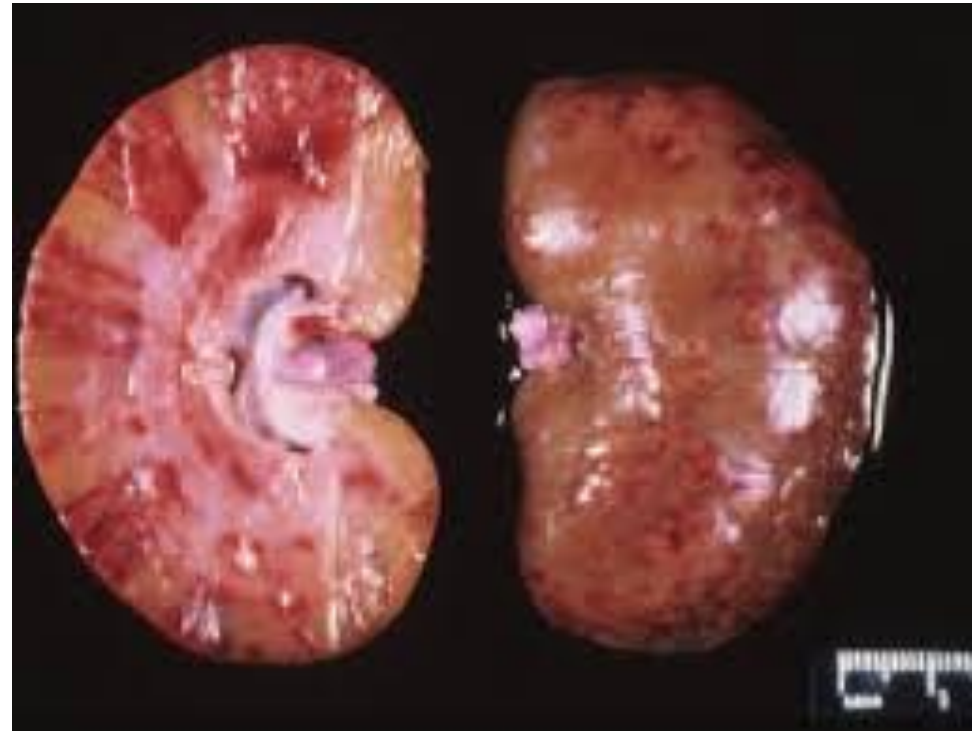
Clinical manifestations include Four main symptoms of nephrotic syndrom:

- Proteinuria.
 - Hypoalbuminemia
 - Edema.
 - Hyperlipidemia (elevated plasma lipids) is associated with hypoalbuminemia, perhaps as a hepatic response to low levels of albumin.
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- Increased susceptibility to infections (caused by hypoimmunoglobulins) and generalized edema.

Pyelonephritis



Pyelonephritis is inflammation of the parenchyma and lining of renal pelvis of kidney



Etiology:

Gram negative organism like “E.coli (common)”

Gram positive organism like **Staph.saprophyticus**,

Virus (Rare)

Parasite

Pathogenesis:

In the majority of UTIs bacteria establish infection by ascending from the urethra to the bladder.

Continuing ascent up the ureter to the kidney is the pathway for most renal parenchymal infections.

Clinical Feature

Mild pyelonephritis:

- low-grade fever with or without lower-back or costovertebral-angle pain

Severe pyelonephritis:

- High fever “picket-fence” 72hr
- Nausea
- vomiting
- flank and/or loin pain



Hypertensive Glomerular disease

1- **Renal failure** may occur with progressive high-pressure damage to the renal capillaries, the glomeruli.

With glomerular injury, blood flow to the functional units of the kidney, the nephrons, is impaired, and these can become hypoxic and die.

With damage to the glomerular membranes, proteins will be lost in the urine, decreasing the plasma colloid osmotic pressure and contributing to edema, which is often seen with long-standing hypertension.

Drugs Induced Kidney Disease

- The heart pumps approximately 25% of cardiac output into the kidneys
- Any drug in the blood will eventually reach the highly vascularized kidneys May potentially cause drug-induced renal failure

NSAIDs

- ❖ Selective cyclooxygenase (COX-2) inhibitors cause similar renal dysfunction
- ❖ COX-2 exists as a constitutive enzyme in the thick part of the ascending loop of Henle and in the renal medulla
- ❖ COX-2 causes natriuresis and diuresis Inhibition of COX-2 by selective COX-2 inhibitors, such as celecoxib and rofecoxib
- ❖ causes renal dysfunction particularly in patients who are salt depleted or haemodynamically unstable.

Cisplatin

- ❖ Nephrotoxicity is the major dose-limiting toxicity for **cisplatin**.
- ❖ **Platinum** compounds are believed to mediate their cytotoxic effects through their interaction with DNA”
- ❖ In addition low concentrations of **cisplatin** preferentially result in apoptotic cell death while at higher concentrations necrosis ensues.

ACEIs and ARBs cause ARF

Stopping the medication should resolve the renal failure.

Restarting the drug at a lower dose may be possible.

Drugs of Abuse

- Cocaine and heroin.
- Cocaine use can cause renal artery thrombosis (clotting), severe hypertension and interstitial nephritis.
- long-term cocaine use can lead to chronic renal failure.
- Long-term tobacco use also increases the risk of kidney cancer.

Reference: Corwin , Pathophysiology, 3rd Edition

