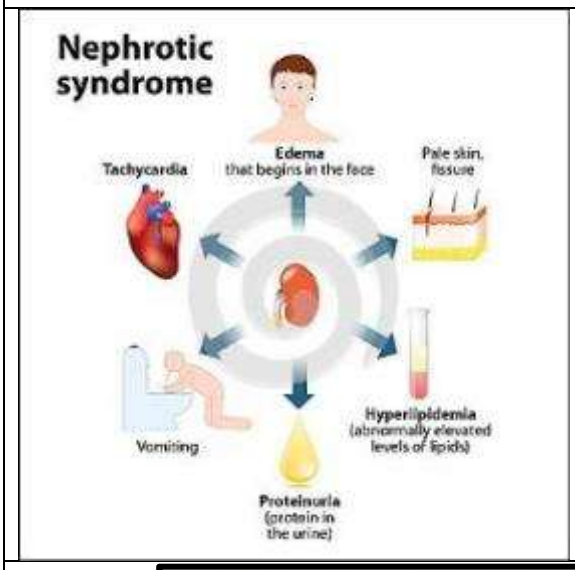
XIX. Diseases of the Urinary System

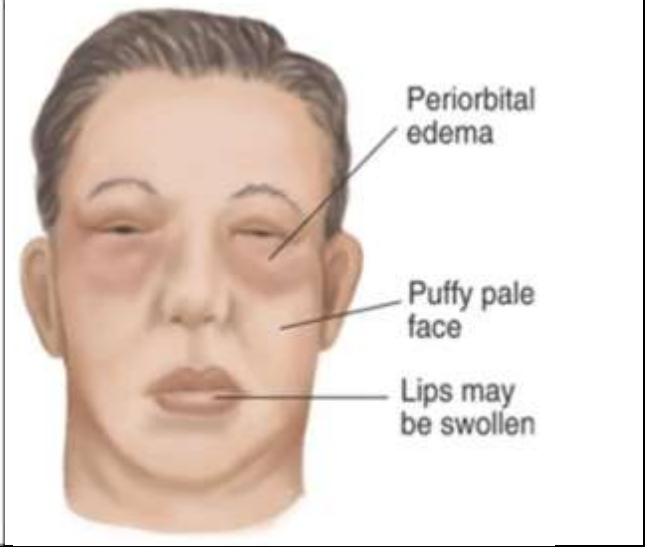
The nephrotic syndrome:

A clinical term for a **symptom-complex** non-specific of renal disease consisting of

1. ***Generalized oedema,***
2. ***Marked proteinuria and***
3. ***Cylindruria. (casts in urine),***
4. ***Hypercholesterolemia and***
5. ***Hypoproteinemia***
6. ***In the absence of azotemia 'or persistent hypertension.***

- The glomeruli are affected (as well as the tubules) and hence the use of the word "syndrome" to differentiate this condition from "pure nephrosis" in which the lesion is restricted to the tubules.





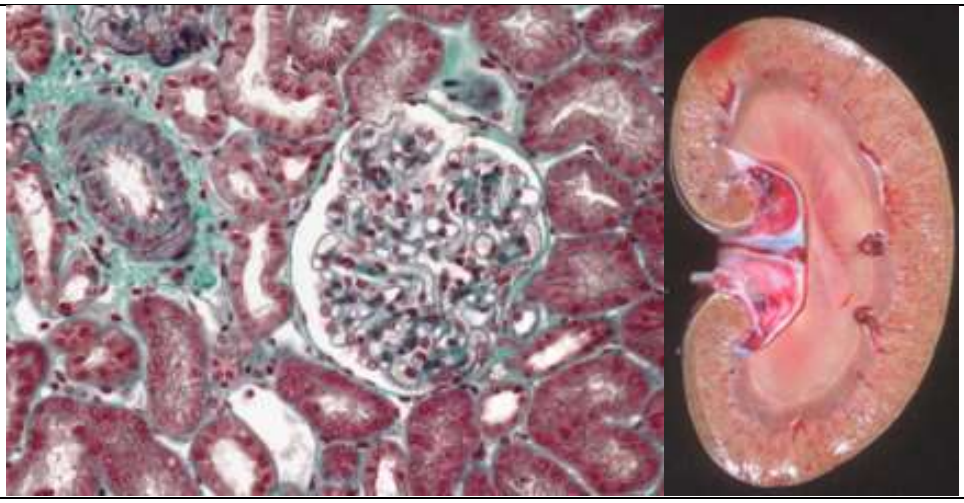
Features of Nephrotic syndrome – NAPHROTIC

- **N**a+ decrease (Hyponatremia)
- **A**lbumin decrease (Hypoalbuminemia)
- **P**roteinuria >3.5 g/day
- **H**yperlipidemia
- **R**enal vein thrombosis
- **O**rbital edema
- **T**hromboembolism
- **I**nfection (due to loss of Immunoglobulins in urine)
- **C**oagulability (due to loss of Antithrombin III in urine)

The syndrome may be encountered in the following diseases:

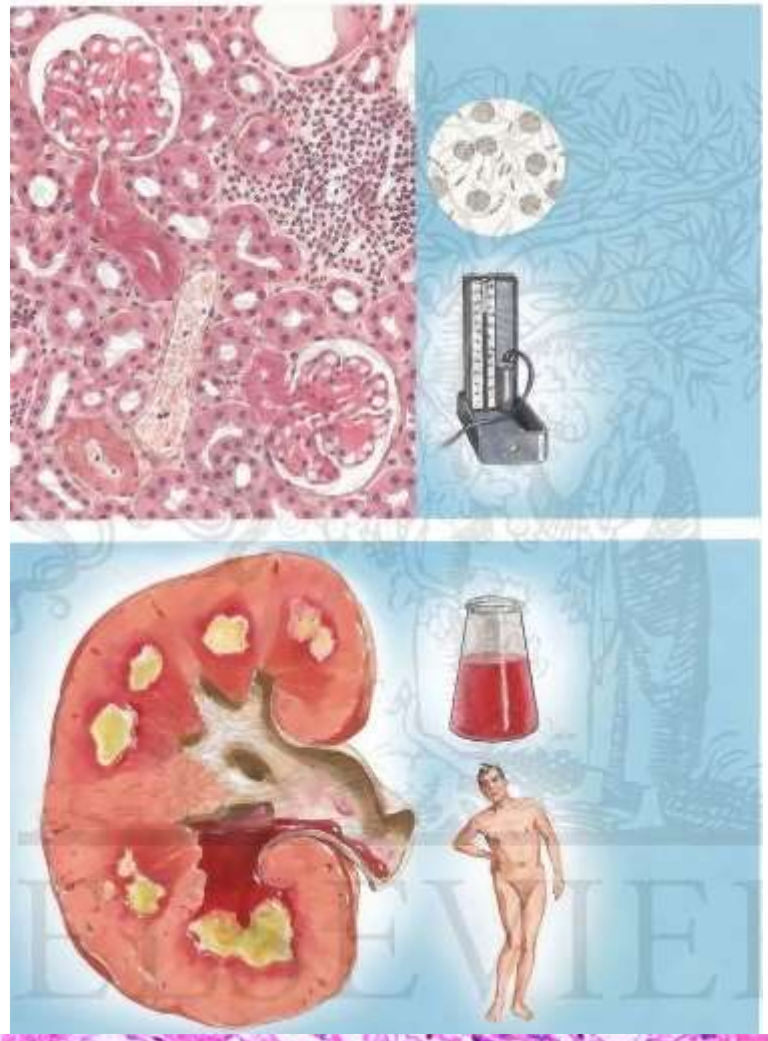
1. ***Diffuse glomerulonephritis (proliferative and membranous phases).***

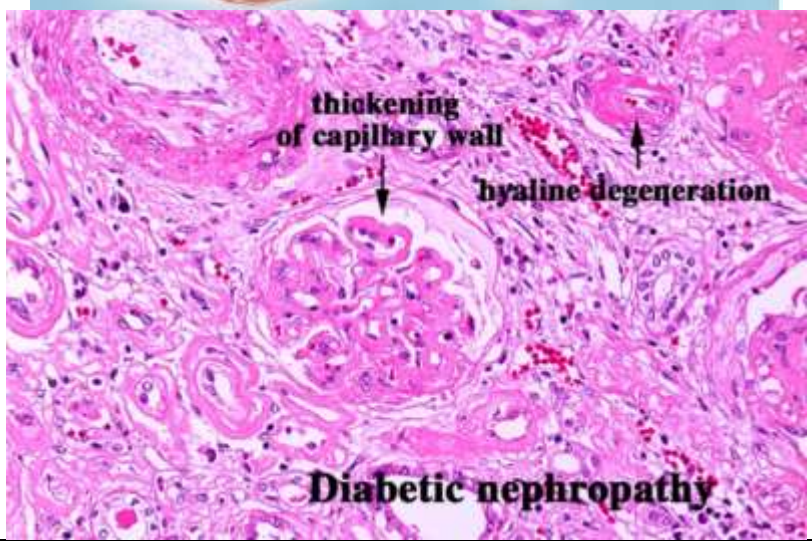
2. ***The so-called lipoid nephrosis (chiefly in children):***
    a. *At present is included in the syndrome because*
    b. Affection of the glomeruli (which was not previously-revealed by the ordinary microscope)
    c. Has **been proved by the electron microscope** (diffuse swelling and fusion of the foot-processes of the epithelial cells & Thickening of the basement membrane.)

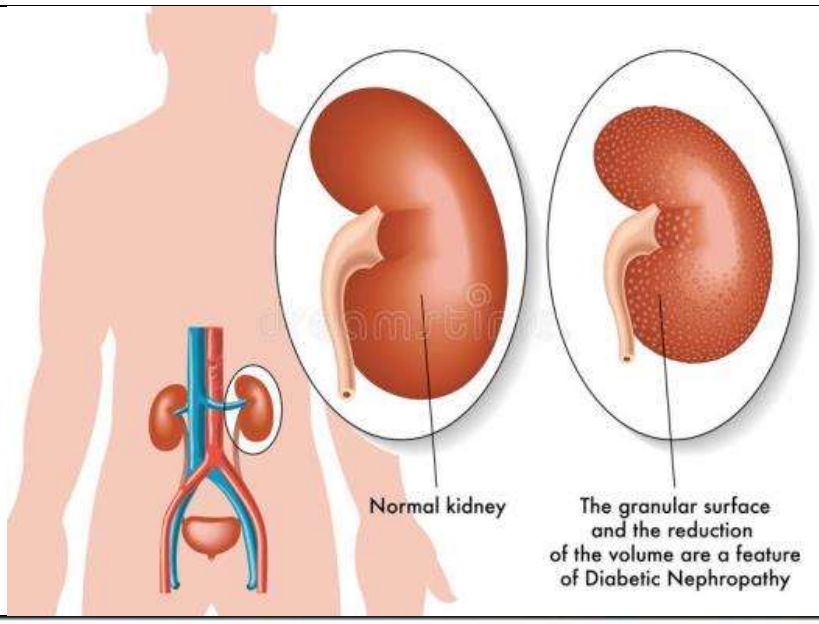


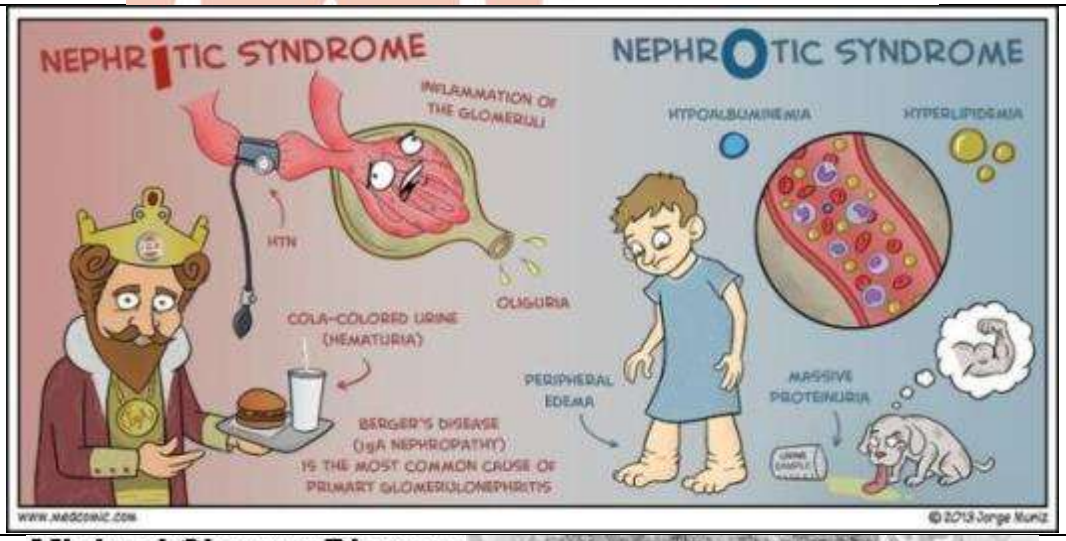
3. Collagen diseases specially ***disseminated lupus erythematosus and peri-arteritis nodosa***.
4. ***Amyloid disease.***
5. ***Thrombosis of the renal veins*** (if it occurs gradually).
6. ***Eclampsia & pre-eclampsia***

7. ***Kimmelstiel-Wilson disease (diabetic nephropathy***) → large pale kidney with a pitted capsular surface and a pale (and mottled) wide cortex.

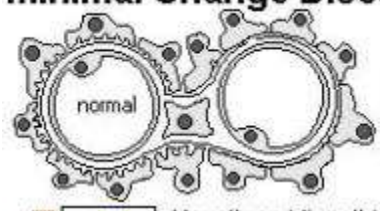




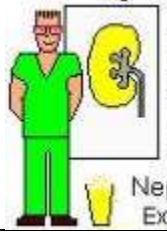




Minimal Change Disease



"nil disease"
"lipoid nephrosis"

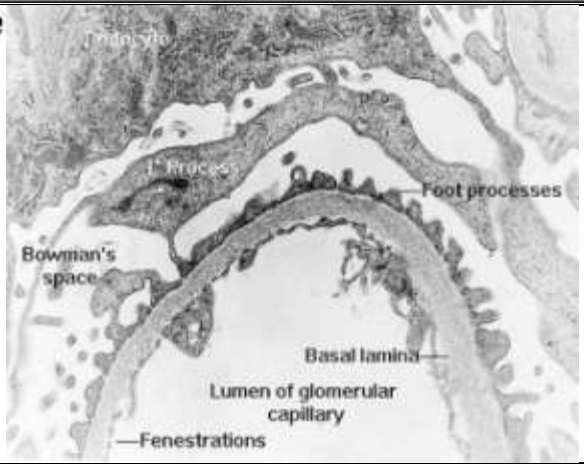


Usually an idiopathic, Rx-able kid's disease.

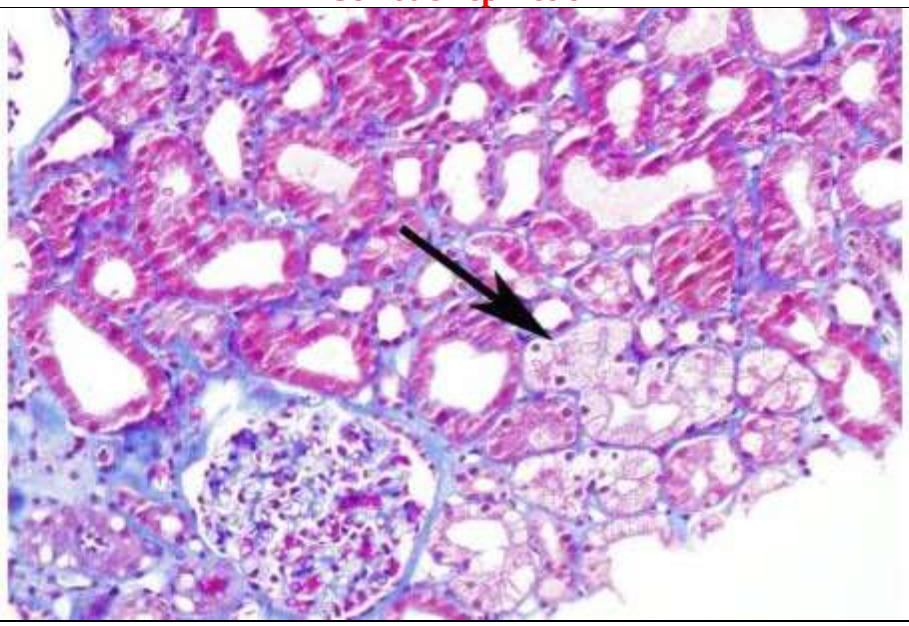
Foot processes are fused / obliterated.

No immune deposits.

Nephrotic syndrome
Expect selective proteinuria



Osmotic nephrosis



Clinically:

- ***Insidious onset of oedema***
- ***(sometimes followed by ascites and hydrothorax → shortness of breath),***
- ***Oliguria,***
- ***Anorexia,***
- ***Mild anaemia,***
- ***Pallor,***
- ***Gastro-intestinal disturbances and***
- ***Infections.***

N.B.3:

Nephrosis:

- A morphologic term for a condition characterized ***pathologically by degenerative (non-inflammatory) changes confined to the renal tubules*** (with no histological abnormality of the glomeruli and no appreciable changes in the interstitial tissue and blood vessels); and, ***characterized clinically by***
  - Oedema,
  - Albuminuria,
  - Hypoproteinaemia,
  - Hypercholesterolaemia,
  - Absence of haematuria and
  - No cardiovascular or cerebral changes.
- Although, there is usually a **tendency to recovery** (after withdrawal or/and correction of the causative agent).
- Yet some cases may become so severe as to simulate (clinically) **the nephrotic syndrome;**
- And, here, a **biopsy-study** is more than necessary to differentiate them (i.e. normal glomeruli in pure nephrosis & affected glomeruli in the nephrotic syndrome).

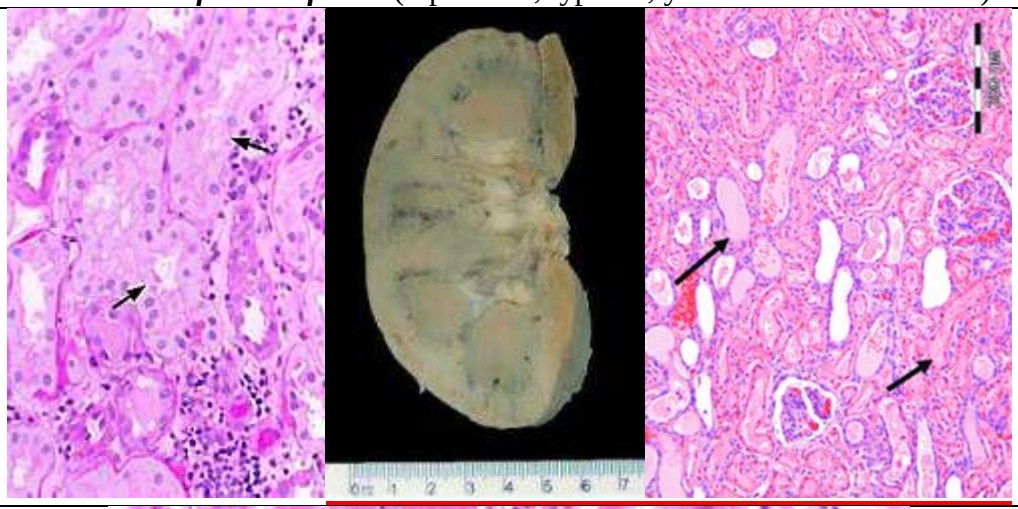
Types

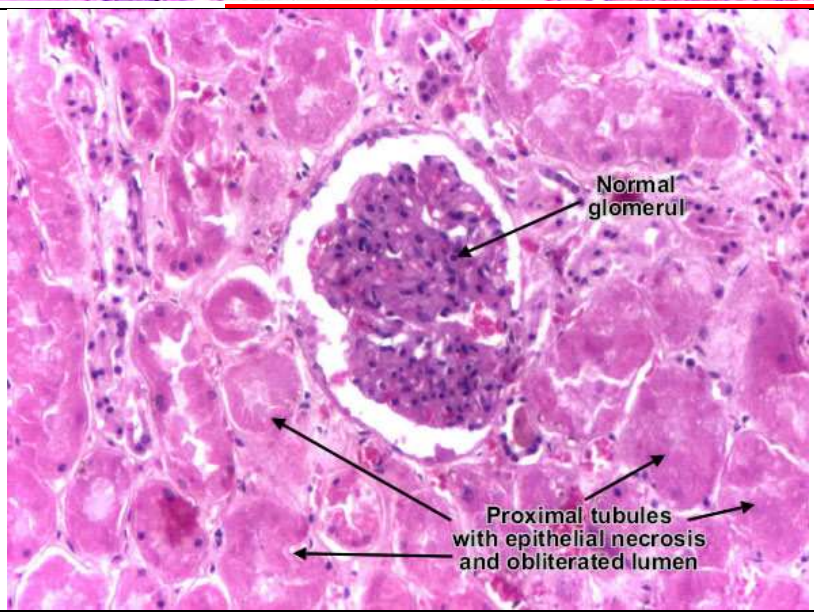
1. ***Chemical nephrosis (necrotizing nephrosis):*** *From*

- ***Mercury compounds (organic and inorganic),***
- ***Salts of heavy metals,***
- ***Potassium dichromate,***
- ***Carbon tetrachloride,***
- ***uranium nitrate and***
- ***Ethylene glycol.,***

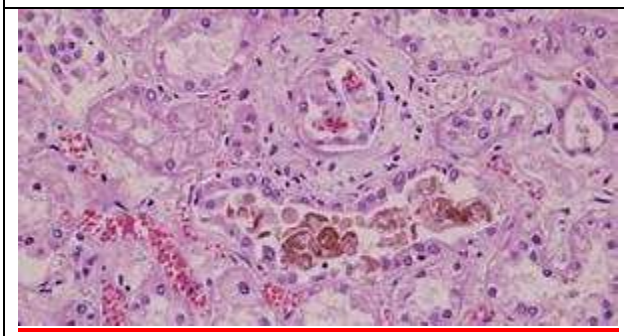
2. ***Toxic nephrosis (acute toxaemic nephrosis) :***

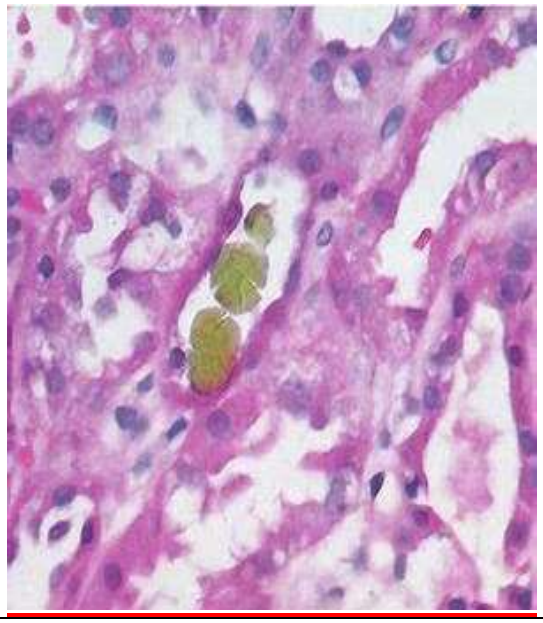
- ***Toxins,***
- ***Toxic metabolites and***
- ***Certain infectious fevers*** (diphtheria, typhoid, yellow fever and cholera).



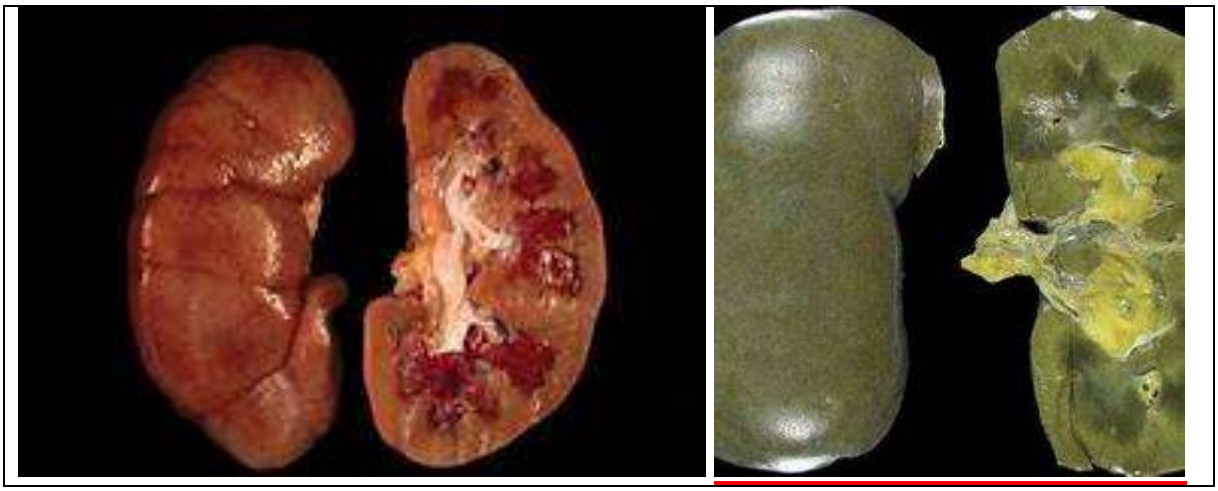


3. ***Cholaemic nephrosis (bile-nephrosis):***
    - The kidney becomes swollen and bile-stained (and the tubules show some degenerative changes with bile pigment).



4. ***Osmotic nephrosis (vacuolar nephrosis)*:**
    - **Severe vomiting and diarrhoea, renal and gastro-intestinal** disorders, marked alteration in electrolytes and disturbance in fluid-balance.
5. ***Myelomic nephrosis:***
    - In multiple myeloma → **Bence-Jones proteoses** in urine associated with hyperglobulinaemia and hypercalcaemia.
6. ***Hypoxic nephrosis (acute tubular nephrosis):***
    - In shock and transfusion of incompatible blood→ haemoglobinuric nephrosis and lower nephron nephrosis.
7. ***Glycogen nephrosis:*** In **von Gierke's disease** and diabetes mellitus.
8. ***Nephrosis accompanying the Fanconi syndrome:*** *In infants and at young ages → multiple defects in renal tubular function.*



: