Important notes:

• Dear students...
*This summary is to organize yourselves and to keep some information if you felt you couldn’t store information in your memory

*Please memorize these information well at least for the clinical years

*This summary may help you in the exam but all what I have given you previously is **required** from you in the exam
...and if you found extra information here...also required

*When I say in this summary: “4 main things” for example, these are the main not all

*For every sentence in the summary there are exceptions you will find them in the lectures and Robbins
- **Nephrotic syndrome** (a glomerular problem):

  - 4 main manifestations:
    - heavy proteinuria...>3.5gm/day (=nephrotic range proteinurina)
    - hypoalbuminemia and consequent severe edema
    - hyperlipidemia
    - lipiduria

  - 4 main diseases:
    - Minimal change disease (MCD)
    - Focal segmental glomerulosclerosis (FSGS)
    - Membranous nephropathy
    - Membranoproliferative glomerulonephritis I (MPGN I)
      (+ Dense deposit disease (DDD))

  - MCD:
    - most common nephrotic syndrome in children
    - no glomerular LM or IF changes
    - only on EM: foot process effacement
    - selective proteinuria
    - responsive to steroids and good prognosis

  - FSGS:
    - podocyte problem
    - can be associated with heroin, HIV, renal ablation, obesity...etc.
    - more in blacks
    - collapsing variant is bad...HIV
    - IgM & complement in the sclerosed segment (nonspecific) on IF

  - Membranous nephropathy:
    - Diffuse GBM thickening on LM
    - Spikes on silver
    - Subepithelial deposits
    - IF: IgG & C3...capillary granular

  - MPGN I & DDD:
    - large glomeruli with hypercellularity + GBM thickening...with lobular accentuation
    - tram track appearance on PAS & silver
    - DDD: C3 only (capillary & mesangial) on IF...and low C3 in the blood
    - MPGN I: C3, C1q, C4 & IgG on IF
• **Nephritic syndrome** (a glomerular problem):

- Main manifestations:
  ...hematuria with RBC casts
  ...oliguria & azotemia of acute onset
  ...hypertension
  ...the proteinuria if present is non-nephrotic range

- Main diseases:
  ...Poststreptococcal glomerulonephritis (PSGN)
  ...IgA nephropathy
  ...Alport

**PSGN:**
- large glomeruli with hypercellularity including neutrophils & lobular accentuation
- C3 is low and ASO is high in the blood
- on IF: C3 & IgG capillary granular and mesangial (lesser degree)
- subepithelial humps on EM
- worse in adults

**IgA nephropathy:**
- mainly hematuria (more common than full nephritic picture)
- commonly after infection
- mesangial changes mainly
- mesangial deposition of IgA (also C3 and lesser amounts of others)

**Alport:**
- collagen IV alpha 5 genetic problem
- deafness and family history
- EM: thinning and basketwave appearance of GBM
- interstitial foamy macrophages
• Rapidly progressive glomerulonephritis (RPGN):

- bad
- histologically: crescentic glomerulonephritis
- types: I, II & III
- type III is the most common (pauci-immune)...ANCA-related...Wegener (c-ANCA), microscopic polyangiitis (p-ANCA)...etc.
- Goodpasture = type I
- can follow other diseases (immune complex diseases) such as PSGN, IgA nephropathy...etc
- Lupus nephritis:

- 6 classes
- class I: no LM changes
- class VI: >90% sclerosed glomeruli
- class V: same as membranous nephropathy
- class III & IV: “endocapillary” proliferation
- wire loops are due to severe subendothelial deposition
- IF deposition: full-house (IgG, IgA, IgM, C3, and C4)
- C3 & C4 both are low in the blood
- ANA and others in the blood... must be tested in any renal problem to exclude lupus and clinical history is very important
Thank You