Chronic kidney disease

Evidence of structural or functional kidney abnormalities (→ urinalysis, histology, imaging) that persist at least 3 months with or without ↓GFR

Not for children <2y.

* adaptive hyperfiltration (بالبداية) — mild — Cr, Na, K, Ca, P, TBW ⇒ within normal

↑ Intra glomerular pressure → (عوضوية) → damage the remaining glomeruli

(ACE-I — ↓ progression)

* ptnuria — * progressive kidney insufficiency

Staging of CKD

Table 1. Stages of CKD[a]

Stage	Description	GFR (mL/min/1.73 m²)
1	Kidney damage with normal or GFR	≥ 90
2	Kidney damage with mild GFR	89-60
3A	Mild to moderate GFR	59-45
3B	Moderate GFR	45-30
4	Severe GFR	30-15
5	Kidney failure = ESRF.	< 15 or dialysis

CKD, chronic kidney disease; GFR, glomerular filtration rate.

[a]Adapted from the Renal Association. http://www.renal.org/whatwedo/InformationResources/CKDeGUIDE/CKDstages.aspx. Accessed November 16, 2013.

Comp. & Clinical pic. :-

- volume overload
- hyperkalemia
  - √ · Ca gluconate (ECG >6.5)
  - · insulin
  - · B_2 agonist
- Metabolic acidosis
  - Characteristically present when eGFR <30 mL/min per 1.73m² (Stage IV)
- HTN
  - optimal BP ↑90th percentile for age.
  - √ ACE, ARB

Anemia (1st sign)

develops early.

* ↓ of EPO (90% of EPO) — type I interstitial cell

* ongoing blood loss

* iron deficiency

* ↓ of B12 / Folic acid.

√ EPO replacement, iron supplement, Hb level (11-12 g/dL)

Renal bone mineral metabolism.

\# abnormalities → Ca, P, PTH, Vit.D (retention)

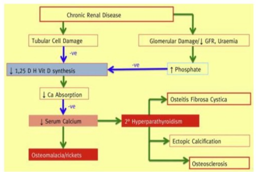
↓

- · bone turnover
- · mineralization
- · volume
- · linear growth
- · strength.

FGF23 (fibroblast growth F) → ↓PTH, ↓ calcitriol; ↓P ↓Ca ↓Vit.D

\# vascular or soft tissue calcification (نتيجة ارتباط Ca+P)

CKD-mineral and bone disorder (CKD-MBD.



PTG Receptor

$\downarrow Ca^{2+}$ → ↑PTG → PTH

- Bone → osteoclast → resorption → ↑Ca, ↑P
- inactive Vit.D 25 → (α hydroxylase) → active 1,25 (Calcitriol) → SB → ↑absorption of P, Ca
- renal tubules → ↑ Ca absorption, ↑ P excretion.

♂ > ♀ — CAKUT ↑ in ♂

Causes :- GN / Non-GN (→ progression)

- obstructive uropathy (PUV, bladder) — MCC (cong. anomalies)
- Renal hypoplasia /dysplasia
- Reflux nephropathy (MC.)
- Childhood nephritis syndrome (FSGS)
- PKD (AD, AR)

70% of CKD → ESRF (20.)

Consequence

- kidney failure & ESRD
- ↑ CV dis
- growth & developmental retardation.

MCC of death :- 1. CV dis. 2. infection

LVH

√ RRT → HD, PD, CRRT — same efficacy