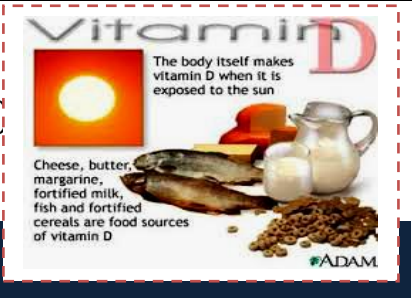
METABOLIC BONE DISEASES

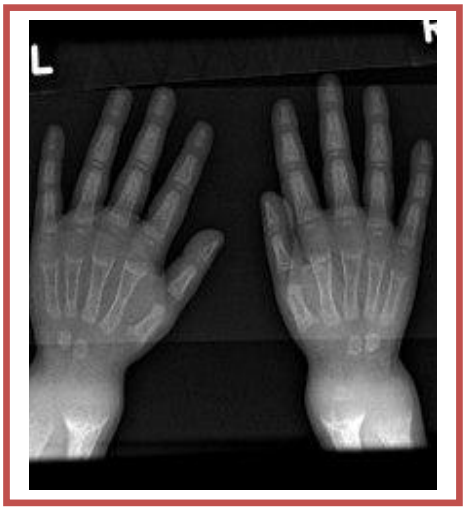
Vitamin D Deficiency

(in Children → Rickets / In Adults → Osteomalacia)



• Rickets

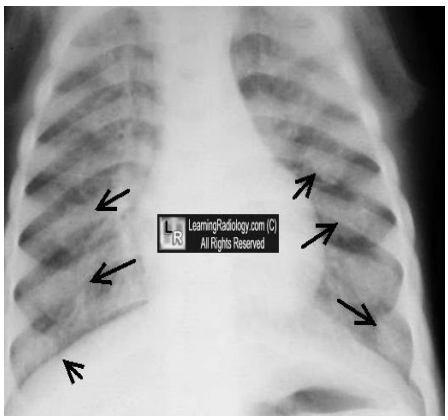
Def. : Increase uncalcefied osteoid in <u>immature</u> bone.



3 Stages: 1-Active 2- Healing 3- & Healed

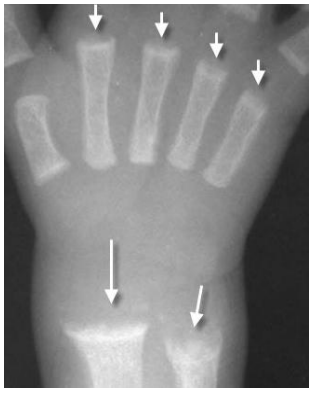
• Radiological **<u>"Active "</u>** manifestation : "7"

1. **Growth plate** → Wide
2. **Metaphysis** → Cupping & Fraying
3. **Cortex** → Indistinct
4. **Bone Density** → Deceased
5. **Bone Growth**→ Retarded *"Delayed oss. Centers"*
6. **Ribs** /*Ant ends "like metaphysis*" → **Rosary Beads**
7. Bone softening → Bowing , Kyphoscoliosis



2- **Healing Rickets** , "patient on ttt / Vit D & Ca"

→ ***<u>Metaphyseal Calcification Bands</u>***



3- **Healed Rickets** : Absence of all manifestations

- But one deformities may prolonged.

- **HYPO PHOSPHATASIA** ***'Vit D Resistance Rickets'***

- Autosomal recessive.
- Like Rickets , But when ttt with vitD → **Worsen**
- Low serum **Alkaline Phosphatase** → Mild to sever form of Rickets.
- Manifest as Rickets + Craniostenosis + **Nephrocalcinosis**

• OSTEOMALACIA

Def: Increased uncalcefied osteoid in **Mature** bone.

1- Multiple LOOSER's Zones 2-Dec. Bone Density 3-Coarse faint trabeculae

4.Softening

Incomplete fracture

"Looser zone"..multiple

NB. Looser zone = ***Milk Man*** Fracture.

SCURVY

- Vit **C** deficiency - 6 m : 2 y
- Manifestation best seen at Knee joint :

1- Osteoporosis = Dec. bone density

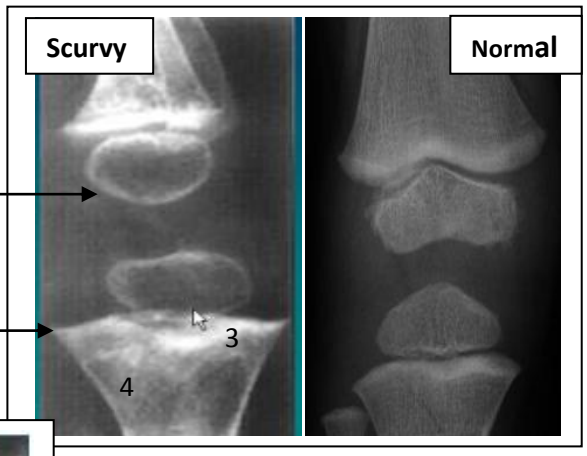
2- Pencil Thin cortex epiphysis

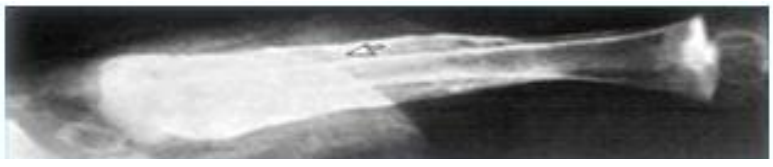
3- Provisional Zone of calcification

4- Metaphyseal Lucency

5- Pelkan spur "Metaphyseal tibial spur"

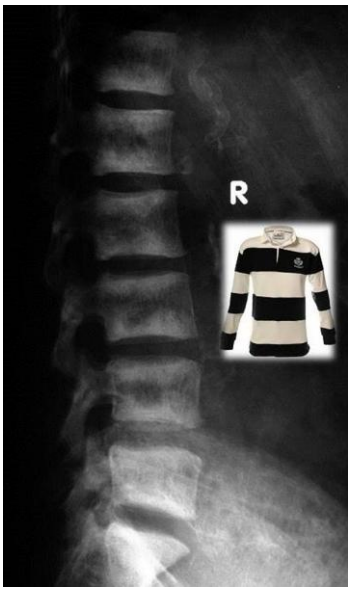
6- Sub periosteal hematoma → Periost. Reaction



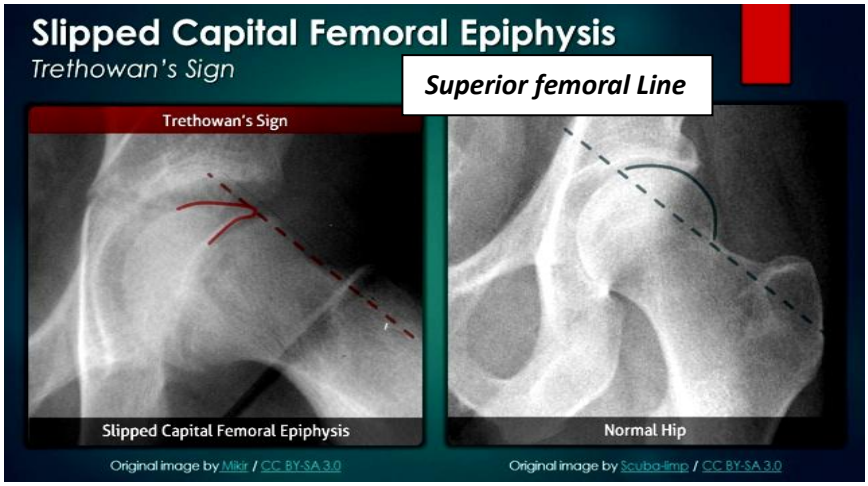


RENAL OSTEODYSTROPHY

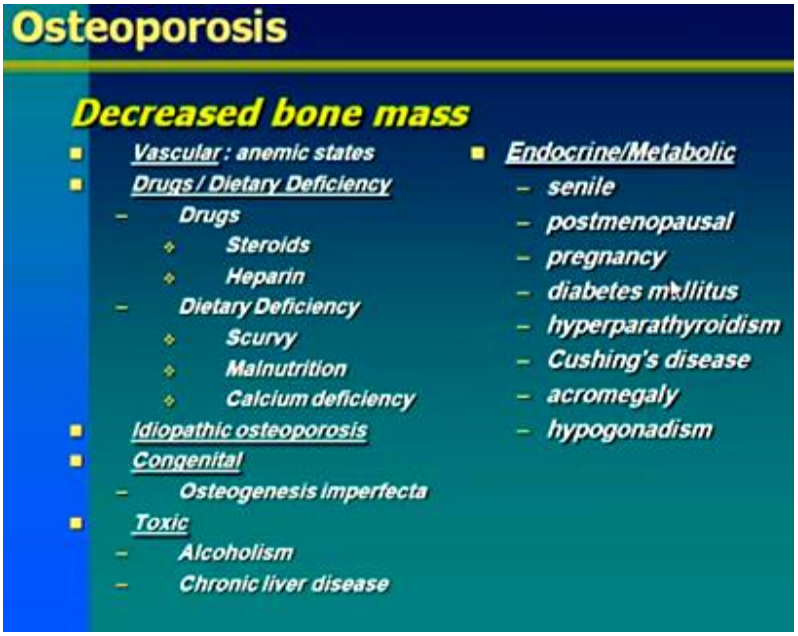
- ⇨ Renal impairment → Bone dystrophy
- ⇨ *Consists of* : *(Osteomalacia or Rickets + osteosclerosis + 2ry Hyperparathyroidism)*
- ⇨ ***MANIFESTATIONs***
  - ***2ry Hyper Para → Sub periosteal erosions +/- Brown tumor***
  - ***Soft tissue calcifications "mainly Arteries"***
  - ***Osteosclerosis → Rugger Jersey spine***
  - ***Osteomalacia → Looser's Zones***
  - ***In Children → Rickets + Slipped capital femoral Epiphysis***

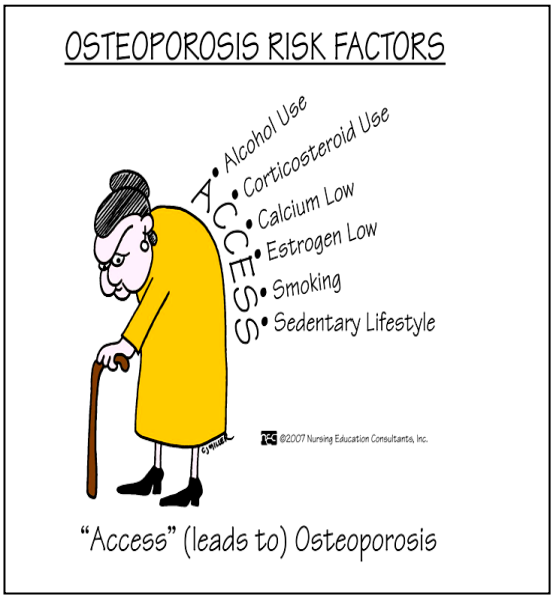


Sclerosis + malacia → Mosaic Bone



⇨ OSTEOPOROSIS

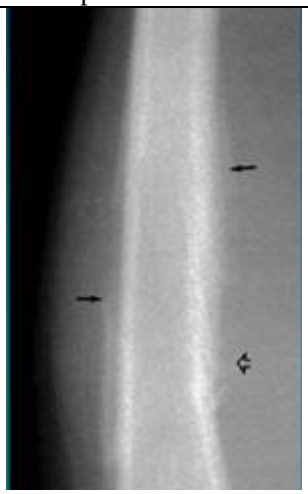




⇨ **Causes of Localized osteoporosis:**

- Immobility
- Infection
- Arthritis
- Post Fractures
- Sudeck's Atrophy : *dysfunction of the sympathetic nervous system, which is involved in the regulation of blood supply to the affected part.*

TOXIC EFFECTS ON THE SKELETON

Hyper Vit A	Lead Poisoning	Vinyl Chloride	Fluorosis
*Sub periosteal reaction +/- Pain *> 1 y age *ttt Stop vit A	*Metaphys SCLEROTIC BANDS *+/- Toxic Encephalitis	* Osteolysis of middle part of distal phalanx	DIFFUSE Hyperostosis
			
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Source : Lecture of Dr. Ahmed Wafei

https://www.youtube.com/watch?v=doo1tKelnTI

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21 Oct 2017