Metabolic Bone Diseases

**RICKETS & OSTEOMALACIA**

-result from inadequate serum & extracellular levels of calcium &phosphate ,minerals required for the normal calcification of bone & teeth.

-result from adefect in the normal activity of the metabolites of vitamin D.

-rickets 🡪 the disease affects the growing skeleton in infants & children

-osteomalacia 🡪 this disease affects the mature skeleton in adults .

**\*\*radiogrphic features :**

**-Radiographic changes a**ssociated with the teeth in **Rickets** , rickets in infancy or early childhood may result in hypoplasia of developing dental enamel . if the disease occurs before the age of 3 years ,enamel hypoplasia is fairly common . radiographs may reveal this early manifestation of rickets in unerupted & erupted teeth . lamina dura & cortical boundary of tooth follicles may be thin or missing .

-Osteomalacia does not alter the teeth because they are fully developed before the onset of the disease , the lamina dura may be thin with long standing or severe osteomalacia . in osteomalacia , bone problem occur , thin cortices and pseudo fractures but teeth are not involved.

-bone changes are the same in the rickets & osteomalacia , bones are soft in general , deformity occur especially in weight bearing bones , so legs bowing occur and greenstick fractures appear .

**HYPOPHOSPHATASIA**

-rare inherited disorder that is caused by either reduced production or defective function of alkaline phosphatase "this enzyme is required for normal mineralization of osteoid" .

-we see this disease in adults , because in the children🡪 rare , in infant 🡪very severe'' fetal''

-teeth + bone are affected….. "this is the idea 🡪 in systemic desease🡪 the bone & teeth are involved"

-like any disease without proper mineralization …. Poor growth ,fractutes , closure proplems,poor calcification .

-generalized radiolucency of the mandible & maxilla , cortical bone & lamina dura are thin ,& alveolar bone is poor calcified & may appear deficient….. both primary & permenant teeth have thin enamel & large pulp chambers & canals , the teeth may be hypoplastic & may be lost prematurity .

**RENAL OSTEODYSROPHY**

* -Renal disease is associated with secondary hyperparathyroidism 🡪 with radiolucent apperance
* -long term renalfailure may be give radiolucent appearance OR radiopaque appearance''sclerotic appearance ''
* -in the radiographs 🡪radiolucency, no cortex "very thin " black area",loss of bone mass, loss of lamina dura ,"resorpative pattern"
* - in other pic 🡪 sclerotic "radiopaque" bone"sclerotic pattern"

- **HYPOPHOSPHATASIA**

-vitamin D resistant rickets , it exactly look like it ,,but the gentic background is the deffrence

- teeth will be affected

-soo clinically & radiographs are similar

- in the radiographs 🡪 thers deffrential diagnosis .. may br rickets ,hypophosphatemia, hypophosphatasia,hyperparathyroidism ….. sooo it depends on history background ("family history ,,, or about sclera "about osteogenesis imperficta " ,,,renal disease …..)

**OSTEOPETROSIS**

-albers-schonberg &marble bone disease

-inherited(recessive & dominant)

-we have too much bone

-sereously dense bone

-the bone is dens ,fragile that are susceptible **to fracture**" brittle"& infection

-results from defect in the defrentiation & function of osteoclasts . the lack of normally osteoclasts results in abnormal formation of primary skeleton & generalzed increase in bone mass

-the pt. has progressive loss of the bone marrow & its cellular products & severe increase in bone density.

-good case to osteomylitis start

- orally 🡪 impaction problems

-osteopetrosis showing dense clacification of all the bones , skull , facial,chest, pelvis …..

- we cant do surgery"risk of osteomylitis" for this pts. Soo …prevention,fluoride. scaling

Other systemic disese:

**Sickle cell anemia & thalasemia**

-hemolytic disorders

-theres active bone marrow space

-hair on end appearance

-clinically …

 زي السنجاب

The face develops prominent cheekbones & protrusive premaxilla

-n the radiographs :

Thick diploic space , thin cortex , hair-on-end bone pattern , granular appearance of the skull , large bone marrow spaces , change in the bone shape,,,,,, thick body of mandible

-they come to clinic because of face shape " CC" ,,,

**-SCLERODERMA**:

- connective tissue problem,, in collagen ,,, the pt come to clinic with limited mouth opening, tight skin………

- causes 🡪symmetric & generalized widening of periodontal ligament space

***Islam AL-Dagag***

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