Today we are going to talk about some generalized diseases that affect bone..we will start by talking about the fibro osseous lesions: they are very important from radiographic point of view because they are one of the few diseases where radiology is going to give a definitive diagnosis more than the histopathology-as most of these diseases will look very similar under the microscope-

-these diseases are diverse in term of age groups and presentation

-all these diseases have in common the osseous and the fibrous components (starting from the defective bone which get replaced by fibrous tissue which recalcified into a haphazard looking bone):so they start radiolucent(soft tissue) then mixed density lesions and finally with aging this lesion will turn into full lesion that is completely radio opaque

**Fibrous dysplasia:**  is a genetic related disorder(there is a mutation in GNAS1 gene),which affects the overall skeleton

-usually it's seen in young adults and stops when the growth spurt stops

-there is no gender predilection unless we are talking about McCune-Albright syndrome which is exclusive to females(they have dark skin spots called "café au lait" spots, precautious puberty and multiple bone defects)

-it has many types classified according the number of affected bones ( single or multiple bones).. and the one seen most in maxillofacial area is the "polyostotic" as you can't affect the maxilla witout other bones like zygoma being affected

-they put the maxillofacial variant alone as they- in the ployostotic type- search mostly for endocrine signs like the café au lait spot but in case this disease affects males they call it "jaffe syndrome" where there is no precautious puberty… so the maxillofacial variant is in between

-there are aggressive rapidly growing cells

**-signs and symptoms:**

1- no pain

2-it’s technically a swelling in one side of the body( usually there is an asymmetry)

**-2 imprtant things in this disease:**

1-the periphery: ill defined (we can't distinguish normal from abnormal bone)means: there is no capsule and no single advancing front

-the only benign ill defined lesion

(in our mind ill defined lesions are either malignancy or an acute inflammation but also fibrous dysplasia has an ill defined periphery( because it's a genetic disorder so technically no osteoblast is normal –even if only some bones will show the swelling, but if I took a biopsy from non swelling bone there will be mutation in the responsible gene )

-in the book you will find that the early lesion are sharp: this is only when caught really early but most of the cases we will not see sharpness

2- superior displacement of the inferior alveolar canal:

We said that if things happened above the inferior alveolar canal:mostly, it's an odontogenic issue..fibrous dysplasia is not an odontogenic issue..it's abony disease so the mandible below the canal is affected so it will displace it superiorly

Note: if the dysplasia affects the cranial base, there might be a parasthesia as the cranial base will get narrower..other ways there is no parasthesia

-Tx:

It stops when the growth spurt stops, so some times we only need some bone shaving for esthetic reasons..otherwise if there is soft tissue camouflage or a beard there is no need for treatment

-aradiograph showing:

1- asymmetry

2-we can't tell whether the bone is normal or not

3-ground glass appearance(resembling an orange surface): bone with no even thikness(has irrigularities)..mixed density appearance,haziness and radioopacity

4- no distorton when displacement happens-pushing structures uniformly-(the original shape is the same ) but the size is reduced

**Periapical cement osseous dysplasia (PCOD)**

-mostly im idle aged women

-more in African Americans but can be seen in whites

-not coomon in jordan

-teeth are vital.. so don't do RCT

-well defined borders

-usually around the epicenter of the anterior lower teeth…if lesions are numerous we call it the florid type(if 3 or more quadrants are affected ..same racial profile)

-no teeth resorption,no bone resorption,no interruption of lamina dura(in some racial groups in the florid type,we might see some expansion but this is the uncommon presentation)

**-note**:in book there are some uncommon presentations seen only in specific cases such as the loss of lamina dura which we think about in case of inflammatory lesions

-incidental finding in the radiograph

-one of the special features if PCOD specifically in the florid type, we will see Traumatic bone cysts(pseudo cysts with empty cavities:which may trigger the need of biopsy which we should not do as this lesion will decrease the vascularity, increasing the risk of osteomyelitis no intervention is needed

So if we see a new lesion in an already established POCD .. we know it's traumatic bone cyst ..no managemnet

-the only time I should worry about it is before surgical intervention:if I have to do surgery,extra precautions are needed to avoid the risk of osteomyelitis

DDx:

1- cementoblastoma:which causes severe bone resorption

2- odontoma

**Cemento ossifying fibroma**

- a benign tumor: Radiolucent capsule,causes expansion

-needs Treatment

-doesn't happen outside the head and neck area

-expansile Neoplastic process

-Mixed density is what we see because it's hard to caught it in the early radiolucent phase

-Remodeling for the surrounding structure

-Changes the shape of sinus (distortion )

-Mostly in the mandible

-It's a Female disese

-Any age( if came early,it will cause jaw deformities,rapid growth)

-In children, it is a very aggressive form(high recurrence rate and comes in multiple form)

-Well defined

-Sclerotic border

-variable sizes

- Appears as ballooning , radiolucent capsule , it takes its natural size without respecting any boundaries

Differential diagnosis:   
fibrous dysplasia and cemento ossifying fibroma

**Central giant cell granuloma**

-Reactive lesion

-Anterior mandible(most common)

-Young individuals

-Radiolucent lesion

-Thin wispy striations, and that means it’s a multilocular lesion

-The septa in between are too thin that sometimes they aren’t seen (not sharp or well defined):it has more cellular than bony component)

-It makes displacement of teeth and inferior alveolar canal

-sometimesIt makes resorption

-If in posterior areas, it makes expansion of cortices

-It’s like any other space occupying lesion

-It has an internal pattern ( = wispy septations): 90 degrees to the outer margin of the lesion

-one of the giant cell lesionslike ,brown tumors(thourogh history and examination and blood work is necessary to exclude hyperparathyroidism)

-it's not actually a granuloma

**Aneurysmal bone cyst (ABC)**

-Reactive lesion

-not as common as other diseaes

-One of the giant cell lesions

-Young patients

-predilection of women

-Very very expansile and expands rapidly ,painful and tender to percussion ( not subtle): because of the pressure on periosteum

-It happens around the condyle at upper ramus

-Very rapid expansion so the bone become very thin(if the patient is given a contrast it will appear more radiographically)

-unilateral

-Highly vascularized lesion and high recurrence rate ,so mostly they do partial resection

-DDx: central giant cell granuloma

-definitive diagnosis: by biopsy

because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum because of the pressure on periosteum -One of the giant cell granuloma

-Bilateral (affects the four quadrants)

-Young kids(under 4 year old)

-The kid looks like an angle that’s why it’s called “cherubism”   
affects all 4 quadrants including posterior maxilla

-it stretches the skin of the lower eyelid so we see the sclera from beneath the eyelid, so the kid appears as if he’s looking up like angles

-management: same as fibrous dysplasia, if the disease didn’t have a proper remodeling and correctionthen we go for reshaping the bone

-it makes also anterior displacement for molars(the sixes) because the expansion epicenter is in the ramus

**Paget’s’ disease of bone**

-discovered due to constant change of hats

-it affects men in 40s

-it’s about an imbalance in resorption and positioning of bone

-the bone starts as radiolucent the becomes mixed then more opaque

-the new bone is not as resilient as the normal bone

-hanges the shape of skull and creates a pressure on foramina, this causes a neurologic problem

-the vascular tissue increases

-the alkaline phosphatase increases which creates metabolic problems and rapid metabolism of bone which may affect the heart

-heart failure is expected, because the heart can’t cover the demands of high vascularization

-lamina dura is affected (first.it disappears then it become thicker),hypercementosis,enargement of the cortex(thicker),non homogenous opacity in the skull

-cotton wool appearance (the bone is made in haphazard unorganized way)  
differential diagnosis:

|  |  |
| --- | --- |
| Fibrous dysplasia | Paget’s’ disease |
| Unilateral | Bilateral, involve mostly the skull and maxilla, and a little bit the mandible |

They look similar if we looked only on one piece of bone

**Langerhans’ cell histiocytosis**

This disease has different classifications, one of them is (benign and malignant) :  
type I : eosinophilic granuloma , localized in one of the bones

Type II: hand-schuller-christian disease,cells in soft tissue everywhere; kidney, eyes…. etc

Type III : letterer-siwe disease , in very young patients, they usually die very early, so we might not see any of these patients   
>>> type I and II are benign   
>>> type III is malignant

-this disease is characterized by a scooped out appearance “hint”(we see it also in multiple myeloma)  
-well defined ((too much))  
-punched out:as if a piece of bone is taken out   
-the missing bone stays without remodeling  
-it’s very aggressive(periosteal reaction) and fast (but benign)  
-we may see floating teeth , they’re only held by soft tissue , no bone around them at all(the dr showed a radiograph: we don't think of periodontitis because it's only around one tooth,there is bone on the crest and also it is an inflammatory disease which will show shaggy bone with no delineation)

Good luck ☺