

Osteoporosis

11/3/2020

(1)

2, 3, 9, 10, 17, 18, 20
21, 23, 25, 28, 32, 34, 35
37, 40, 44, 46, 47,
51, 60

Human skeleton contains ? bones.

Begins to develop ?? birth.

When skeleton forms first it is flexible due to cartilage
begins the process of ossification

↓

When hard deposits of calcium phosphate &
collagen replace the cartilage over 20 yrs

→ So bones are made up of calcium, phosphorus, sodium,
collagen & other major minerals.

→ Bones store calcium & also release into blood
stream when it is needed by other parts of body.

→ Three types of cells ① Osteoblasts → Makes new bone
Helps in repair damage

② Osteocytes → Carry nutrients
Waste products
to & from blood
vessels to bone

③ Osteoclasts → Helps to break
& let & shape

① → Bones have soft bone marrow which contains sp.
Cell called "stem cells"

→ 2 Types of Material

- Compact bone

→ solid hard outside part of the bone

Extremely strong.

- Cancellous

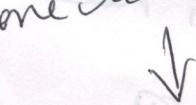
→ Made up of mesh like network
called trabeculae
Spaces in this network
filled with Red Marrow.

Osteoporosis:

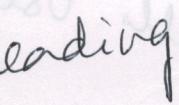
defined as disease characterized by

low bone mass & microarchitectural

deterioration of bone tissue



deterioration of bone tissue
leading to enhanced fragility



↑ in fracture risk

& a consequent

Refers to osteoporotic condition not related
to other ch. illnesses & usually affects
low level of estrogen

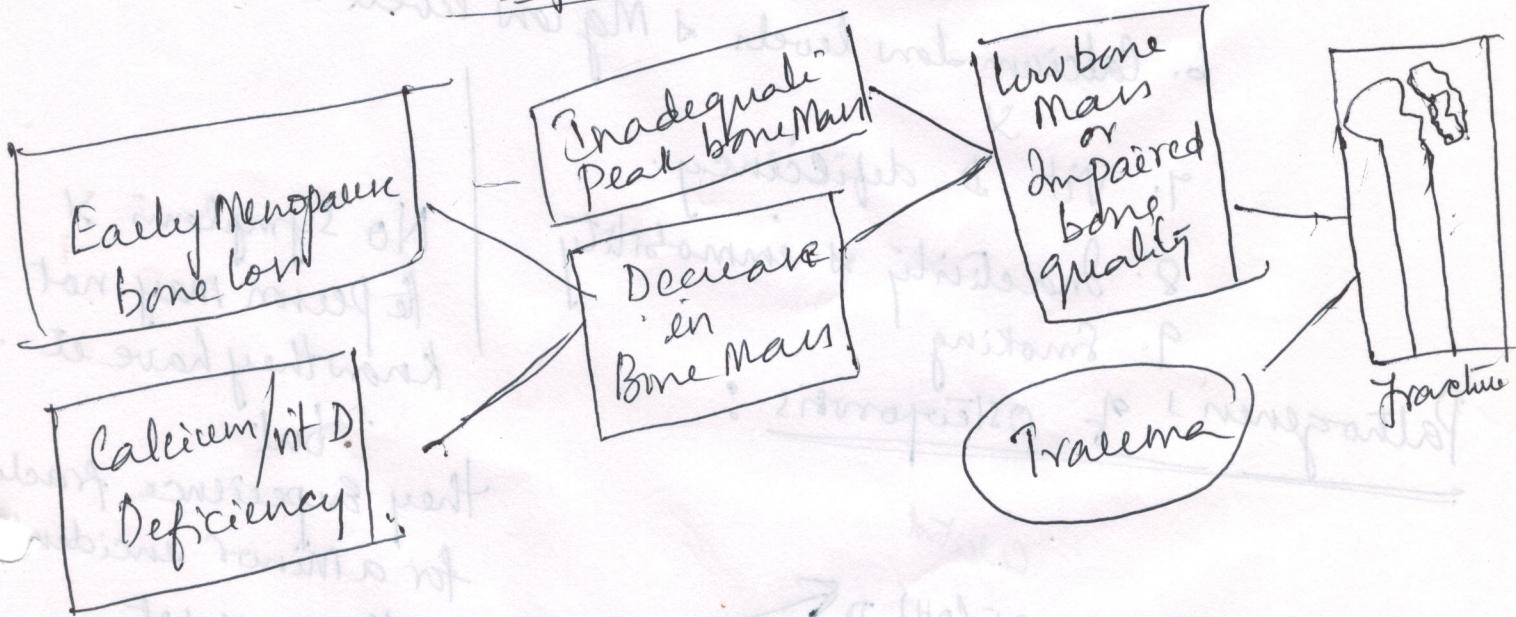
Primary:

Secondary: Caused by other health problems.

Disease is one of the many causes

↓
Inducing bone loss & resulting see osteoporosis - OH

Development of Osteoporosis



Epidemiology:

Osteoporosis

Causes about 9 million

fractures annually world wide

Lifetime risk for fragility fractures in women at

50 yrs age approaches 40%

& 12% in men

Etiology → Age : Especially after Menopause.

2. Reduced sex hormones : Lower Estrogen levels.

3. Ethnicity : White people & Asians are more susceptible.

4. Bone structure : Tall people > 5 feet 7 inches or slim.

5. Genetic factor : Family Member & Osteoporosis Makes more likely.

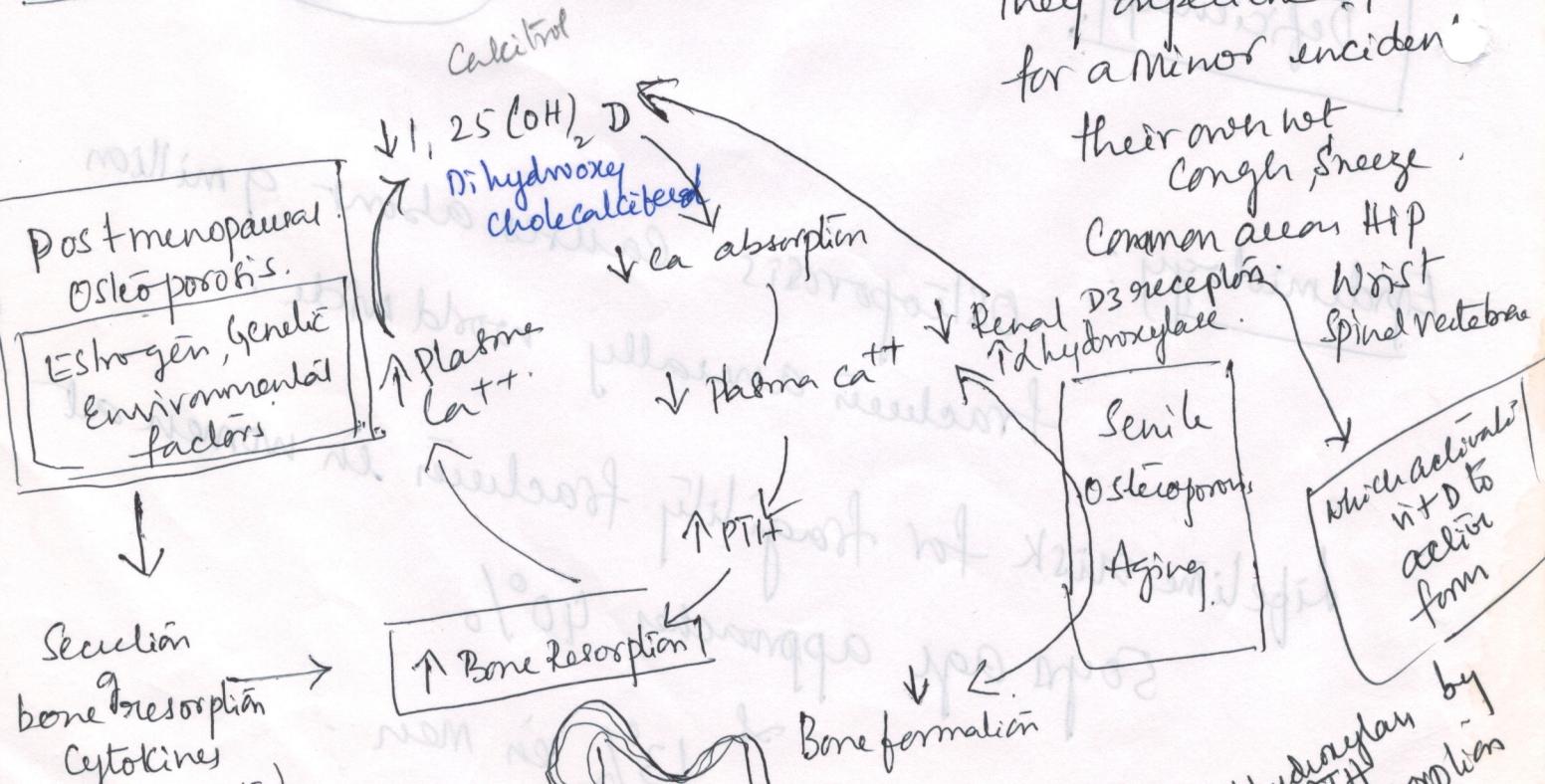
6. Calcium low levels & Mg low levels.

7. Vit D deficiency.

8. Inactivity & immobility

9. Smoking

Pathogenesis of Osteoporosis :



No symptoms &
the person may not
know they have it.

but
they experience fracture
for a minor incident

their own hot
cough sneeze

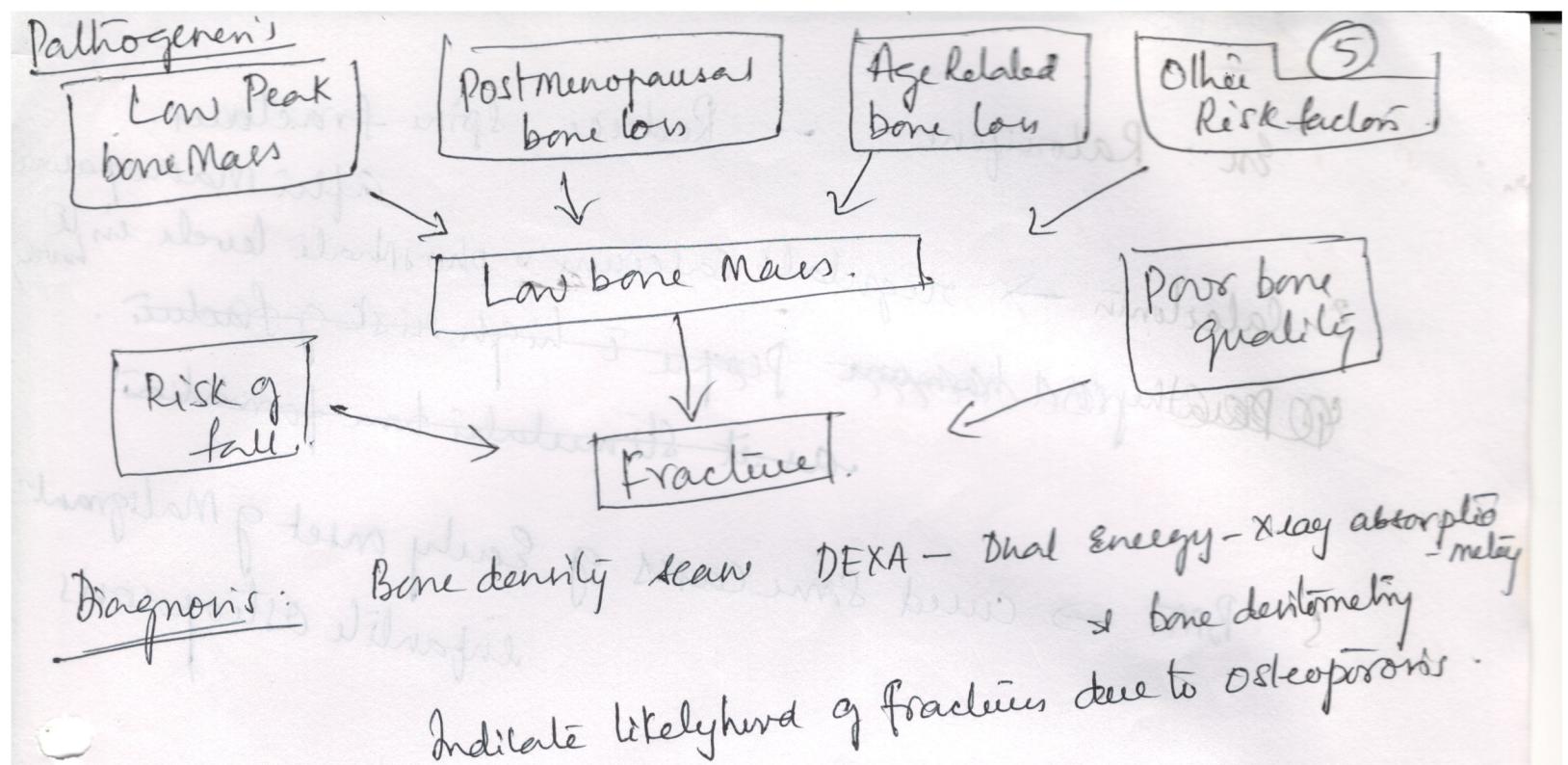
common areas HP

D₃ receptors
D₃ hydroxylase

Wrist +
Spinal Vertebrae

which activates
vit D to
active form

hydroxylation by
enzymes



- Treatment:
1. No smoking / Alcohol prevents falls.
As it can reduce growing new bone
↓ Estradiol levels in women.
 2. wt reduction
 3. Exercises : To promote flexibility & balance.
which reduce the risk of falls & fractures
 4. Calcium & vit D → Supplements
 5. people who are osteoporotic → fall prevention
Nutrition
↳ Reduces risk of fracture.

Drugs: 1. Bisphosphonates : New bone formation
- Anastrozole

Ex: Raloxifene → Reduce spine fractures.

after Menopause

3. Calcitonin → regulates calcium & phosphate levels in body
4. Parathyroid hormone People with high risk of fracture.
as it stimulates bone formation

5. BMT → cured some cases of Early onset of Malignant infantile osteopetrosis

→ death of osteoclasts p. bone platelet elevation
capillaries leak toward bone

• Most striking feature | patients often have fractures
↓ endosteal p. bone resorption ↓
metabolic bone disease associated with ↑ bone resorption

• arrested & flattened shape of: ribosomes fib. S
Kellip p. bone fib. number of: ribosomes S
metabolic bone disease
metabolism

• fibroblasts → fib. fib. & muscle p
metabolic disorder → fibroblasts are abn. except p
metabolic disorder

metabolic disorder