

Bone Cells

Osteoblasts

Osteocytes

Osteoclasts

- Bone deposition and absorption are normally in equilibrium.
- stress or tension on bones increases deposition.

Effect of Estrogens on the Skeleton:

Inhibit osteoclastic activity in the bones ® stimulate bone growth.

Osteoporosis of the Bones Caused by Estrogen Deficiency in Old Age.

1,25Dihydroxycholecalciferol (Vit D) (steroid)

Action

Increases intestinal absorption of calcium and bone mineralization.

1- Has a potent effect to increase calcium & phosphate absorption from the intestinal tract.

2- Decreases Renal Calcium and Phosphate Excretion.

3- has important effects on both bone deposition and bone absorption.

Effects of Vitamin D on Bone & Its Relation to Parathyroid Hormone **Activity**.

Vitamin D in smaller quantities :-

- promotes *bone calcification* (by ↑ calcium and phosphate absorption from the intestine and enhances the mineralization of bone.
- The administration of extreme quantities of vitamin D causes *absorption of bone*:
 - * *by facilitating PTH action on bones.*
 - * *number & activity of osteoclasts.*

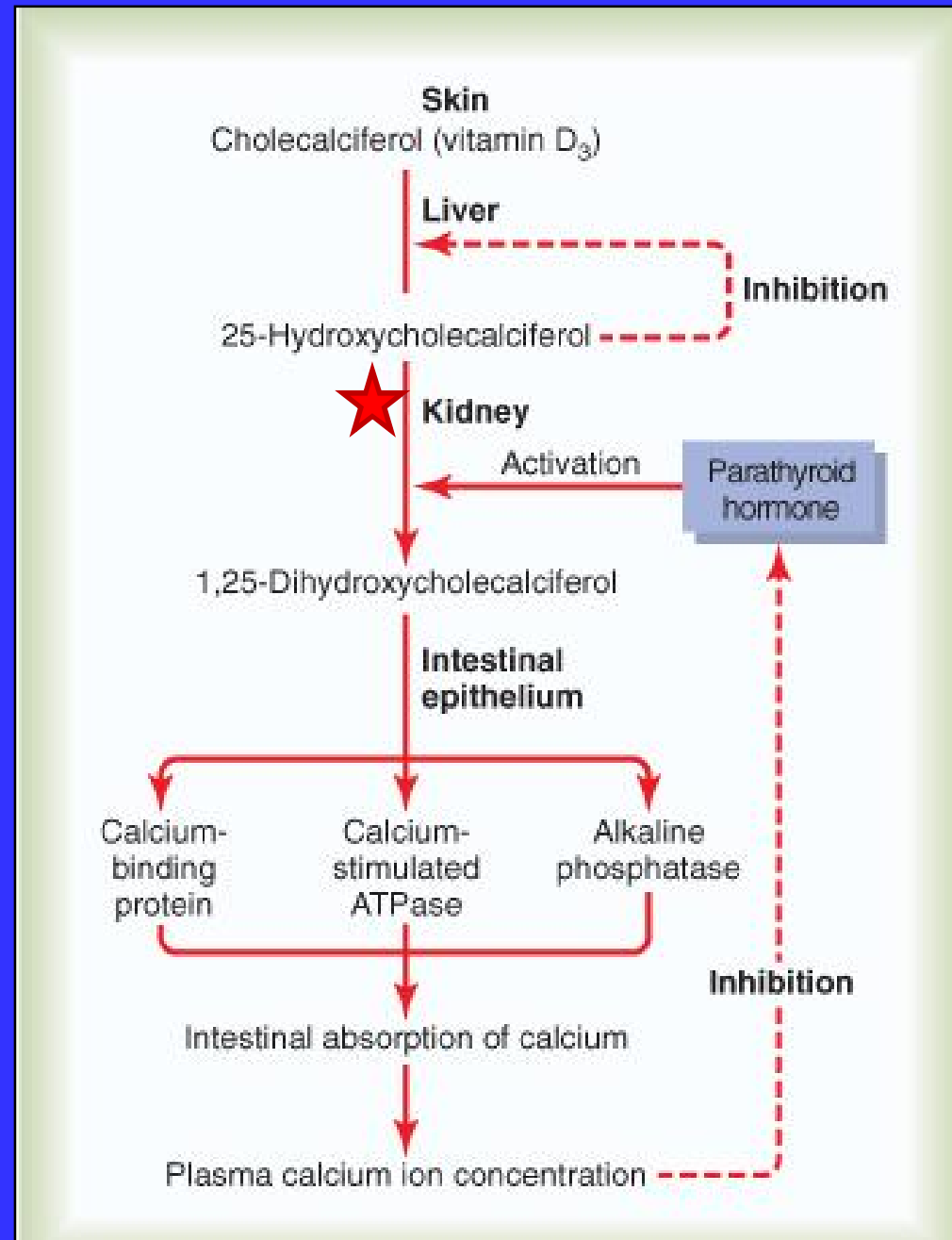
Control of Vit D3:

1- low Ca ions

2- prolactin

3- PTH

All stimulate renal
1, alpha
hydroxylase.



Rickets (In children)

results from calcium/phosphate deficiency in ECF.
usually caused by lack of vitamin D.

Tetany in Rickets

early stages: no tetany
(PTH stimulate osteoclastic absorption of bone).

When the bones finally become exhausted of calcium, (Ca level falls rapidly).

blood level of calcium falls below 7 mg/dl → tetany
(positive Chvostek's sign)

Treatment of Rickets

supplying adequate calcium and phosphate in the diet and,
administering large amounts of vitamin D.

Osteomalacia-"Adult Rickets". (rare).

positive Chvostek's sign is facial nerve irritability/spasms elicited by tapping the nerve





وَقَفَّكُنَ اللَّهُ