CALCIFICATION

DR.HARSHAD P.PATEL
ASST.PROFESSOR, GEN.PATHOLOGY
G.D.C & H.

DEFINITION

- Deposition of calcium salts in tissues other than osteoid or enemal is called pathogenic or heterotopic calcification.
- It is two types- 1) Dystrophic calcification
  2) Metastatic calcification

DYSTROPHIC CALCIFICATION

- Deposition of calcium salts in dead or degenerated tissue with normal calcium metabolism and normal calcium level.
- Calcification in dead tissue- caseous necrosis,

  Liquifaction necrosis, fat necrosis , Infarction, thrombi , hematoma, dead parasites, breast cancer, congenital toxoplasmosis involving breast ,CNS.

- Calcification in degenerated tissue: -
  - Old scar
  - Atheromas
  - Stroma of some tumours
  - Cysts
  - Calcinosis cutis
  - Senile degenerated changes

- PATHOGENESIS: not clear. Few factors like alteration in PH of necrotic tissue and release of enzymes alkaline phosphatase is responsible.
- Two steps:

1) Initiation – where Ca and Ph4 accumulate intracellularly in mitocondria and extracellularly in membrane bound vesicles.

2) Propagation –formation of crystals from deposition.

METASTATIC CALCIFICATION

- Etiological factors:

  1)Excessive mobilisation of calcium from bone

- Hyperparathyroidism
- Chronic renal failure
- Bony destructive lesion like Multiple myeloma and Metastatic carcinoma
- Prolonged immobilisation of patient

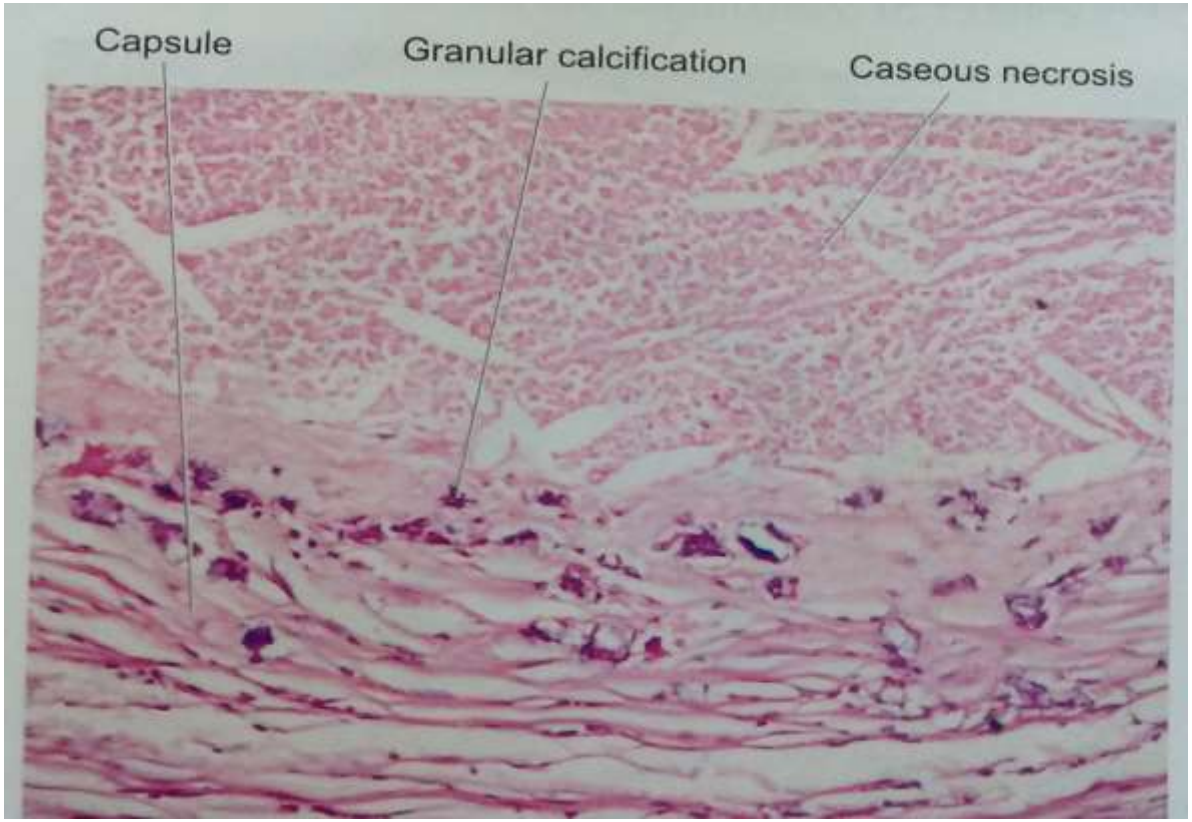
2) Excessive absorption of calcium from gut:

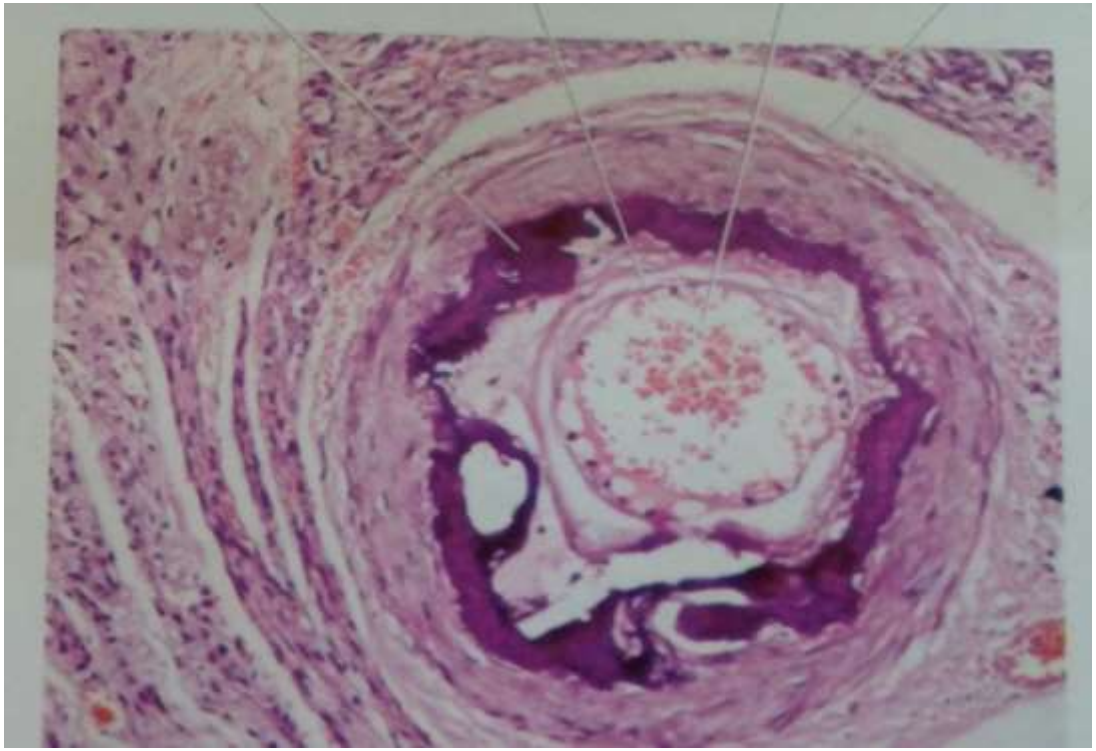
- Hypervitaminosis of Vitamin D which increase calcium absorption.
- Milk alkali syndrome-excessive oral intake of milk and calcium carbonate for peptic ulcer.
- Hypercalcemia of infancy

- Sites for the metastatic calcification:
  It can affect any organ of the body but most common are
  - Kidney–B.M. of renal tubules
  - Lung – wall of alveoli
  - Stomach – acid sectreting fundal glands
  - Blood vessels – internal elastic lamina
  - Cornea
  - Synovium

MORPHOLOGICAL FINDINGS

- Morphological findings are same for both types of calcification.
- In H & E stain calcium salts appear as deeply basophilic irregular and granular clumps.
- The deposite may be intracellular , extracellular or both.
- Occasionally bone formation may be seen.
- Calcium deposition can be confirmed by special stain like SILVER IMPREGNETION METHOD producing black colour.
- Pathological calcification may be associated with diffuse or granular deposition of iron giving positive PRUSSIAN BLUE REACTION.


Capsule
Granular calcification
Caseous necrosis



THANK YOU