

Osteonecrosis

Avascular necrosis is bone death due to severance of blood supply.

Classification

A-Traumatic e.g after fracture and dislocation

B-Non-traumatic

1-infection a-osteomyelitis b-septic arthritis

2-Haemoglobinopathy e.g sickle cell anemia

3-Storage disorder e.g gaucher disease

4-Caisson disease

5-Coagulation disorders a-familial thrombophilia b-hypofibrinolysis c-hypolipoproteinemia d-thrombocytopenic purpura

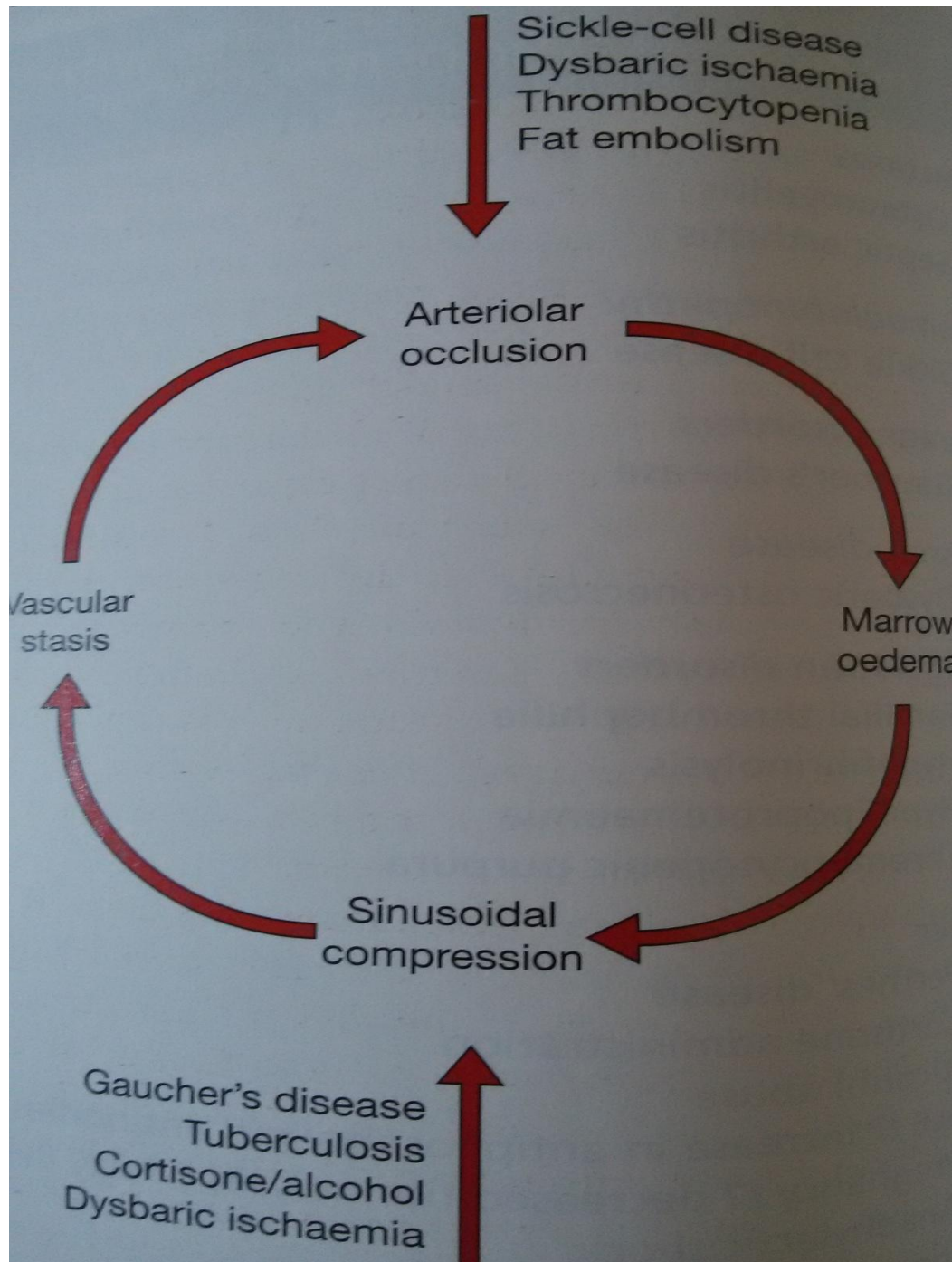
6-Others a-Perths disease b-cortisone administration c-alcohol abuse d-SLE e-pregnancy f-anaphylactic shock g-ionizing radiation

Most commonly affect a-femoral head b-femoral condyle c-head of humerus d-capitulum e-proximal parts of scaphoid and talus

Aetiology and pathogenesis

It tends to affect most distant parts of the bone vascular territory with limited collateral connections. Vascular sinusoids which nourish marrow and bone cells have no adventitial layer and their patency is determined by volume and pressure of the

surrounding marrow tissue; so local changes such as haemorrhage and decrease blood supply rapidly spiral to a vicious cycle. This process can be initiated in 4 different ways 1- severance of blood supply 2- venous stasis 3- compression of capillaries and sinusoids by marrow swelling.



Clinical features

The earliest stage of bone death is asymptomatic, in advanced stage there will be a- pain in or near a joint and perhaps with certain movements. b- click in the joint, probably due to snapping or catching of a loose articular fragment. c- stiffness and deformity in later stages. d- local tenderness. e- swelling may be seen in superficial bone. f- restricted movement. g- fixed deformities may be seen in advanced cases.

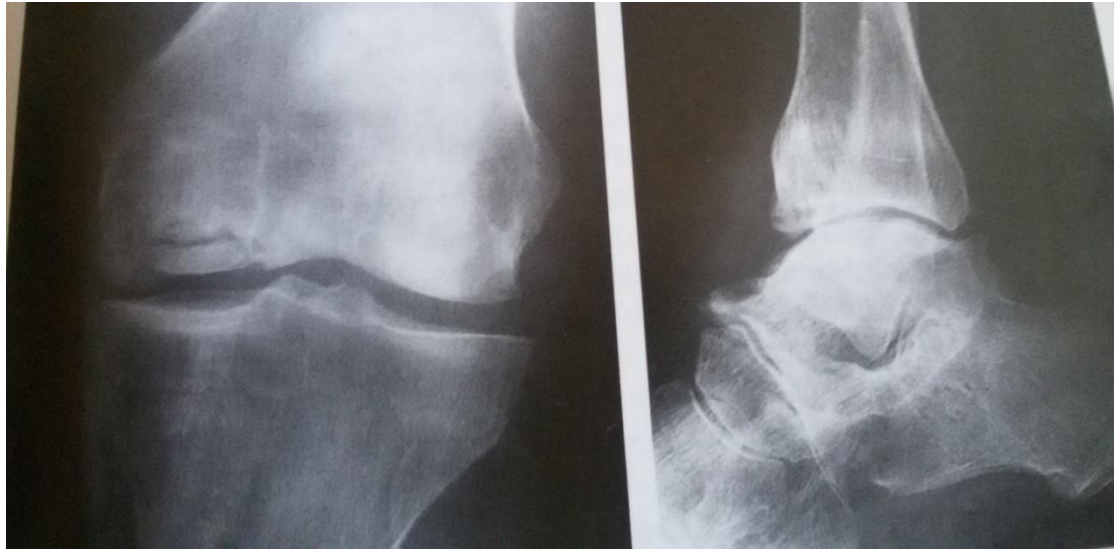
Imaging

1-x-ray: usually after 3 months of bone death a- area of increased bone density in the subchondral bone and may show thin tangential fracture line below the articular surface. b- distortion of the articular surface in late stages. c- occasionally the necrotic portion separates from parent bone as a discrete fragment.

2-Radioscintigraphy- ⁹⁹Tc sulphur colloid is used may reveal avascular segment.

3-MRI is the most reliable way of diagnosis marrow changes and bone ischemia at early stage.

4-CT scan-It does show the area of bone destruction very clearly and it may be useful in planning surgery.



Treatment

1-Early osteonecrosis

If bone contour is intact ; there is always the hope that structural failure can be prevented esp. in areas which are not severely stressed. a-oral alendronate for 25 weeks b-unloading osteotomy esp. in knee and hip c- medullary decompression and bone grafting of femoral head.

2-Intermediate osteonecrosis; there is structural damage a- realignment osteotomy alone or combined with curettage and bone grafting of the necrotic segment. b-arthrodesis.

3-Late stage osteonecrosis a- non-operative treatment include control of pain, modification of daily activities and splintage of the joint. b-arthrodesis of the joint c-partial or total joint replacement e.g knee and hip.