Giant Cell Tumor

Giant cell tumor, also known as osteoclastoma, is a benign primary bone tumor which typically presents near the epiphyseal end of long bones. This region includes the distal metaphysis. The peak incidence is 20-40 years old. Although classified as a benign tumor, it can be locally aggressive and may actually metastasize. Giant cell tumor classically occurs in the knee region. A soap bubble appearance is classic on plain radiographs while spindle-shaped cells and multinucleated giant cells are notable on histology.



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Pathophysiology

Osteoclastoma
Ostrich-glasses-gnome
Osteoclastoma is the alternative name for giant cell tumors of bone. This tumor arises from uninhibited growth of osteoclasts, which are actually macrophages for osseous tissue.

Epiphyseal End of Long Bones
E-pick on end of long bone
This tumor commonly grows on the epiphyseal end of long bones, including the distal metaphysis. There is a high turnover rate in the epiphyseal ends of long bones.

Peak Incidence 20-40 Years
20-40
Tumor classically presents in 20-40 year olds.

Benign
Bunny
The tumor is classified as benign but can actually be locally aggressive. This means it can grow and cause mass effect with symptoms like pain, swelling, and even fractures. Metastasis is rare but more common than other benign bone tumors.

Knee Region
Knee
This tumor commonly appears in the knee region (distal femur, proximal tibia).

Diagnosis

Soap Bubble Appearance on X-ray
Soap Bubbles
On X-ray, giant cell tumors are lytic and lucent lesions that can show a classic soap bubble or double bubble appearance.

Spindle-shaped Cells
Spindle Cell
Spindle shaped cells are characteristic of this tumor on histology.

Multinucleated Giant Cells
Nuclear Giant-shell
Giant cell tumors are diagnosed from biopsy, which demonstrates multinucleated giant cells that can have up to hundreds of nuclei.

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