Chondromyxoid fibromas (CMFs) are extremely rare, benign cartilaginous neoplasms that account for <1% of all bone tumours.

Epidemiology

The majority of cases occur in the second and third decades, with ~75% of cases occurring before the age of 30 years.

There is no recognised gender predilection.

However, examples have been seen in patients up to the age of 75 years. In some series, there is a male predilection, whilst in others, no such distribution is found.

Clinical presentation

Typically patients present with progressive pain, often long-standing and/or bony swelling and restricted range of movement in affected limb.

The latter is most often the case in bones with little overlying soft tissues (e.g. short tubular bones of the hands and feet).

Pathology

The tumour comprises of a variable combination of chondroid, myxoid, and fibrous tissue components organised in a pseudolobulated architecture

Macroscopic appearance

On gross examination, they are typically seen as solid glistening tan-gray intraosseous masses.

Histology

Occasional osteoclast-like giant multinucleated cells are encountered particularly at the periphery. Most cells are morphologically bland, and mitotic figures are rare or absent.

Location Most chondromyxoid fibromas are located in the metaphyseal region of long bones (60%), and may extend to the epiphyseal line and even rarely abut the articular surface.

They are almost never just epiphyseal

The classical site is the upper one-third of the tibia, which accounts for 25% of all cases, with the small tubular bones of the foot, the distal femur and pelvis being other relatively common locations 12.

Radiographic features

Plain radiograph

often seen as a lobulated, eccentric radiolucent lesion

long axis parallel to long axis of long bone

no periosteal reaction (unless a complicating fracture present)

geographic bone destruction: almost 100%

well defined sclerotic margin: ~85%

presence of septations (pseudotrabeculation): ~60%

presence of matrix calcification in small proportion cases: 12.5%

MRI MR features are often not particularly specific. Signal characteristics include:

T1: low signal

T1 C+ (Gd)

the majority (~70%) tend to show peripheral nodular enhancement ~30% diffuse contrast enhancement and this can be either homogeneous or heterogeneous

T2: high signal

Nuclear medicine On bone scans, the scintigraphic “doughnut sign” has been described in this tumour type 11. However, this is very nonspecific and can be seen in many other bone lesions.

Treatment and prognosis

They are benign lesions and malignant degeneration is rare. They are usually treated with curettage which however have a high recurrence rate of 25%. As such if an en-bloc resection is possible this is advisable.

History and etymology

It is thought to have been initially described by H L Jaffe and L Lichtenstein in 1948.

Differential diagnosis

General imaging differential considerations include:

aneurysmal bone cyst (ABC)

giant cell tumour of bone (GCT)

non-ossifying fibroma: younger age group

chondroblastoma: younger age group