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Periosteal chondroma of tibia in pediatrics

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Abstract:
Background :
Periosteal chondromas are rare benign cartilage tumor , most commonly in the metaphyses of long tubular bone which may be mistaken clinically and histologically for other and more common tumors "1-5" .
Patient and methods:
A 12 year old male presented with a painless firm non mobile swelling on the anterior aspect of left knee since 6 months with no history of trauma.Plain radiograph revealed eccentric cortical lesion in the antero-lateral aspect of proximal tibial metaphysis with stippled calcifications . Further on evaluation with CT showed cortical erosion . MRI demonstrated no intramedullary extension / soft tissue component .
Results:
Patient underwent complete excision of the lesion confirming the diagnosis as periosteal chondroma on histopathological examination
Conclusion:
A variable overlap existed in the imaging appearances of chondroid tumors stressing the importance of a multidisciplinary approach to prevent overtreatment of a benign lesion "3,4" .
Keywords*: Periosteal , Chondroma, Pediatrics, Tumor, Benign*

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I. Introduction

Periosteal chondromas are rare, and benign slow growing cartilaginous tumours developing beneath the periosteum as masses of hyaline cartilage accounting for ~2% of benign bone tumours and has a peak incidence in the 2nd to 4th decades of life with no sex predilection "1,2,6"

Clinical features

A 12 year old boy presented with a painless firm swelling (6x5cm) on the anterior aspect of left leg ~ 5cm below the knee for 6 months. No history of trauma. On examination shows no local rise of temperature, ulceration, surrounding edema or any pigmentation. No restriction of movements.

II. Imaging Features

Plain radiograph

Radiograph is important to differentiate from chondrosarcoma (as histology may be similar) **.**
Well demarcated cortical lesion in the lateral aspect of proximal tibia showing punctuate/ stippled calcification in the matrix with saucerization of the underlying bone and dense periosteal reaction (Fig:1)

Fig: 1 Lateral radiograph of left knee joint showing chondroid matrix with dense periosteal reaction

Computed Tomography (CT)

CT mimics the radiographic findings with better delineation of the cortex and bony erosion . (Fig: 2a,2b)

Fig:2a

Fig: 2b

Fig:2a,2b : Axial and sagittal sections show cortical erosion along the superior margins with no extension into the joint space

Magnetic Resonance Imaging (MRI) :

MRI plays an important role to evaluate extent of marrow involvement and soft tissue delineation , confirms the CT findings . This lesion shows T1W hypointensity , T2W heterogeneous hyper intensity with post contrast enhancement showing intramedullary extension with no soft tissue component .
(Fig : 3a,3b,3c)

Fig:3a

Fig: 3b

Fig:3c

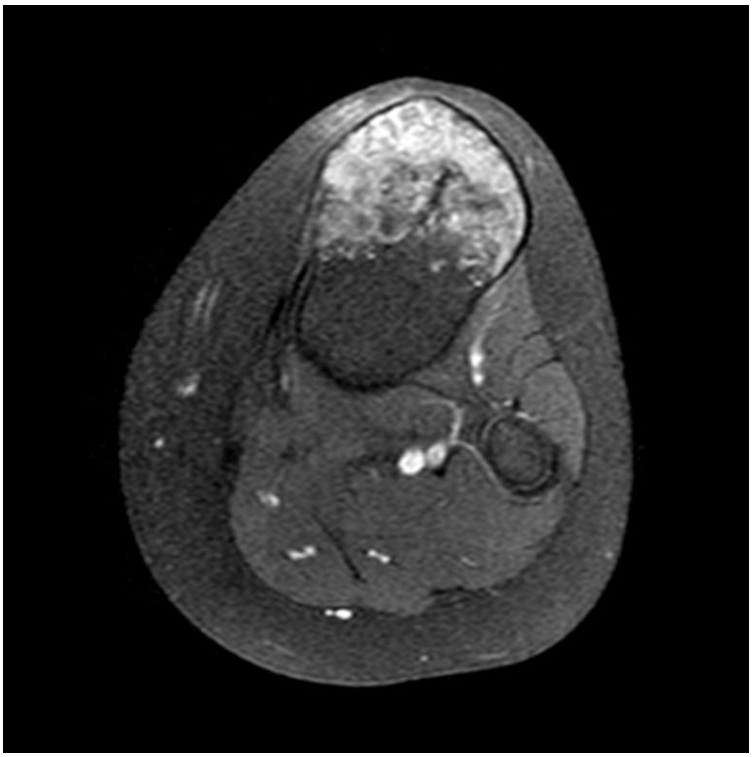

Fig : 3d

Fig 3a(T1W axial) show iso to hyposignal intensity , Fig3b,3c(T2W/STIR sagittal) iso to hypersignal intensity and
Fig 3d(T1W post contrast axial) demonstrate heterogeneous enhancement, especially in the periphery with no intra-medullary extension

Histopathological examination

Specimens received were core biopsies from left proximal tibia.
Macroscopic examination of specimen showed multiple tiny grey brown bits altogether measuring 1x0.5x0.2cm.
Histology features were consistent with periosteal chondroma (Fig:4a,4b)

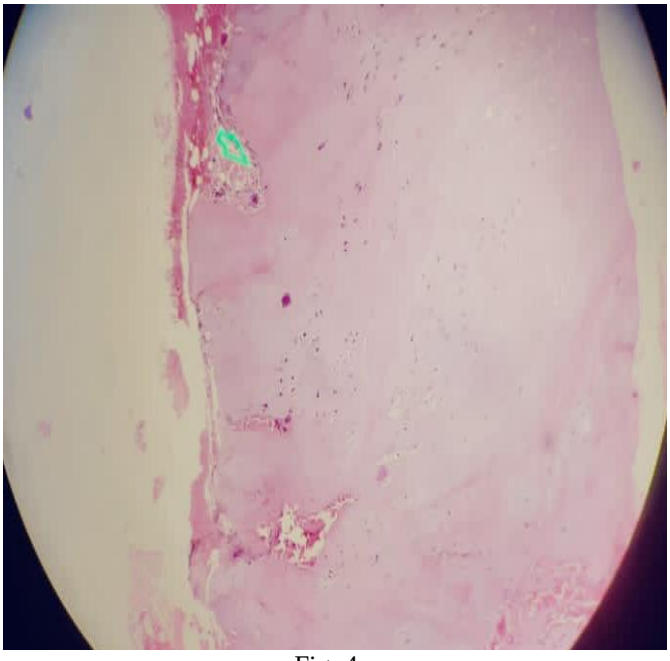

Fig: 4a

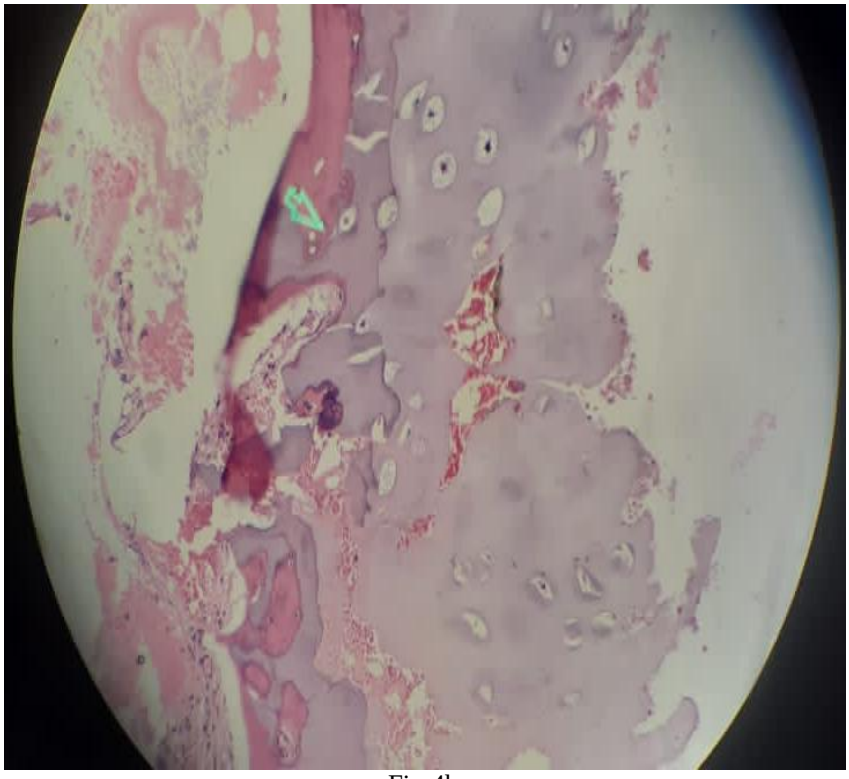

Fig:4b

Fig :4a , 4b Microscopic examination section showed bony trabeculae enclosing fatty marrow and also showed islands of hyaline cartilage over the surface. No evidence of pleomorphism/ mitotic activity in the cells

III. Discussion

The majority of the cortical lesions of tibia have a cartilaginous origin, osteochondroma being most frequent. However in this report, another rare tumour , the periosteal chondroma most commonly seen in the metaphysis of long tubular bone which may be mistaken clinically and histologically for other more common tumour in this location "1,5,6".

The imaging criteria for differentiating periosteal chondrosarcoma and periosteal chondroma are sparse. However, considered reasonable for chondrosarcoma if size> 3cms, older patients and PET CT - SUV cut off >2 or 2.3

Differential diagnosis	*Surface lesion*	*Similar histology*
Periosteal chondroma	+	+
Osteochondroma	+	+
Paraosteal osteosarcoma	+	-
Periosteal osteosarcoma	+	-
Enchondroma	-	+
Chondrosarcoma	-	+

IV. Conclusion

Although overlap exist in the imaging appearance of chondroid tumors , stressing the importance of multidisciplinary approach is essential to prevent over treatment of a benign lesion. Hence complete excision of the lesion leads to permanent cure "3,4".

Declaration Of Patient Consent:
Patient has given consent for his images and clinical features to be mentioned in the article understanding that their identity will not be revealed and due efforts will be made to conceal the same . However , anonymity cannot be guaranteed.

Conflict Of Interest: There are no conflicts of interest.

Funding Interests: None

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