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Giant Cell Tumor of Patella-Common Tumor in Uncommon Location

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Abstract:
Giant cell tumors comprise approximately 4% of all bone tumors. Usually GCT occurs as eccentric epiphyseal lytic lesion in a mature skeleton, commonly along the long bones. Uncommonly they are seen to occur in calcaneus, ribs, carpal bones and patella. We report a case of Giant Cell Tumor of Patella in an 18 year old male presenting with history of pain and swelling of right knee. The diagnosis was made on radiologic investigations and was confirmed on histopathological examination.

1. Case Report

An 18-year-old male presented with one year history of a swelling in the right knee which was slowly progressive in size .The patient also complained of pain. There was no history of trauma. On clinical examination there was a swelling in the right knee which measured around 10 x 8 cm, with no local rise of temperature. Overlying skin was stretched .Blood examination was within normal limits.

X ray right knee (AP, Lateral and skyline views) were done, revealed a lytic, expansile lesion involving the right patella with internal septations and thinned out cortex .There was no periosteal reaction/matrix calcification. There was no evident cortical breech. (Figure 1).Screening chest X ray was normal.

Figure 1: AP, Lateral and Skyline views showing right patella being replaced by a lytic septated lesion with thinned out cortex.

On ultrasound the patella was expanded with irregular cortex with heterogenous areas within. Areas of hyperechogenicity were noted within suspicious of hemorrhage. There was no joint collection (Figure 2)

Figure 2: Saggitalultrasound (Image A) showing expanded patella with irregular cortex (arrow) and areas of hemorrhage within Image B, dashed arrow

Patient underwent plain CT examination which showed well defined, expansile lesion involving entire patellawith scalloped peripheral margins .Few micro-fractures were noted along the cortex (Figure 3)

Figure 3: CT images Axial, Sagittal and Coronal respectively showing expansile lytic lesion involving the patella with micro-fractures (Image A, arrow) and internal septations (Image B, dashed arrow)

On T1 weighted MR images the lesion was iso-hyporintensewith few areas of hyperintensity within -s/o hemorrhage. No fatty marrow was seen within. T2 weighted images showed multiloculated cystic lesion involving whole of the patella with multiple fluid levels. T1 post contrast images showed multiple enhancing internal septae. There was no extension of the lesion into the subcutaneous plane/joint cavity (Figure 4).

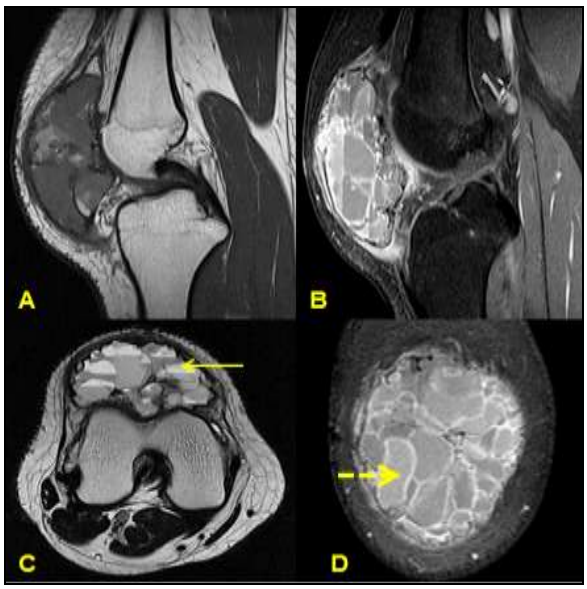

Figure 4: MR images Saggital T1 (Image A) and Axial T2 (Image C) showing iso to hypointense lesion lesion with fluid-fluid levels (arrow) .Post contrast Fat saturation (Image B and D) showing multiple internal enhancing septations

Based on the imaging findings the differential diagnosis of Giant cell tumor and Aneurysmal bone cyst was given. Post histopathological examination confirmed the diagnosis of Giant cell tumor (Figure 5).
The patient was managed by surgical excision and bone grafting. Post-operative was an eventful.

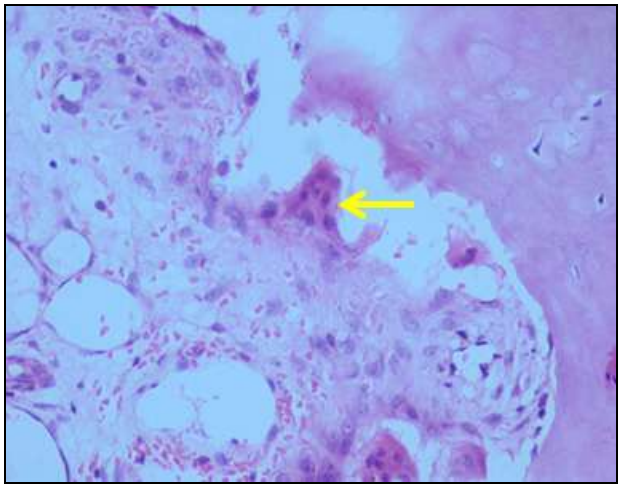

Figure 5: HPE of the lesion showed round/spindle, Multinucleated giant cells in the background of mononuclearstroma and bone tissue. Based on these findings a diagnosed as Giant cell tumor with no cellular atypia

2. Discussion

Patellar neoplasms are uncommon, however most patellar neoplasms are benign. Most of the lesions are cartilaginious in origin. Giant cell tumor is the most common neoplasm of the patella[1]. Giant cell tumor is locally aggressive tumor with a tendency for local recurrence[2,3].
GCT is found almost exclusively in adults in the ends of long bones and in flat bones[4].Most common sites, with 60% arising around the knee joint. Isolated cases have been reported in the scapula, sternum, patella, vertebra, skull and talus[5].Its difficult to tell radiologically if a GCT is benign or malignant. Only about 15% of them are said to be malignant[4]. Very few of these metastasize. They usually metastasize to the lungs, should be characterized as malignant[4].Pain and swelling are the two common modes of presentation .Few of them show pathological fractures[6].
GCT's in the flat bones and Patella appear subarticular , expansile with thinned out cortex characteristically causing a soap bubble pattern ,At times the tumor when very aggressive may show cortical breakthrough and development of a soft tissue mass. Screening x ray of chest is a must to rule out metastasis[1].
On CT giant cell tumors appear as lytic lesion with thinning and erosion of the cortex. A sclerotic margin may be present between the tumor and the normal marrow cavity7.On ultrasound they are cystic with internal echoes representing hemorrhagic contents.
The typical magnetic resonance imaging appearance is uniform, intermediate-low signal intensity on T1-weighted images. High cellularity, hemosiderin, and collagen deposition often result in relatively low T2 signal in nodular, zonal, whorled, or uniform pattern. The tumors enhance with intravenous gadolinium. Fluid-fluid levels are seen in GCTs[8].Fluid-fluid levels are also seen in telangiectatic osteosarcoma, chondroblastoma, giant cell tumor of bone, fibrous dysplasia, malignant fibrous histiocytoma[9].
It is essential to exclude other possible causes of lytic lesions such as multiple myeloma, hyperparathyroidism and metastatic carcinoma[10].These tumors are locally aggressive and pulmonary
metastasis have been reported in 1-2% of GCT[11]
However, because of the limited number of cases available in literature, most of which had varied staging, no definitive treatment plans related to staging are recommended in the literature. Patellectomy
has been recommended as the preferred treatment[12]

3. Conclusion

Patellar tumors are rare, cartilaginous tumors being most common. Giant cell tumor is the most common benign tumor of the patella with high chances of recurrence. Giant cell tumor and Aneurysmal Bone Cyst are close differentials, both of them showing fluid-fluid levels.

4. References

1. Terry R Yochum, Lindsay J Rowe. Essentials of Skeletal Radiology 3rd Edition, Lippincott Williams &Wilkins.
2. O'DonnellRJ, SpringfieldDS, MotwaniHK, Ready JE et al: Recurrent of giant cell tumors of the long bones after curettage and packing with cement. J Bone joint Surg.Am(1994)76:1827-1833
3. KlenkeFM,Wenger DE, Inwards CY,Rose PS and Sim FH: Recurrent giant cell tumor of long bones:analysis of surgical management. ClinOrthopRelatRes(2011) 469: 1181-1187

4. Clyde A. Helms .Fundamentals Of Skeletal Radiology 4th Edition:15-16
5. Mardi K, Sharma J.Primary giant cell tumor of soft parts-report of a case with fine needle aspiration cytology and histology findings.JCytol 2001:24:58-9
6. Hanna RM. Kyriankos M Quinn SF. Case report 757:Giant cell tumor of rib. Skeletal Radiol 1992:21:482-8
7. Clyde A Helms, Nancy M, Mark W et al. MUSCULOSKELETAL MRI.Saunders, Elsevier. 2009.
8. BJManaster.David A May.David G Disler.Musculoskeletal Imaging:3rd edition: The Requisites.509-11
9. Clyde A. Helms ,Nancy M. Major, Mark W. Anderson,Phoebe A. Kaplan, Robert Dussault Musculoskeletal MRI,2nd Edition
10. Denis Macdonald, MD, Victor Fornasier, MD, John Cameron, MD .Multicentric giant cell tumour involving the patella, Journal canadien de chirurgie, Vol. 44, No 3, juin 2001.
11. GChakraverty, U Chakraverty. Late Presentation of G.C.T. of the Patella.The Internet Journal of Orthopedic Surgery. 2008 Volume 12 Number 1
12. Hoch B, Inwards C, Sundaram M, Rosenberg AE. J Bone Joint Surg Am. 2006 Sep;88(9):1998-2008.Multicentric giant cell tumor of bone. Clinicopathologic analysis of thirty cases.