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Case Report

Parosteal Lipoma of the Humerus: A Case Report

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ABSTRACT

Background and Objectives: To study the imaging and histopathological characteristic of a tumorous mass and to differentiate parosteal lipoma from similar looking osteochondroma or myositis ossificans.

Presentation of case: A 54-year old female presented with more than 5-years history of a large swelling in the anterolateral aspect of upper arm. The case study was carried out at the First Hospital of Yangtze University situated in Jingzhou city of Hubei province, PRC in 2015 September.

Discussion: Radiological Imaging and Pathological examination confirmed the diagnosis of parosteal lipoma. Computed tomography (CT) and Magnetic Resonance Imaging (MRI) showed the mass to be fatty in nature with characteristic pedunculated exostosis abutting the periosteum. Histopathological sections showed the mass to be composed of mature adipose tissue without atypia or lipoblast.

Conclusion: Parosteal lipomas are rare neoplasias with no proven malignant potential and requires high index of suspicion for proper diagnosis and effective management.

Key Words: Parosteal lipoma, Periosteum, Hyperostosis, Mature adipocytes

INRODUCTION

Lipomas are the most common benign soft-tissue, ubiquitous tumors composed of mature adipose cells without cellular atypia. Other mesenchymal elements such as smooth muscle, fibers, cartilage or osseous tissue may occasionally be found in addition to adipocytes inside lipoma as a result of metastatic process [1, 2]. Although lipomas are common, osseous lipomas are rare. Osseous lipomas, according to their site of origin has been broadly divided into two groups: i) those arising within bone (intraosseous) and ii) those on the surface of the bone (juxtacortical). Surface osseous lipomas are further subdivided into parosteal and sub-parosteal lipomas [3, 4]. Parosteal lipomas often induce a periosteal reaction. They are exceedingly rare benign lipomatous neoplasms located adjacent to the periosteum of an underlying bone usually affecting mainly adults aged over 40. The most frequently affected sites are the diaphysial and metaphyseal regions of long bones. The

most frequent complaints are abnormal swelling presenting as a visible or palpable mass with or without pain and neuropathy [3]. The present article describes a case of parosteal lipoma in the humerus in an adult presenting with palpable mass without pain or neuropathy.

Case report

A 54-year-old woman presented with a palpable mass on the anterolateral aspect of the upper arm approximately 10 cm above the elbow joint for 5-6 years. There was no fever, weight loss, any history of trauma, diabetes, or tuberculosis or similar problem in the family. The findings of general clinical examination were within normal limits. On local examination, a non-tender, oval, firm swelling was felt in the anterolateral aspect of the right upper arm. The mass was fixed to the underlying bone but not to the overlying skin. No associated pain, paresthesia, weakness or features of vascular compromise of the upper limb was observed. After proper evaluation the mass was excised and regular follow-up showed no evidence of recurrence.

Imaging characteristics

Ultrasonography imaging showed a well-defined mass with evidence of calcification within it and radiographic imaging confirmed the calcified structure arising from humerus.

On CT, the tumor was a lobulated, exophytic radiolucent fatty mass (HU= -162), abutting cortex with bony exostosis (HU=669) arising from surface of bone. There was no evidence of bony destruction at the site (figure 1).

On MRI it showed the same signal intensity characteristics as subcutaneous fat, (with high T1/intermediate T2 signal) regardless of imaging sequences along with an evidence of cortical bone inside the lipoma. Areas with intermediate signal intensity on T1-weighted images that showed high signal intensity on T2-weighted images represented the cartilaginous components in parosteal lipoma (figure 2).

Histopathology report

With hematoxylin and eosin staining, histopathological sections of the excised tumor revealed mature adipocytes having eccentric nuclei devoid of atypia or any lipoblast and had intimate relationship with the periosteum. Evidence of chondroid and osseous materials was also present in the sections (figure 3).

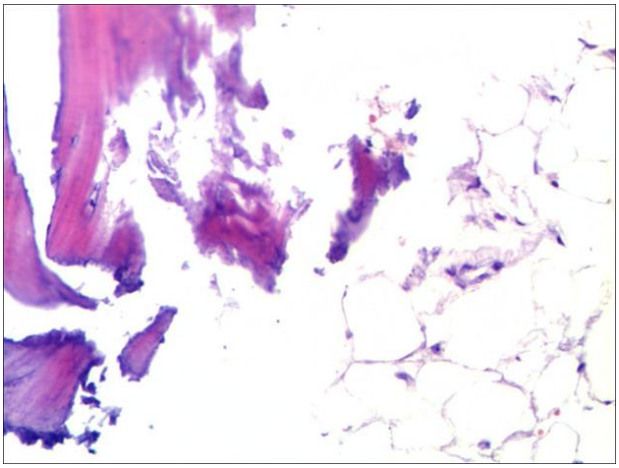

Fig. 3. Pathological specimen shows osseous structure comprising of cortical and cartilaginous structure surrounded by mature adipose tissue. (Hematoxylin and Eosin staining, magnification 20*20).

DISCUSSION

The term 'parosteal lipoma', which was introduced by Power in 1888, is still used to denote the fatty tumor having contiguity to periosteum [5, 6]. It is amongst the rarest neoplasias of skeleton, accounting for less than 0.1% ofprimary bone tumors and 0.3% of all lipomas. It affects, almost exclusively, adults over40 years, of either sex [7, 8]. The most common sites of parosteal lipomas are in the thigh contiguous with the femur or in

the forearm adjacent to the radius. They have also been reported in the tibia, fibula, scapula [9], clavicle, ribs, pelvis [10], metacarpals, metatarsals, mandible and skull. Here, we have a female of 54 years presenting with parosteal lipoma of humerus.

The bony reactions include bone deformity, cortical erosion, and overproduction of the cortical bone (hyperostosis). More than half of parosteal lipomas presenting bone reactions are associated with hyperostosis [7]. Parosteal lipoma can be classified into four types according to the presence and characteristic of the associated bone reaction

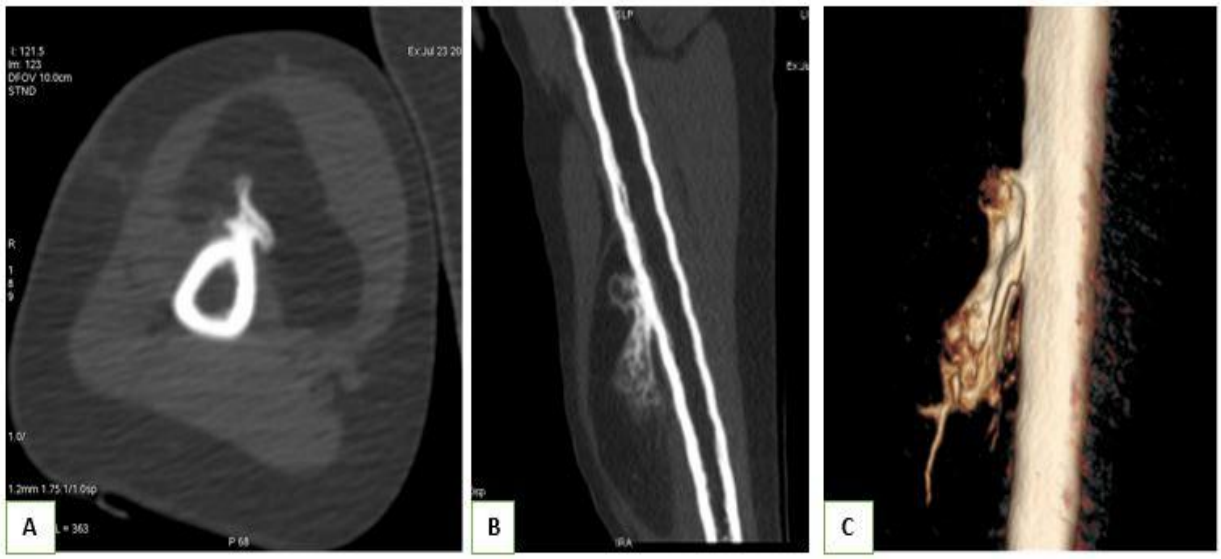

Fig 1. CT scan - A: Axial, B: Coronal, C: Volume rendering images shows a large lobulated mass (669HU) abutting the cortex of the humerus. The bony protuberance is attached to the cortex but no marrow continuity is seen.

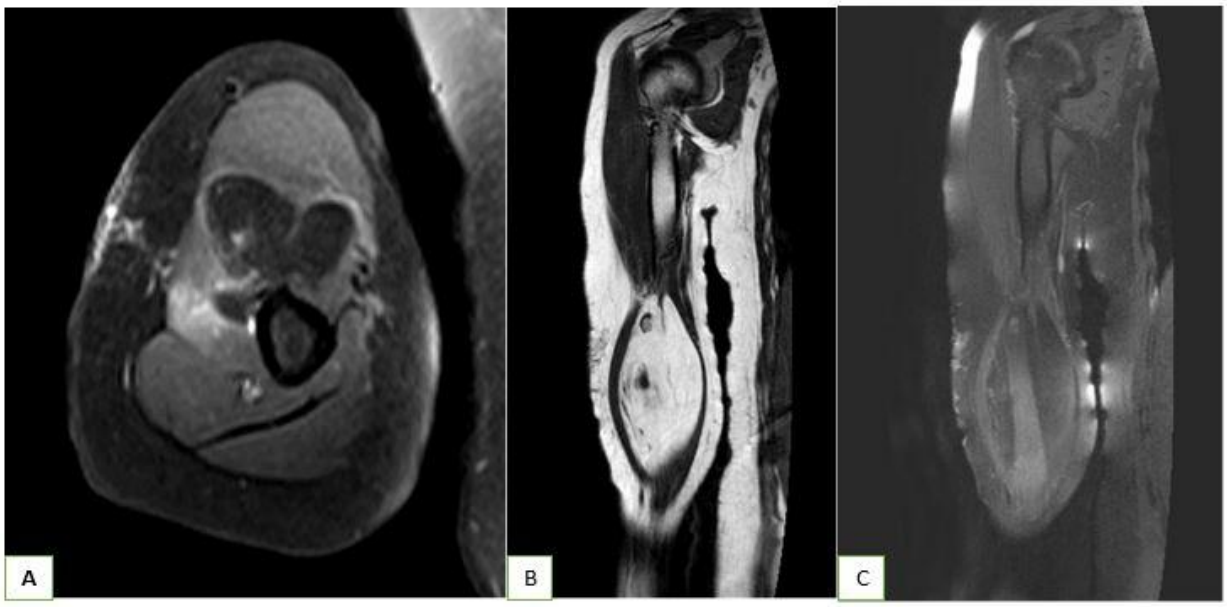

Fig 2. MRI Scan: Axial T2-weighted (A), Coronal T1-weighted (B), Coronal T2- weighted MR image with fat saturation (C) image of upper arm shows a septate mass with fat signal intensity in close proximity to the low-intensity cortical bone

- Type I (without calcification), Types II (pedunculated exostosis), Type III (sessile exostosis) and Type IV (chondro-osseous modulation)[5, 11]. In our case the lesion was classified as Type II as the lesion consisted of bony exostosis with a stalk.

The affected patients usually present with a slowly growing, painless mass fixed to the underlying bones in the extremities but not to the overlying skin. Features of peripheral nerves involvement have also been reported. Posterior interosseous palsy has been seen in periosteal lipoma involving the radius while common peroneal nerve palsy was seen when fibula was involved[5, 12]. The presenting symptom in this case was a palpable painless mass at the upper arm, without neurological deficits.

Hashmi [2] et al stated that with high level of suspicion and relevant radiological imaging and histological findings, parosteal lipoma should be accurately diagnosed as it is associated with better clinical outcome than most of the deep seated soft tissue neoplasms. Imaging finding shows a radiolucent mass with evidence of calcification arising from the periosteum. MRI shows the fatty tissue details within the lesion [13-16].

It must be differentiated with osteochondroma, in which the bony exostosis from surface of bone is contiguous with the marrow of the host bone while the medullary cavity is not confluent with the host bone in parosteal lipoma [13]. Also myositis ossificans can be differentiated from the ossifying lipoma by its fibroblastic stroma.

CONCLUSION

Parosteal lipoma is an extremely rare benign tumor composed mainly of mature adipose tissue with a bony component. Radiological, histological and clinical examination can aid in the definitive diagnosis. As these soft tissue tumors are benign with an excellent prognosis and 'no' recurrence at, proper diagnosis is essential for most effective treatment of the tumor.

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AUTHOR'S CONTRIBUTION

DD- Main author of manuscript, overall conception and design of study; **HJ-** involved in drafting the manuscript and revising it critically for important intellectual content.

ETHICAL CONSIDERATION

Written informed consent was obtained from the patients and Department of Medical Imaging and Nuclear Medicine, First Hospital of Yangtze University, Jingzhou, China prior to this case study.

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COMPETING INTERESTS: The authors declared that they have no competing interests.

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