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Case Report

Radiology Section

Morel-Lavallee Lesion (MLL) Mimicking A Soft Tissue Neoplasm

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ABSTRACT

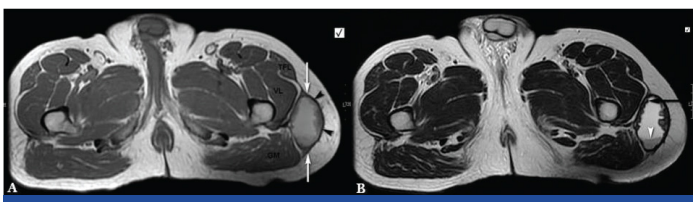
Morel-lavallee lesion (MLL) represents post traumatic subcutaneous cyst generally overlying bony prominences like greater trochanter, lower back, knee and scapula. A 51-year-old man presented with a swelling in left thigh since six years which was insidious in onset, gradually progressive in size and not associated with pain, fever or discharge. There was no history of trauma or any associated constitutional symptoms. Since there was no history of trauma recalled by the patient the clinical dilemma was between soft tissue sarcoma and cold abscess. We report a case of slow growing painless mass lesion of thigh, diagnosed on Magnetic Resonance Imaging (MRI) as morel lavallee lesion and describe its salient imaging features with treatment options.

Keywords: MLL, Morel-lavallee lesion, MRI, Post traumatic cyst

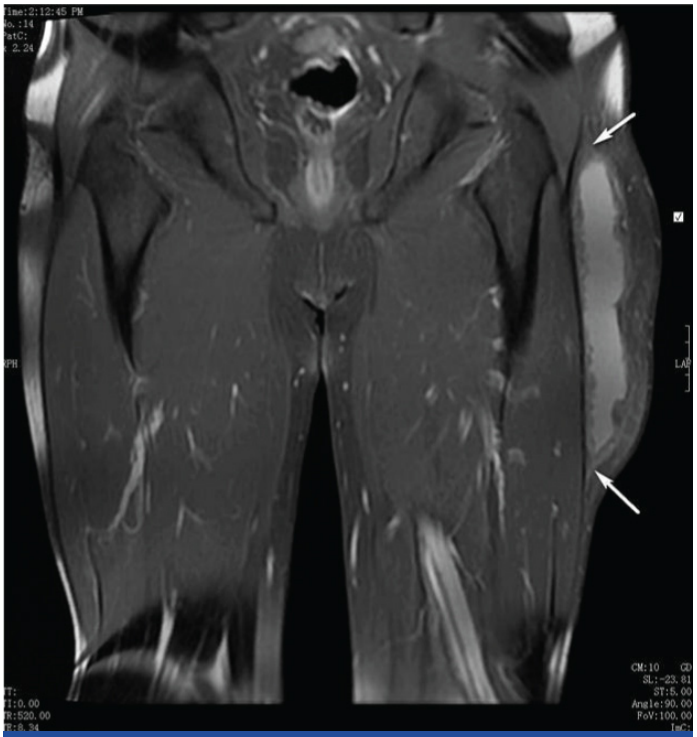
CASE REPORT

A 51-year-old male presented to our hospital's outpatient department with complaints of swelling in left thigh since six year. The swelling was insidious, gradually progressive in size, not associated with pain, fever or discharge. There was no history of weight loss or loss of appetite. There was no history of any antecedent trauma or any direct impact on the area. Medical history revealed no bleeding diathesis or anticoagulant therapy.

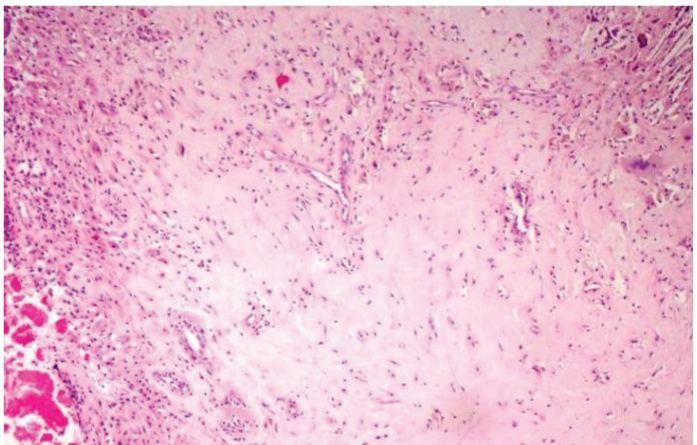
Physical examination revealed a well defined fluctuant swelling in the lateral aspect of left thigh, measuring 17x10x5 cm in size. The swelling was globular in shape with smooth surface with no tenderness and no local rise in temperature. The lesion was cystic in consistency and compressible with smooth edges and the overlying skin was smooth and could be pinched. The lesion could be moved over the underlying muscles. Distal neurovascular status was normal. Ultrasound revealed a large subcutaneous cystic lesion showing mobile internal echoes, extending from hip to the knee region. MRI revealed a well defined unilocular cystic lesion measuring 20x10x6 cm which was hyperintense on both T1-weighted and T2-weighted sequences, seen along the left proximal fascia lata, in close proximity to underlying vastus lateralis and gluteus maximus muscles with maintained intervening fat planes. Fluid-fluid level with dependent hypointensity was seen within the lesion. The cyst showed a thin smooth capsule which was hypointense on all sequences, and multiple small hypointense mural nodules were seen projecting into the lumen [Table/Fig-1a,b]. Post contrast smooth peripheral enhancement was seen [Table/Fig-2]. No neuro-vascular involvement was seen. Left proximal femur showed normal marrow signal intensity. Based on MRI features, diagnosis of Morel lavallee lesion was suggested. Cyst fluid aspiration cytology and culture were negative for acid fast bacilli with no growth after 48 h incubation. The patient underwent excision of the cyst with biopsy. Intra operatively the cyst drained dark brown fluid. Histopathology



[Table/Fig-1a,b]: Axial (A) T1- weighted and (B) T2- weighted image of hip reveal a large well defined ovoid cystic lesion (white arrow) contiguous with left proximal Tensor fascia lata (TFL) and showing maintained intervening fat planes with Vastus lateralis (VL) and Gluteus maximus muscles (GM). The lesion is hyperintense on both T1W and T2W sequences and shows a complete thin hypointense surrounding capsule (black arrowheads) with multiple hypointense internal nodular projections into the lumen of the cyst (black arrow). Fluid –fluid level was seen with in the lesion (white arrowhead)



[Table/Fig-2]: Post contrast Coronal fat saturated T1W image reveals homogenous peripheral enhancement along the capsule of the morel lavallee lesion (arrows)



[Table/Fig-3]: Histopathology shows amorphous eosinophilic material, hemosiderin laden macrophages, foamy macrophages, proliferating vascular channels and giant cells

revealed a lesion with a nodular configuration composed of central amorphous eosinophilic material surrounded by hemosiderin laden macrophages, foamy macrophages, multinucleate giant cells including touton giant cells, proliferating vascular channels, cholesterol clefts and collagen deposition [Table/Fig-3]. Post surgery the patient had an uneventful recovery with regular dressing and antibiotics.

DISCUSSION

MLL represents closed internal degloving injury resulting from blunt trauma with tangential sheer force that separate the hypodermis from the underlying fascia with filling in of the potential space with blood, lymph and necrotic debris [1,2]. The common sites of predilection are greater trochanter or anterolateral aspect of thigh. Other rarely reported sites include knee, calf, abdominal wall, head, pelvis, lumbosacral and gluteal region [2-6].

This case illustrates an unusual cause of painless, progressive cystic lesion of thigh especially with no antecedent history of trauma or any bleeding disorder. Even though MLL is understood to be a sequelae of crush injury which separates the hypodermis from underlying fascia, cases have been reported where the patient could not recall a traumatic event [5,7]. MLL is notorious for being overlooked in acute traumatic setting and its delayed appearance has also been documented, creating diagnostic dilemmas [7]. Thus, it is imperative for both the clinician and the radiologist to be aware of this condition and help institute prompt management of MLL, in order to prevent future complications like skin necrosis and infection.

MRI is the mainstay in diagnosis of MLL with presence of a thin peripheral ring which is hypointense on all sequences, representing a fibrous or hemosiderin- laden capsule, being the hallmark of the lesion. The internal characteristics of the lesion can have varied appearances ranging from water like signals appearing hyperintense on T2W and hypointense on T1W images in chronic MLL, to being hyperintense on both T1W and T2W images representing extracellular methaemoglobin, findings consistent with late subacute stage of hematoma. A third MRI pattern has also been reported for MLL, with variable signal intensity on T1W and heterogeneously hyperintense signals on T2W images. The lesion can show peripheral capsular and patchy internal enhancement, which is representative of capillary formation in the inner wall [3].

The differentials for MLL include fat necrosis, coagulopathy related hematoma, soft tissue tumours and cold abscess [3]. Fat necrosis is usually seen over tibia and gluteal region and on MRI it appears as linear hyperintensities within. History and clotting parameters evaluation is vital for confirming coagulopathy related hematoma. Lack of history of trauma with progressive painful enlargement and contrast enhancement made soft tissue sarcoma a clinico-radiological differential for MLL in our case. However, recognition of typical ovoid margin of MLL, formed from peeling back of subcutaneous fat from the fascia helped differentiate MLL from soft tissue sarcoma [5]. Tubercular cold abscess can also develop slowly and grow to huge sizes without evincing any inflammatory features. The typical location and thin fibrous-hemosiderin laden hypointense rim helped differentiate MLL from cold abscess.

Prompt treatment in the form of evacuation is mandated as neglected cases may get infected and lead to extensive skin necrosis [1]. Conservative treatment consists of percutaneous drainage with immediate post procedure compression bandage or using Talc or doxycycline sclerodesis for obliterating the potential space [8]. Surgical treatment for recalcitrant cases includes evacuation of the collection with excision of pseudocapsule and debridement of necrotic tissue. The wound may be left open or closed primarily with or without drainage tube in situ. Other surgical methods described are those of Ronceray surgical method wherein aponeurotic fenestrations are used, quilting suture methods and use of synthetic glue to obliterate the dead space intra-operatively [4].

CONCLUSION

Contrary to convention, this case highlights the fact that MLL can occur in scenarios where prior traumatic history is not at all recalled by the patient. Thus, it is imperative to have a high index of suspicion, augmented with meticulous history taking and clinical examination in concert with radiological findings, to include MLL in the differential for any subcutaneous soft tissue cystic mass and differentiate it from other sinister conditions like soft tissue sarcoma.

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