

MOREL – LAVELLE LESION – AN UNCOMMON ENTITY NEEDS IMAGING CONSIDERATION. A CASE REPORT

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ABSTRACT

Morel-Lavallée lesions are relatively rare closed degloving injuries caused by a shearing force resulting in separation of the dermis and the hypodermis from the subjacent deeper fascia.¹ These shearing forces can disrupt perforating vessels and nerves, creating a potential space that fills with blood, lymph, debris, and fat (necrotic and/or viable).² Although most commonly encountered lateral to the greater trochanter, these injuries may occur throughout the body in a variety of locations.¹ These lesions may not be well recognized at the initial presentation and can be easily missed. Patient's history and imaging findings are very important in reaching the correct diagnosis. Radiological knowledge of this entity is pivotal in avoiding unnecessary patient's worry. We describe a case of 24 years old female who presented with a history of gradually increasing fluctuant swelling in the left gluteal region, and subsequently underwent imaging to reach the diagnosis of this lesion.

Key words: moral-lavallee lesion, post traumatic cyst, degloving injury , Soft tissue injury, shear injury.

Introduction

Morel-Lavallée lesion or post traumatic cyst is a closed degloving soft tissue injury, as a result of abrupt separation of skin and subcutaneous tissue from the underlying fascia.³ Separation of the hypodermal tissue planes results in a complex serosanguinous fluid collection with areas of internal fat necrosis.¹ Morel Lavelle lesion was initially used to refer to injuries involving the trochanteric region and proximal thigh,⁴ however these injuries may occur throughout the body in a variety of locations.¹ The diagnosis of MLL is routinely made based on clinical and radiological examination.⁴ This entity needs consideration as early diagnosis on imaging can help prevent complications like infections and skin necrosis.

Case Report

We present a case of a 24 years old female presented to the clinic with the complaint of gradually increasing

swelling in the left gluteal region for 3 months. It was interfering with patient's daily activities; particularly the area was very painful while standing from sitting posture. There was no history of fever or any other systemic symptoms. Past history of surgery or hospitalization was also negative. Patient denied of any trauma initially.

On examination the patient was oriented with time, place and person. The left gluteal region was asymmetrically enlarged and a mass is seen over left gluteal region which was fluctuant and non-tender. Overlying skin appears normal, no redness or thickening was there.

To further evaluate she was sent for ultrasound , that demonstrated a well-defined thin walled cystic lesion with fine internal echoes, present in the subcutaneous tissues of left gluteal region which measured 6.5 x 5.5 cms. No appreciable flow was seen in it. Possibility of subcutaneous abscess is raised and patient was kept on antibiotics. Patient again presented in the

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clinic after 3 weeks with further increase in the size of swelling and pain in the specified region. On further interview patient revealed history of heavy workouts and there is specific history of violent hip exercises. Subsequently CT scan and MRI were done. CT demonstrated a large well defined encapsulated cystic lesion (HU 6) in subcutaneous tissues of left gluteal region. (Fig 1a, 1b) This lesion has now increased in size compared with the previous ultrasound, and



Figure 1a: CT Plain axial sections demonstrate well defined fluid density lesion (HU 4-10) in subcutaneous tissues of left gluteal region. A linear tract is also seen extending to the deeper tissues.



Figure 1(b): CT Plain Coronal view showing similar findings.

measured 13.0 x 13.4 x 10.0 cms. Scattered fat densities are also seen within it. This lesion is causing significant bulge on the overlying skin. A linear fluid filled tract is seen extending from this superficial lesion into the left paravertebral and left iliacus muscle. Ramification of this tract is also seen. All of these

findings are better appreciated on MRI (Fig 2a, 2b). Keeping in view patient's history of crushing trauma and imaging findings, the diagnosis of Morel Lavallee lesion is given. The patient underwent incisional drainage without any complication. Follow up ultrasound of the patient demonstrated resolution of the lesion.

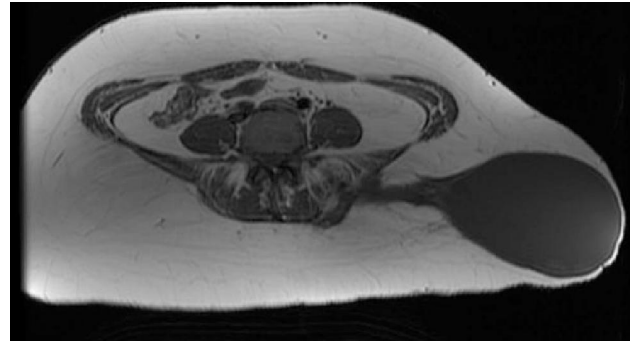


Figure 2(a): MRI, axial sections, T1WI showing well defined hypointense collection in the subcutaneous tissues of left gluteal region.

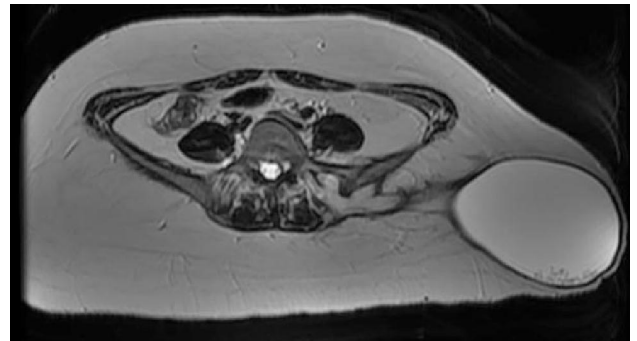


Figure 2(b): MRI axial T2WI, showing fluid collection with hypointense rim. Ramified tract with its internal communication is much better shown on this sequence.

Discussion

Pathophysiology:

In the soft tissues, Morel Lavallee lesions or post traumatic cysts are usually occurred after closed degloving injury caused by forces of pressure and shear stress at the borders of subcutaneous tissue to the muscle fascia or bone. The space thus created is initially filled with blood, lymphatic extravasations and liquefied necrotic fat. These collections may develop rapidly when the arterial bed is involved, or otherwise slowly, in cases of injury to lymphatic vessels⁵. These swellings can either subside because of absorption of fluid or become encapsulated. These can also become infected and there is a potential for

overlying skin necrosis. The septation and fat globules can also be seen in some swellings as it was in our case⁶ (3a, 3b, 3c).



Figure 3(a): CT plain axial image demonstrate hypointense focus representing entrapped fat globule. (White arrow)

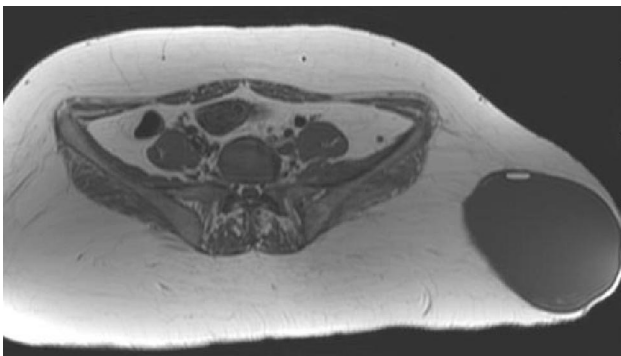


Figure 3(b): MRI axial T1WI, fat globule in the CT scan is appearing hyperintense on T1WI.

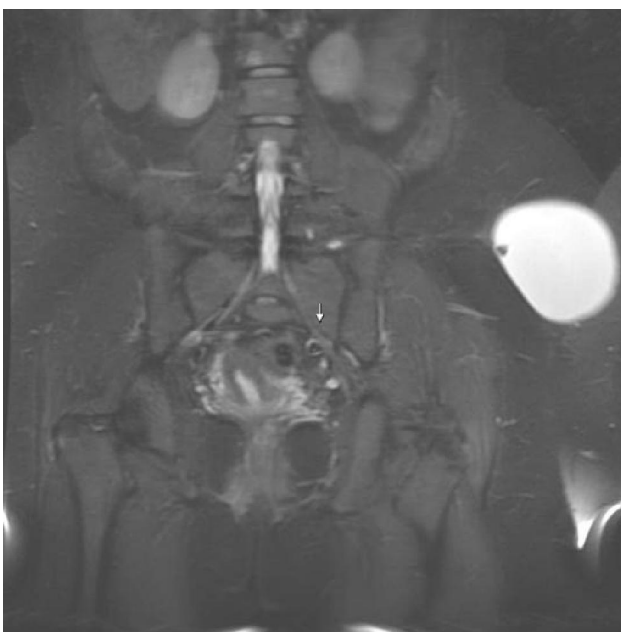


Figure 3(c): MRI COR STIR, showing signal loss of focus of fat.

Morel Lavallee lesion was initially used to refer to injuries involving the trochanteric region and proximal thigh,⁴ however these injuries may occur throughout the body in a variety of locations.¹ These typically dissect perifascial planes adjacent to the fascia lata and iliotibial band. The peritrochantric area is particularly predisposed to this process due to the increases mobility of the soft tissues in this region, the subcutaneous nature of the bone and the strength of the fascia lata as it attaches to the iliotibial band.¹⁰ The lesion can be either painful or asymptomatic and up to one third of the patients do not recall any significant trauma.⁷ The diagnosis is based on physical examination and an associated history of trauma. A Morel-Lavallee lesion can present anywhere from days to months after the initial injury and may or may not be associated with an underlying pelvic or acetabular fracture.⁷ Early complications of unrecognized trauma that can occur are infection and delayed - secondary skin necrosis due to prolong tissue hypoxia and acidosis. Left untreated, the inflammatory process can increase the degree and amount of injury to the soft tissues. In the later stage, these lesions can resolve spontaneously, but in some cases can persist and change in pseudo cyst formation.⁵

Imaging Features and Differentials:

The imaging appearance is variable and nonspecific, potentially mimicking superficial hemorrhagic bursitis, or cystic or necrotic primary soft tissue neoplasms.¹ The differential diagnosis of Morel-Lavallée lesions also includes other subcutaneous lesions of posttraumatic origin, like fat necrosis or coagulopathy-related hematoma.⁹ Considering that Morel-Lavallée lesions may remain undiagnosed for long periods, it is important for the radiologist to know the characteristics of acute and chronic lesions, as well as their therapeutic implications. The appearance of the lesions depends on the amount of present blood, lymph and fat, as well as the time elapsed from the trauma.⁷ Ultrasound, MRI and CT have been used to diagnose Morel-Lavallee lesions. On all three, the lesions are fusiform or ovoid, located between the hypodermis and the deeper fascial planes. The appearance of internal contents of the lesion and the formation of a capsule depend on its age. Lesions less than 6 months will be complex cysts filled with debris and blood products. Older lesions become clear cystic

spaces, with a discernible capsule.⁸ As mentioned above, USG features are based on the age of hematoma. The lesions appears as a focal anechoic to isoechoic complex collection located superficial to the muscle plane and deep to hypodermis. The mass may contain fat globules that appear as hyper echoic nodules along its wall.¹⁰ On CT and magnetic resonance imaging (MRI) scans, these lesions are well visualized as well-defined encapsulated fluid collections with fluid-fluid levels. On MRI scans, however, the lesions are better visualized with soft-tissue contrast enhancement. Therefore, MRI is a better choice of imaging modality than CT in making a diagnosis of MLL.⁴ MRI can characterize the internal contents as blood products or seroma, helping differentiate this lesion from a soft tissue mass.⁹ Conservative management is advocated for smaller lesions without presence of septations and infection. Lesions with capsule and septations require surgical drainage. Post-surgical graduated compression by stocking prevents the reaccumulation of the collection by agglutinating the skin to underlying fascia.⁶

Conclusion

Morel Lavallee lesion is uncommon post traumatic closed degloving injury which needs early diagnosis and careful attention as the neglect or misdiagnosis of these cases may lead to unnecessary patient's apprehension and complications that include infections and overlying skin necrosis due to tissue hypoxia and infections. For accurate diagnosis, proper history and imaging is crucial. Although MRI is considered best modality for diagnosis but ultrasound helps in narrowing the differential diagnosis if radiologist keeps this entity in mind.

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