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EXTRAPULMONARY TUBERCULOSIS MIMICKING A MOREL-LAVALLÉE LESION: A CASE REPORT

Medicine

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ABSTRACT

Background: Morel-Lavallée lesion (MLL) is a post-traumatic closed degloving injury resulting from separation of the subcutaneous tissue from the underlying fascia. Because of its variable clinical and radiological appearance, MLL can mimic several soft-tissue pathologies, including abscesses, hematomas, and neoplasms. In tuberculosis-endemic regions, musculoskeletal tuberculosis should also be considered in the differential diagnosis of atypical soft-tissue collections.**Case Presentation:** A 40-year-old man presented with persistent lower back pain and a right gluteal soft-tissue swelling following trivial trauma. Magnetic resonance imaging performed overseas demonstrated a multiloculated fluid collection suggestive of a chronic Morel-Lavallée lesion, abscess, or chronic hematoma. Subsequent evaluation in India with fluorodeoxyglucose positron emission tomography/computed tomography revealed associated pulmonary and pleural abnormalities suspicious for tuberculosis. Image-guided aspiration yielded purulent material, and GeneXpert MTB/RIF detected Mycobacterium tuberculosis complex, confirming multisystem tuberculosis with musculoskeletal involvement. The patient received standard antitubercular therapy and achieved complete clinical and radiological resolution.**Conclusion:** This case highlights the diagnostic overlap between chronic Morel-Lavallée lesions and musculoskeletal tuberculosis. In regions where tuberculosis is prevalent, clinicians should maintain a broad differential diagnosis for persistent post-traumatic soft-tissue collections. Integration of clinical findings, advanced imaging, and microbiological confirmation is essential for establishing the correct diagnosis and initiating appropriate treatment. [1]

KEYWORDS

INTRODUCTION

Morel-Lavallée lesion (MLL) is a closed degloving injury first described by Maurice Morel-Lavallée in 1853. It results from shearing forces that separate the subcutaneous tissue from the underlying deep fascia, disrupting perforating blood vessels and lymphatics and creating a potential space that gradually fills with blood, lymph, liquefied fat, and inflammatory debris. Although MLL most commonly follows high-energy trauma, it may also occur after seemingly trivial injuries, making diagnosis difficult when the history of trauma is subtle or remote. [1,2,3]

The lesion most frequently involves the greater trochanter, pelvis, gluteal region, thigh, and lumbosacral area. Clinical presentation varies from acute painful swelling to a chronic fluctuant mass. Chronic lesions often develop a fibrous pseudocapsule that prevents spontaneous resolution and predisposes to secondary infection. Magnetic resonance imaging (MRI) is the imaging modality of choice because it accurately characterizes lesion morphology, chronicity, and capsule formation.4

The radiological appearance of MLL frequently overlaps with that of chronic hematomas, abscesses, soft-tissue neoplasms, and granulomatous diseases, making it one of the important diagnostic mimickers of soft-tissue masses. In tuberculosis-endemic regions, musculoskeletal tuberculosis should also be considered, as tuberculous abscesses may closely resemble chronic post-traumatic collections on imaging. We report an unusual case of multisystem tuberculosis presenting as a lesion initially suspected to represent a Morel-Lavallée lesion, highlighting the importance of correlating imaging findings with microbiological investigations to establish the correct diagnosis.4

CASE PRESENTATION

A 40-year-old Asian man residing in the United States presented with progressively worsening lower back pain of one month's duration. The pain began after a trivial twisting injury but gradually evolved into a persistent dull ache associated with swelling over the right gluteal region. He denied fever, weight loss, night sweats, or other constitutional symptoms.

Magnetic resonance imaging of the lumbosacral region performed in the United States demonstrated a 10 × 2.1 × 1.7 cm crescentic multiloculated peripherally enhancing fluid collection overlying the right gluteal and paraspinal musculature with surrounding fat edema. Based on the imaging findings, the differential diagnosis included a chronic Morel-Lavallée lesion, chronic hematoma, soft-tissue abscess, and granulomatous disease. Owing to persistent symptoms and an inconclusive diagnosis, the patient travelled to India for further evaluation.

Fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET-CT) demonstrated a linear fluid collection within the deep subcutaneous plane of the right gluteal region extending superiorly along the posterolateral paraspinal muscles. Additional findings included metabolically active right external iliac and inguinal lymph nodes, right pleural empyema, and tree-in-bud nodules in the posterior segment of the right upper lobe, raising strong suspicion for disseminated tuberculosis with musculoskeletal involvement.

Ultrasound-guided aspiration of the collection yielded approximately 90 mL of thick yellow-green purulent material. Gram stain, Ziehl–Neelsen stain, and aerobic bacterial culture were negative; however, GeneXpert MTB/RIF detected *Mycobacterium tuberculosis* complex without rifampicin resistance. The erythrocyte sedimentation rate was elevated (74 mm/hour), and the tuberculin skin test showed 24 mm of induration.

The patient was diagnosed with multisystem tuberculosis involving the lungs, pleura, and musculoskeletal soft tissues presenting as a lesion radiologically resembling a chronic Morel-Lavallée lesion. He was treated with standard antitubercular therapy (streptomycin, isoniazid, rifampicin, pyrazinamide, and ethambutol) following baseline laboratory and ophthalmological assessment. Treatment was

well tolerated, and the patient achieved complete clinical and radiological resolution without residual functional impairment.

DISCUSSION

Morel-Lavallée lesion is an uncommon post-traumatic closed degloving injury that results from separation of the subcutaneous tissue from the underlying fascia, leading to accumulation of hemolymphatic fluid within a potential space. Chronic lesions develop a fibrous pseudocapsule that may persist for months or years and frequently resemble other soft-tissue pathologies. MRI is considered the imaging modality of choice because it accurately demonstrates lesion morphology, internal contents, and pseudocapsule formation. However, imaging findings alone are often insufficient to establish a definitive diagnosis, particularly in chronic or infected lesions. [1,2,3,4]

Musculoskeletal tuberculosis accounts for approximately 10–15% of extrapulmonary tuberculosis, whereas isolated soft-tissue involvement is distinctly uncommon. The clinical presentation is typically indolent, with slowly enlarging swellings, minimal constitutional symptoms, and nonspecific inflammatory markers. Consequently, tuberculous soft-tissue abscesses may closely mimic chronic hematomas, seromas, Morel-Lavallée lesions, or soft-tissue neoplasms, especially when a preceding history of trauma is present. [5,6]

Several imaging features may help distinguish these entities, although none is pathognomonic. Chronic Morel-Lavallée lesions usually remain confined to the interfascial plane, often demonstrating a characteristic fusiform fluid collection with a peripheral fibrous capsule. In contrast, tuberculous collections may be accompanied by adjacent lymphadenopathy, pulmonary or pleural abnormalities, osseous involvement, or other manifestations of disseminated disease. Therefore, careful assessment of imaging beyond the primary lesion is essential. [1,4,5,6]

Table 1. Comparison between Morel–Lavallée Lesion and Musculoskeletal Tuberculosis

Feature	Morel–Lavallée lesion	Musculoskeletal tuberculosis
Etiology	Closed degloving injury after shearing trauma	Mycobacterium tuberculosis infection
History	Usually trauma	May have trivial trauma or none
Symptoms	Painful/fluctuant swelling	Chronic swelling; constitutional symptoms often absent
MRI	Interfascial fluid collection, pseudocapsule	Abscess with inflammatory changes; may mimic MLL
PET-CT	Usually localized	May show pulmonary disease, lymphadenopathy, pleural/osseous involvement
Microbiology	Sterile unless secondarily infected	GeneXpert/culture positive for M. tuberculosis
Treatment	Compression, aspiration, sclerodesis or surgery	Antitubercular therapy ± drainage
Prognosis	Good with appropriate management	Excellent if diagnosed early and treated

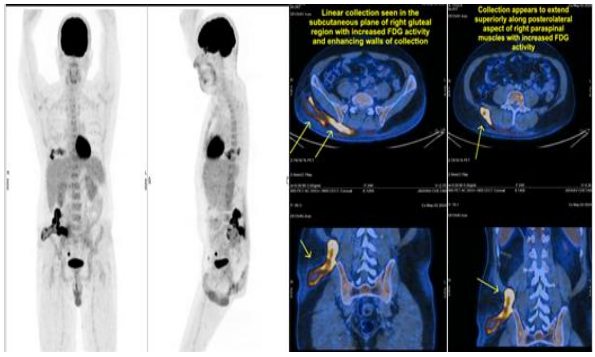
In the present case, MRI findings initially favored a chronic Morel-Lavallée lesion because of the characteristic fluid collection along the fascial plane following minor trauma. However, subsequent FDG PET-CT demonstrated pulmonary nodules, pleural empyema, and metabolically active lymphadenopathy, substantially increasing the likelihood of an infectious etiology. Definitive diagnosis was established only after aspiration of the collection and microbiological confirmation by GeneXpert MTB/RIF. This case illustrates that imaging should always be interpreted in conjunction with microbiological investigations whenever atypical features are present or when patients originate from tuberculosis-endemic regions. [1,5]

The successful outcome following standard antitubercular therapy further emphasizes the importance of early recognition and prompt treatment. Failure to consider tuberculosis in the differential diagnosis of chronic soft-tissue collections may result in delayed therapy, inappropriate interventions, and avoidable morbidity. Clinicians should therefore maintain a high index of suspicion for musculoskeletal tuberculosis in patients presenting with persistent post-traumatic fluid collections, particularly when imaging findings are atypical or systemic features of infection are identified. [5]

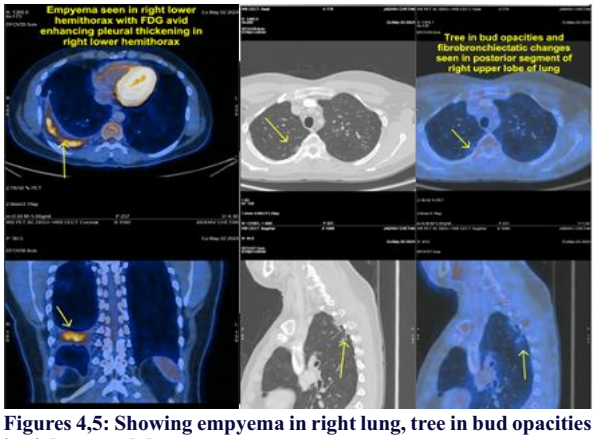
CONCLUSION

Morel–Lavallée lesions remain an important diagnostic consideration in patients presenting with persistent post-traumatic soft-tissue swellings. However, in tuberculosis-endemic regions, musculoskeletal tuberculosis should be included in the differential diagnosis, particularly when clinical progression, imaging findings, or associated systemic abnormalities are atypical. This case demonstrates that imaging alone may not reliably distinguish chronic Morel–Lavallée lesions from tuberculous soft-tissue collections. Careful correlation of clinical findings with microbiological investigations, including molecular assays such as GeneXpert MTB/RIF, is essential for establishing the correct diagnosis. Early recognition and prompt initiation of antitubercular therapy can prevent unnecessary surgical intervention, reduce morbidity, and achieve excellent clinical outcomes.

FIGURES:



Figures 1,2,3: FDG PET CT images showing linear collection in the subcutaneous plane of right gluteal region with increased FDG activity and enhancing walls of collection.



Figures 4,5: Showing empyema in right lung, tree in bud opacities in right upper lobe.

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