

Recurrent Intramuscular Hematoma as a Presentation of Pleomorphic Sarcoma

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Background	This case report reviews a 50-year-old male who presented with recurrent thigh hematoma secondary to pleomorphic sarcoma. Initial diagnosis was delayed due to soft tissue mass obscurity on imaging and a misleading history of muscle injury. The patient underwent three hematoma incision and drainage procedures prior to identification of definitive pathology. Following diagnosis, the patient underwent appropriate metastatic workup and was referred to a tertiary care center.
Summary	Soft tissue sarcoma (STS) poses a diagnostic challenge that delays recognition and often results in inappropriate treatment. Recommendations for management of STS of the extremity include early diagnosis, referral to specialized treatment teams, appropriate metastatic workup and definitive surgical excision. Metastatic workup includes computed tomography (CT) of the chest and pelvis to evaluate for pulmonary or pelvic lymph node involvement. Surgical intervention is aimed at removal of the mass in its entirety with retained limb function, although limb amputation may be necessary. Negative surgical margins are the most predictive factor for local recurrence and distant metastasis of STS.
Conclusion	Atypical presentations without definitive diagnosis should prompt high suspicion for the possibility of STS. This review highlights that nonspecific CT findings that do not exclude sarcoma should be followed up with magnetic resonance imaging (MRI) for further analysis prior to any surgical intervention. However, this may be difficult in emergent cases in which immediate intervention is required. Referral to a tertiary specialized center is of the utmost importance in the therapeutic management of patients with STS.
Keywords	Soft tissue sarcoma, pleomorphic sarcoma, extremity, thigh, hematoma

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Case Description

We present a 50-year-old man who was evaluated at our institution for a large posterior thigh hematoma in the context of a recent trauma. He had strained his hamstring at work where he was employed as a truck driver about a month prior to our initial assessment. Shortly after the incident, the patient went to his employee health clinic and outpatient magnetic resonance imaging (MRI) was ordered. The patient was told he had torn his hamstring. However, he presented to our emergency department with worsening pain and paresthesia following his diagnosis.

A computed tomography (CT) scan with IV contrast of the right lower extremity was performed on admission and showed a 15 cm complex encapsulated fluid collection in the right posteromedial thigh (Figure 1). Imaging findings and history were consistent with an intramuscular hematoma thought secondary to a hamstring rupture.

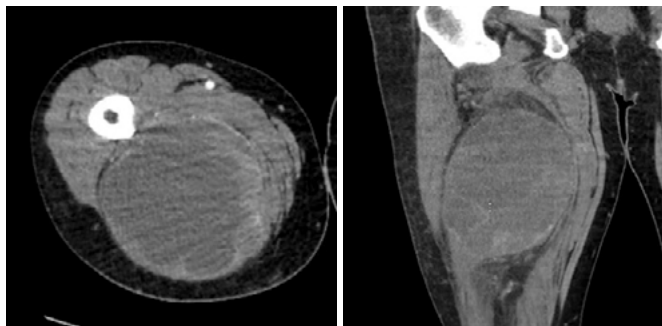


Figure 1. Encapsulated complex fluid collection in the right posteromedial thigh

We proceeded with surgical management and evacuated 1500 mL of clot through a 5 cm longitudinal incision, which was closed primarily following drain placement. His postoperative course was unremarkable and the patient was discharged with home physical therapy two days later. At his one-week follow-up, the patient continued to show improvement.

Two weeks later, the patient followed up with worsening right thigh swelling and pain following a recent escalation of his physical therapy. A repeat CT scan revealed a recurrent 18 cm intramuscular fluid collection with vessel enhancement and mild fat stranding. A second incision and drainage was performed with evacuation of approximately 1300 mL of old hematoma; cultures were sent at that time and the patient was discharged home. Unfortunately, the patient presented again with recurrent bleeding several

days later. Given that the patient had failed conservative management multiple times, the decision was made to proceed to the operating room (OR) for hematoma evacuation and wound exploration. Intraoperative findings were remarkable for a 5 x 4 x 4 cm peri-hematoma mass, which was sent for pathology. He returned to the OR several days later for washout and closure of the right posterior thigh wound with Jackson-Pratt (JP) drain placement.

Analysis of the excised specimen revealed fibrin, blood clot, and associated 4 x 2 x 2 cm irregular, flat, partially circumscribed appearing white fibrous connective tissue. Microscopic analysis was consistent with undifferentiated pleomorphic sarcoma, previously known as malignant fibrous histiocytoma, storiform pleomorphic type (Figure 2). Metastatic workup included a CT of the chest, abdomen, and pelvis. Oncology was consulted for evaluation, and recommended outpatient follow-up with an orthopedic oncologist at a large tertiary care center.

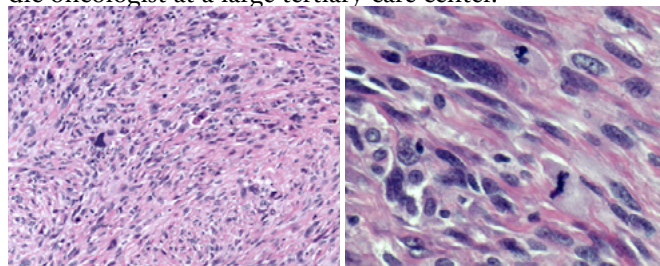


Figure 2. An undifferentiated pleomorphic sarcoma with marked nuclear atypia and increased mitotic activity

Discussion

Soft tissue sarcomas (STS) are a heterogeneous group of neoplasms with mesenchymal origin. There are more than 100 histological subtypes of STS and can occur anywhere. The majority occur in the extremities (75 percent), most commonly the thigh. Around 10 percent are located each in the trunk wall and retroperitoneum.^{1,2} Accurate and prompt diagnosis of STS is frequently delayed due to its rarity in addition to patient and physician assumption of benign etiology.³ A soft tissue mass is 100 times more likely to be benign than malignant, a statistic that impacts the sensitivity for the detection of STS.¹ Surgical excision is the primary treatment of STS with adjuvant or neo-adjuvant adjuncts employed as needed based on staging.² Special consideration is paid to preservation of limb functionality in extremity sarcomas. The achievement of negative surgical margins is the most important variable in determining adequate local control.² Positive margins are associated with increased risk of both local recurrence

and distant metastasis.³ In addition, a prospective review of 365 patients revealed that tumor depth was the most sensitive marker of metastatic disease.⁴

Our patient's clinical course was complicated by the presence of a muscular tear leading to recurrent hematoma that obscured the identification of STS and delayed diagnosis for a significant period. The initial CT that was obtained on presentation was read as "unable to exclude a soft tissue sarcoma." However, the patient's history in conjunction with an outpatient MRI that was consistent with an intramuscular hematoma presumptively eliminated malignancy from our differential diagnosis. This ultimately had a negative impact on our patient's outcome, as tissue biopsy should have been a paramount objective during initial operative management. Furthermore, it was likely that the margins of the mass were violated as a result of the multiple incision and drainage procedures that the patient underwent. This further complicated excision of the mass and subsequent analysis of anatomic pathology. However, once diagnosis of pleomorphic sarcoma was made, appropriate metastatic workup was initiated and remarkable for suspicious pelvic lymph nodes. Adequate steps were then made to refer the patient to appropriate oncological services and a more specialized multimodal treatment team.

Conclusion

Current literature recommends that patients with high suspicion of having an STS be referred to a specialized tertiary care center.¹ Initial approach to a soft tissue lesion must include a thorough assessment for atypical features in clinical presentation. MRI is the most useful test for the initial diagnosis of a STS and should be utilized as the primary imaging modality.² However, due to the low incidence of STS, a malignancy is unlikely to be incidentally identified. In our case, the delayed presentation of hematoma in a patient without anticoagulation therapy should have heightened our concern for underlying pathology.

Lessons Learned

Atypical presentations of benign processes with nonspecific CT findings should increase index of suspicion for STS. Referral to a dedicated tertiary center following proper evaluation with definitive diagnosis or inability to rule out the presence of STS is the primary step for plan of care. Recruitment of a specialized multimodal team should occur prior to surgical intervention.

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