Spontaneous, Chronic Expanding Posterior Thigh Hematoma Mimicking Soft-Tissue Sarcoma in a Morbidly Obese Pregnant Woman

Joshua S. Everhart, BS, Olukemi K. Fajolu, MD, and Joel L. Mayerson, MD

Abstract

Soft-tissue sarcomas are rare and often confused for more common and benign disorders during diagnosis. Chronic expanding hematomas are particularly difficult to distinguish from soft-tissue malignancy. We describe the case of a morbidly obese patient with a chronic expanding hematoma in the distal posterior thigh whose definitive treatment was delayed 6 months because of her pregnancy status and inability to lie prone for open biopsy.

Soft-tissue sarcomas are quite rare, with an annual incidence of 20 to 30 per 1,000,000 persons in the United States.[1] Because of their heterogeneous presentation, they remain a diagnostic challenge and are often initially confused for more common, benign disorders.[2] Chronic expanding hematoma, first described by Friedlander and colleagues[3] in 1968, is a rare entity that is particularly difficult to distinguish from soft-tissue malignancy.[3-5] Chronic expanding hematoma is defined as a hematoma that gradually expands over 1 month or longer, is absent of neoplastic change on histologic sections, and does not occur in the setting of coagulopathy.[6]

Typically associated with remote trauma, these lesions often present as a slowly growing mass on the anterior or lateral thigh, calf, or buttock.[3-4,7-9] They have been reported to persist as long as 46 years, with sizes ranging from 3 to 55 cm in maximum diameter.[7] On imaging, they have a cystic appearance with a dense fibrous capsule.[7-8] Most cases resolve uneventfully after drainage or marginal excision, although some cases require repeated intervention.[7] This case report describes a morbidly obese patient with a chronic expanding hematoma in the distal posterior thigh whose definitive treatment was delayed 6 months because of her pregnancy status and inability to lie prone for open biopsy. The patient provided written informed consent for print and electronic publication of this case report.

Case Report

A 27-year-old morbidly obese woman, who was pregnant at 12 weeks gestation, was seen in an orthopedic oncology clinic with a 1-month history of a slowly growing, painful posterior thigh mass. She had no history of cancer or bleeding disorder, and denied a history of trauma or constitutional symptoms consistent with malignancy. Coagulation studies were normal. Magnetic resonance imaging (MRI) obtained 2 weeks prior in the emergency room showed a cystic lesion with mass-like components in the posterior compartment of the distal right thigh, measuring 17 cm longitudinally. The lesion was located adjacent to, but not involving, the sciatic nerve and femoral vasculature. On initial examination, the large soft-tissue mass was evident and moderately painful to palpation; no skin changes were noted, and the patient had a normal sensorimotor examination. Fine-needle aspiration was performed, which resulted in amorphous debris consistent with hematoma.

Repeat MRI 2 months later showed increased size of the lesion (9.5×10.5 cm axial, 22.0 cm craniocaudal). Although most findings of a more extensive imaging protocol, including precontrast and postcontrast sequences, were consistent with hematoma, the lesion also had several characteristics that indicated soft-tissue sarcoma. Specifically, findings suggestive of chronic hematoma included the hyperintense short tau inversion recovery (STIR) T1/T2 signal of the cystic component consistent with proteinaceous fluid and the low STIR TI/T2 signal of the periphery consistent with a rim of hemosiderin (**Figure 1**). Additionally, the cystic component of the lesion had multiple fine septations that are atypical for a hematoma (**Figure 1**), and several lymph nodes greater than 1.7 cm in short axis were noted in the anterior thigh and hemipelvis that were suspicious of metastatic lymphadenopathy. The encapsulated appearance of the lesion with a sharply defined margin and short transition zone were also reassuring findings for a benign lesion (**Figures 1, 2A, 2B**). However, several findings were identi-

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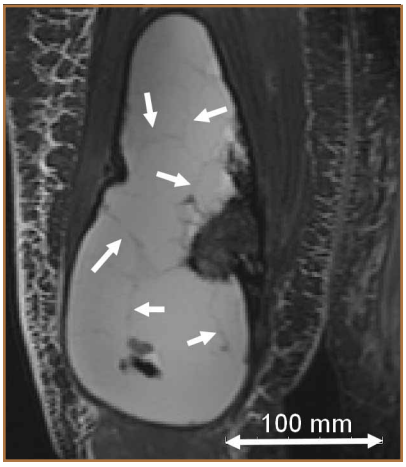

Figure 1. Coronal short tau inversion recovery image of the large posterior thigh mass. The mass has a hyperintense cystic component with a hypointense, encapsulated rim with sharp margins and a short transition zone, which are consistent with chronic hematoma. However, the nodular soft-tissue component on the medial wall and fine internal septations (white arrows) may indicate soft-tissue sarcoma.

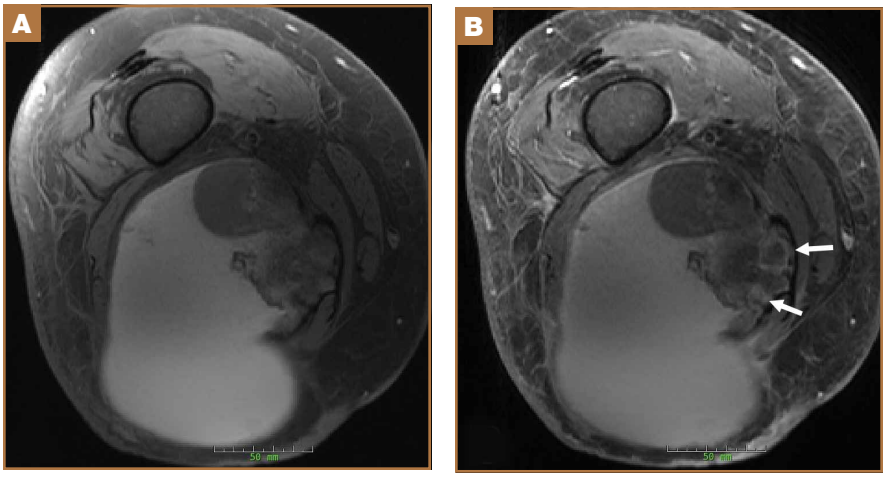

Figure 2. Axial T1 turbo spin-echo images with fat suppression, (A) precontrast and (B) postcontrast. The mixed cystic and nodular soft-tissue components of the lesions are again shown. Subtle heterogeneous enhancement of the soft-tissue component is shown (white arrows) and may be symptomatic of soft-tissue sarcoma.

fied that suggested soft-tissue sarcoma, including a nodular soft-tissue component on the medial wall of the lesion that had heterogeneous enhancement with contrast (**Figure 2B**). We, therefore, proceeded with ultrasound-guided core needle biopsy of the mass and cytologic sampling of the fluid components, which were again consistent with hematoma; no evidence of internal vascular flow was noted on Doppler ultrasound. Ultrasound-guided right inguinal lymph node biopsy was also performed and was negative for malignancy. Because of her large body habitus and pregnancy status, it was agreed that open biopsy should be delayed until after delivery to avoid placing the patient in a prone position.

The patient visited the emergency room several times during the following months because of intermittent exacerbations of her lower extremity pain, swelling, and occasional paresthesias. About 6 months after initial presentation, repeat MRI again showed increased size of the mass (13.5×13.5 cm axial, 28 cm craniocaudal). There was also increased displacement of the adjacent neurovascular structures but no evidence of deep vein thrombosis. Because of concerns about the increased symptomatology of her thigh mass and possible sampling error of the previous biopsies, an elective cesarean section was performed at 35 weeks gestation. One week later, after clearance by her obstetrician, we proceeded with open biopsy of the mass in prone position. Initial sampling was negative for malignancy on frozen section; then, we expressed 1.75 L of brown fluid and solidified blood products, irrigated copiously, and placed a surgical drain. The permanent histologic specimens were again consistent with hematoma, and microbial cultures were negative. A week later, the patient accidentally removed her drain, and she presented with a fever (101°F) on postoperative day (POD) 15. Computed tomography showed reaccumulation of fluid; duplex ultrasound was negative. She was placed on cephalexin and underwent ultrasound-guided replacement of the drain with removal of an additional 750 mL fluid on POD 20. She drained an additional 150 to 200 mL/d for 1 month, with marked improvement in her leg swelling and knee range of motion. The drainage decreased during the next 3 weeks, and the drain was removed on POD 75.

Discussion

The presence of a hematoma in the extremities is usually a straightforward diagnosis. However, the unusual circumstances of this case highlight all the indications for investigation for possible soft-tissue sarcoma when a patient presents with what appears to be a benign condition.

Hematomas are rare in the absence of trauma or coagulopathy, with chronic expansion of hematomas rarer still.[4,7,10-11] The patient had no evidence of coagulopathy because of her ability to have an uncomplicated pregnancy and elective cesarean section. She denied a history of trauma, and the location of her hematoma at the posterior distal thigh is an uncommon site of injury. In this setting, fine-needle aspiration and serial imaging to assess for progressive increase in lesion size were indicated to rule out malignancy.[2]

MRI is the gold-standard imaging modality for distinguishing soft-tissue masses from hematomas.[5,12-14] Unlike the typical appearance of a hematoma, sarcomas of the soft-tissue extremities are often complex cystic lesions with multiple septations, internal soft-tissue components, and relatively ill-defined margins.[15-17] However, as a hematoma becomes chronic, it can develop a fibrinous capsule, and the contents can manifest an atypical, heterogeneous appearance from scattered, progressive accumulation of blood products that is essentially indistinguishable from sarcomas on imaging.[5]

Because of the expansion of the hematoma and the atypical

appearance of the mass on imaging, repeated core biopsy and, eventually, open biopsy were indicated, despite a preliminary negative diagnosis based on fine-needle aspiration. This resulted from the possibility of sampling error that is particularly relevant to cystic sarcomas, because only portions of the mass may be composed of malignant cells.[2] An unusual aspect of this case is the regional lymphadenopathy noted on MRI, because regional lymphatic spread is a known mechanism of metastasis in soft-tissue sarcomas.[18] However, the inguinal biopsies showed a chronic inflammatory infiltrate and were negative for malignancy, and enlarged nodes were not seen on imaging several months later. It is possible that the lymphadenopathy resulted from an unrelated process; alternatively, it may have been secondary to impaired lymphatic drainage because of mass effect from the hematoma, which also caused temporary lower extremity swelling.

The distal posterior thigh is an unreported location for a chronic expanding hematoma. Our patient developed slowly progressive lower-limb swelling and, eventually, paresthesias because of displacement of the neurovasculature, an unusual sequela that was recently reported in a similar case of an acute spontaneous hematoma in a patient on warfarin.[19] Rupture of a Baker cyst is a possible inciting factor in our patient, although the proximal location of the lesion and the clearly defined tissue plane on MRI between the hematoma and the popliteal region make this unlikely. Finally, the patient's lesion showed no evidence of vascular flow on Doppler ultrasonography, although giant hematomas secondary to popliteal aneurysm rupture have been reported.[20-22]

Conclusion

This case highlights the features of a chronic expanding hematoma that can suggest soft-tissue sarcoma and shows the recommended diagnostic steps to differentiate the 2 conditions. This case also describes an unreported location for a chronic expanding hematoma with resulting progressive neurovascular displacement caused by mass effect. We recommend careful monitoring of patients with similarly expansile lesions in this region for signs of neurovascular compromise.

Mr. Everhart is Resident, Department of Orthopaedics, The Ohio State University College of Medicine, Columbus, Ohio. Dr. Fajolu is Attending Physician, LESS Institute, Fort Lauderdale, Florida. Dr. Mayerson is Associate Professor of Orthopaedics, The Ohio State University College of Medicine; Director of Musculoskeletal Oncology, Arthur James Cancer Hospital at Ohio State University; Program Director for the Orthopaedics Residency Program; and Co-Director of the Bone Tumor Clinic, Nationwide Children's Hospital, Columbus, Ohio.

Address correspondence to: Joel L. Mayerson, MD, The Ohio State University Wexner Medical Center, 725 Prior Hall, 376 West 10th Avenue, Columbus, OH 43210 (tel, 614-293-4420; fax, 614-293-3747; e-mail, Joel.Mayerson@osumc.edu).

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