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Topics in Diagnostic Imaging

Clinical and Sonographic Evaluation of a Lower Extremity Angioleiomyoma in a 52-Year-Old Woman

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Abstract

Objective: The purpose of this case study is to describe the role of sonographic examination in the initial evaluation of an angioleiomyoma and to discuss the characteristic findings associated with this soft tissue mass.

Clinical Features: A 52-year-old woman presented with a large, tender, erythematous mass on the anterolateral aspect of her right knee. Sonographic examination revealed a highly vascular mass within the subcutaneous tissues. Differential considerations included benign soft tissues masses such as angioleiomyoma and hemangioma.

Intervention and Outcomes: Surgical consultation was recommended. Excisional biopsy was performed. Histopathological examination confirmed the diagnosis of angioleiomyoma.

Conclusion: Although ultrasonographic findings of a superficial soft tissue mass may be nonspecific, when a highly vascular, well-defined, slow-growing mass is present, angioleiomyoma should be included in the differential diagnosis.

Introduction

Angioleiomyoma is a rare, benign, soft tissue tumor that arises from the tunica media of a vessel.[1] These tumors measure an average of 2.0 cm, are mobile, and are usually painful. It presents in the second to sixth decade of life, is more common in females, and most commonly presents in the lower extremity.[2,3] The mass can be dermal or subcutaneous, or may occur in the superficial fascia of the extremities.[4] Pain is documented as a primary concern in 60% of patients.[4–6] Three subdivisions

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of angioleiomyoma exist: solid, cavernous, and venous, with solid being the most common.[7] The definitive diagnosis of an angioleiomyoma requires a biopsy with histopathological examination using smooth muscle actin stain. Histologically, angioleiomyoma exhibits bundles of smooth muscle cells surrounding the blood vessels.[6] Sonography is often used for the initial imaging examination, and excision is the most common treatment for this condition.[5]

Masses in the superficial musculoskeletal soft tissues are a common clinical encounter and may pose challenges in their differential diagnosis. The purpose of this case report is to describe the clinical presentation, differential diagnosis, and sonographic features for this rare soft tissue mass.

Case Report

A 52-year-old woman presented for care at a chiropractic teaching clinic with a chief concern of low back pain and lower extremity radiation. The patient underwent a discectomy 5 years prior. Following her clinical evaluation, a diagnosis of lumbar radiculopathy was rendered, and the patient began treatment, which consisted of lumbar spine manipulation and extension exercises for centralization of radicular symptoms. Following a month of treatment, the lumbar pain improved. Through the course of treatment for low back pain, a secondary concern of right knee pain was evaluated. During knee examination, a subcutaneous mass was noted. The mass was located on the anterolateral aspect of the right knee, several centimeters cephalad to the joint. It was tender, warm, erythematous, and edematous. The patient stated that direct pressure resulted in discomfort and a dull ache persisted inferior to the patella. Walking relieved the pain, whereas remaining sedentary and rising from a seated position increased the knee pain. Four years prior to presentation at our clinic, an orthopedic surgeon noted the mass during a surgical consultation for a right meniscus repair. A right meniscal repair was performed, but the mass was not evaluated during the course of the meniscal workup. The surgeon opted to temporize, and a diagnosis regarding the mass was not rendered. The patient reported interval growth of the mass since the orthopedic consultation.

The patient was referred for sonographic evaluation of the mass. Sonographic examination (GE Logiq E9; GE Healthcare, Wauwatosa, WI) revealed a solid, large, heterogeneously hypoechoic mass within the subcutaneous layer on the anterolateral aspect of the right knee superior to the lateral femoral condyle (Fig 1). There were no internal calcifications. Well-defined and lobulated borders were noted, without evidence of invasion into the adjacent dermis or subcutaneous fat. The mass measured 3.7 cm long, 2.6 cm wide, and 1.7 cm anterior to posterior. Power Doppler sonographic examination revealed disorganized hypervascularity penetrating the superficial area of the mass consistent with a pattern of type 2 vascularity (Fig 2). The vascularity involved greater than 50% of the mass. Enlarged draining veins within the subcutaneous fat were present. Imaging findings by sonography could not exclude a malignant lesion, and surgical consultation was advised. Tricompartmental osteoarthritis was also diagnosed in addition to the mass during sonographic evaluation.

Following surgical consultation, excisional biopsy of the mass was recommended. Histopathological examination following excision revealed a well-circumscribed tumor with uniform spindle cells and thickened blood vessel walls. Immunohistochemical stains revealed spindle cells positive for vimentin and smooth muscle actin, and negative for S-100 (ie, useful as a cellular marker for certain tumors). There was no evidence of mitosis or necrosis upon examination to suggest rapid cellular growth. These criteria, from the histopathological examination, were consistent with a benign vascular angioleiomyoma.[8] Postoperatively, the patient reported a reduction in pain and began an exercise regimen with specific rehabilitation exercises targeting her knee osteoarthritis. The patient discussed in the following case gave written consent for publication of deidentified images and clinical data.

Discussion

Angioleiomyoma represents 5% of all benign soft tissue tumors.[9] The tumor is most commonly seen in the lower extremity of females but is impossible to

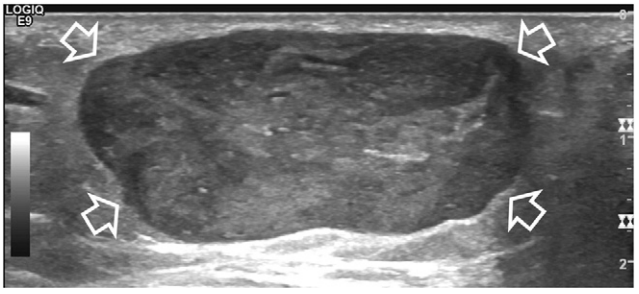

Fig 1. Longitudinal sonographic image demonstrates a solid, well-defined, homogenously hypoechoic mass (outlined by open arrows) within the subcutaneous tissues. The top of the image is superficial, and the left of the image is proximal. The scale on the right side of the image is in centimeters.