AMERICAN JOURNAL OF DIAGNOSTIC IMAGING, 2019
VOL 5, NO. 1, PAGE 1–3
10.5455/ajdi.20181001021931

CASE REPORT

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Primary muscle lymphoma in an elderly patient: Ultrasound and magnetic resonance imaging findings

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ABSTRACT

Muscle lymphoma is a rarely seen disorder and it constitutes 0.1–1.4% of all extranodal lymphomas. It may be seen as the intramuscular involvement of disseminated disease, as an extension from adjacent bone or lymph nodes or as primary extranodal lymphoma. An 83-year-old female patient presented with the complaint of pain and swelling at her right calf. Ultrasound (US) examination of the region demonstrated a hypoechoic appearance of the affected muscle and subcutaneous tissue. Magnetic resonance imaging of the right calf demonstrated the long segmental involvement of the flexor digitorum longus muscle and the adjacent subcutaneous tissue with the increased T2 signal, vivid enhancement, and diffusion restriction. US-guided core needle biopsy of the muscle was performed and histopathological evaluation demonstrated a B-cell lymphoma. Further imaging workup with computed tomography for staging purpose revealed no other organ/system or nodal involvement. The patient was diagnosed with primary muscle lymphoma and received chemotherapeutic drugs.

ARTICLE HISTORY

Received October 01, 2018
Accepted November 16, 2018
Published December 23, 2018

KEYWORDS

Lymphoma; skeletal muscle; soft tissue; ultrasound; magnetic resonance imaging

Introduction

Muscle lymphoma may be encountered in one of the three ways: as a part of the disseminated disease, as an extension from adjacent bone or lymph nodes, or rarely as a primary extranodal disease [1]. Secondary muscle lymphoma from adjacent bone or lymph node, or muscular manifestation of disseminated disease is common; however, primary muscle lymphoma is a very rare entity [2,3]. In this report, we reported a geriatric patient with primary muscle lymphoma presenting with pain and swelling at her right calf.

Case Presentation

An 83-year-old patient presented with painful swelling at her right calf. Medical history was unremarkable. Her laboratory findings and physical examination, including lower extremity pulses were also normal. No sign of deep venous thrombosis was identified. Ultrasound (US) examination of the region performed with a 12 MHz probe demonstrated the hypoechoic appearance of the flexor digitorum longus muscle (Fig. 1). Magnetic resonance imaging (MRI) performed on a 3T machine (Ingenia, Philips Healthcare, Best, The Netherlands) showed thickening and increased T2 signal in flexor digitorum longus muscle with infiltration to the adjacent subcutaneous fat tissue (Fig. 2). The muscle and the subcutaneous fat involvement enhanced homogeneously after gadolinium administration. The abnormal muscle had restricted diffusion on diffusion-weighted images (DWI). Patient was scheduled to undergo an US-guided core needle biopsy and histopathological examination demonstrated a B-cell lymphoma. Further evaluation using computed tomography (CT) confirmed that the disease was limited to the right calf. Patient started to receive chemotherapy with a final diagnosis of primary muscle lymphoma.

Discussion

Lymphoma of the skeletal muscle constitutes 0.1%–1.4% of all extranodal lymphomas and 1.2%

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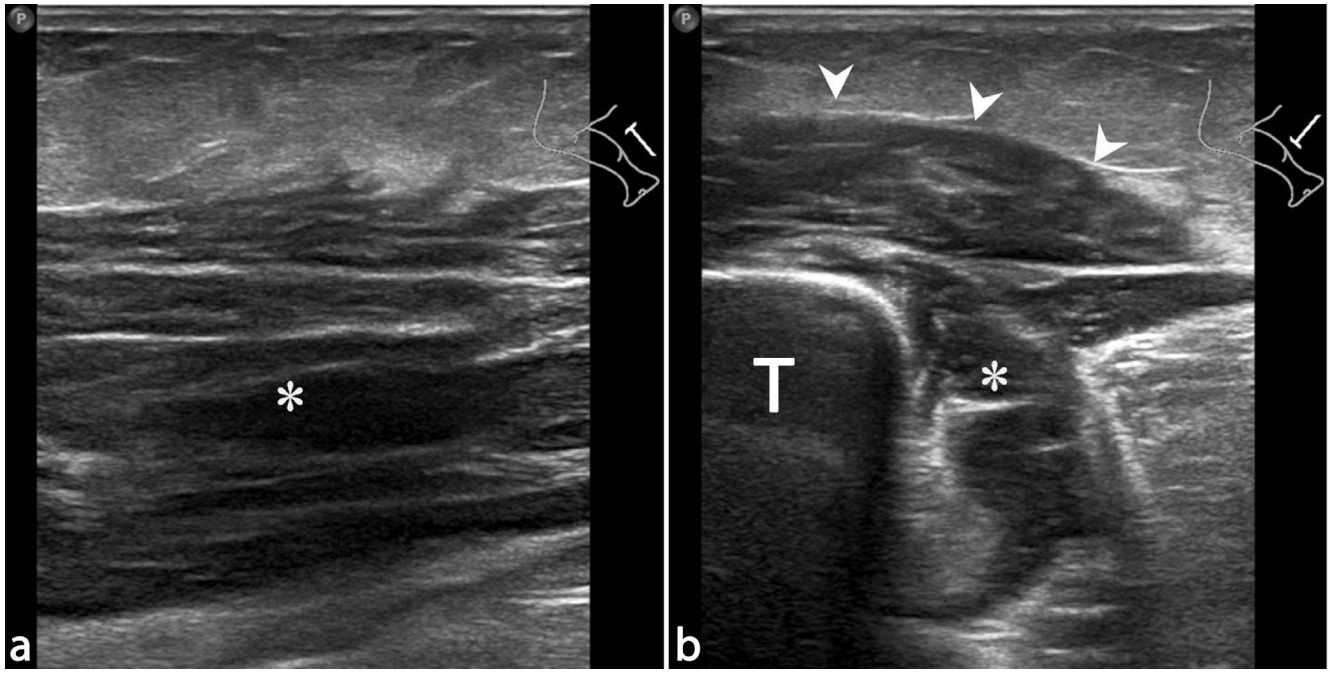


Figure 1. (a) Longitudinal and (b) transverse US images of the right calf demonstrate hypoechoic appearance in the flexor digitorum longus muscle (asterisk) and adjacent subcutaneous fat tissue (arrowheads) without any mass effect or muscle distortion. Subcutaneous tissue involvement is also seen (arrowheads).

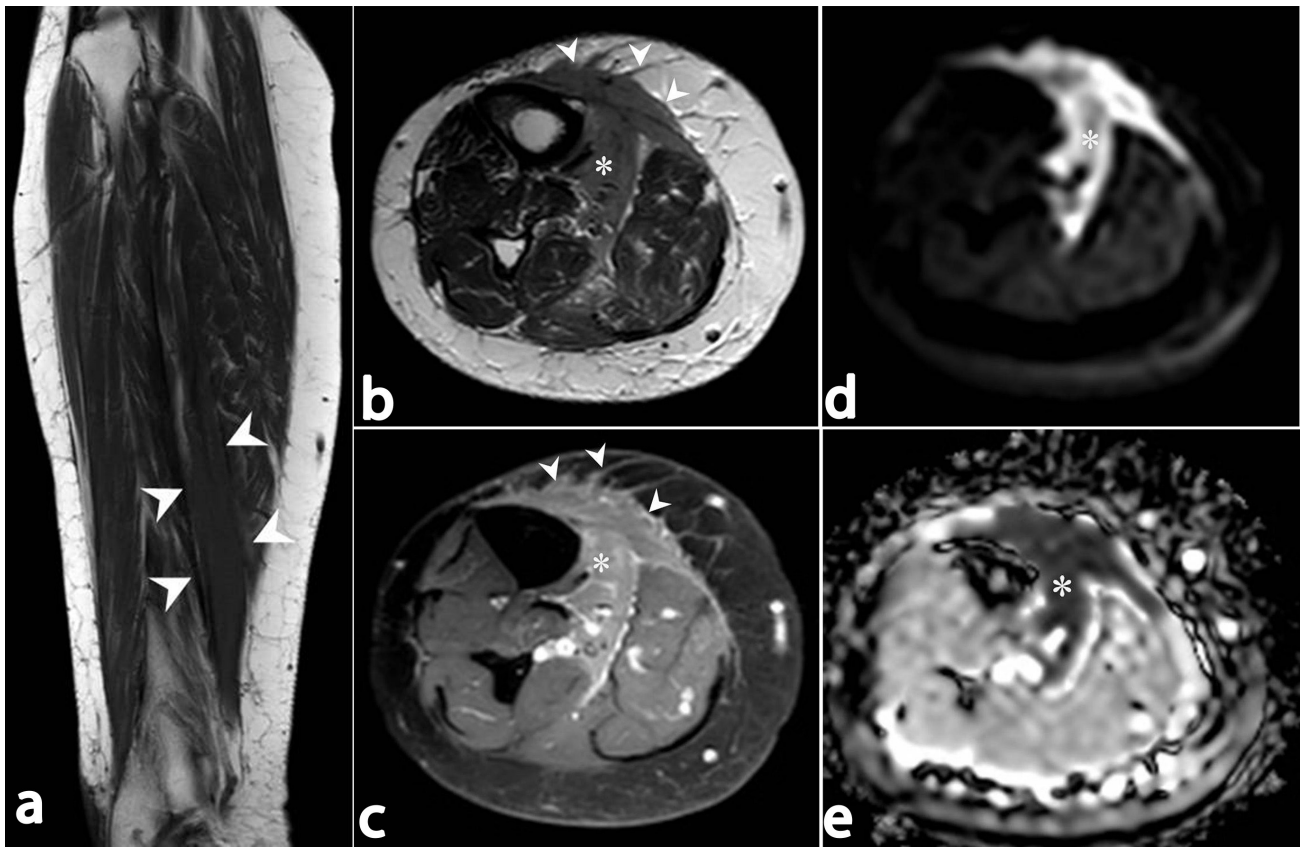


Figure 2. MRI of the right calf. (a) Coronal T1-weighted image shows the isointense appearance of the flexor digitorum longus muscle (arrowheads). (b) Axial T2-weighted MR image shows increased signal in the muscle (asterisk) and adjacent subcutaneous fat involvement and stranding (arrowheads). (c) Axial fat-suppressed contrast-enhanced T1-weighted image demonstrates homogeneous contrast enhancement (asterisk). Subcutaneous fat stranding is also seen (arrowheads). (d and e) DWI obtained with a *b* value of 800 s/mm^2 and apparent diffusion coefficient map demonstrate restricted diffusion in the muscle (asterisk).

to 2% of malignant muscular tumors [2–5]. Thigh, calf, and upper extremities are the most affected areas [6]. Local muscle pain and swelling are the most commonly seen symptoms; however, localized muscle wasting, acute rhabdomyolysis, and compartment syndrome may also be seen [2]. Muscle lymphomas may be seen as intermuscular or intramuscular masses and most of them are seen as a diffuse enlargement of the affected muscles [2,6]. The involved segment is usually greater than 15 cm in length. Adjacent subcutaneous fat involvement with skin thickening is very common [1,7]. These features help to differentiate muscle lymphoma from other soft tissue tumors which are rarely observed in other malignant tumors involving muscle.

Imaging features suggest that a muscle lymphoma which shows a long segmental or multi-compartmental involvement, deep fascial involvement, the presence of traversing vessels within the lesion, subcutaneous fat stranding, and skin thickening [1]. On MRI, the involved muscles show enlargement without necrosis or hemorrhage, and are seen isointense on the T1-weighted images, and hyperintense on T2-weighted images [8,9]. They enhance homogeneously after the gadolinium administration [1]. Significant diffusion restriction is seen on DWI [10]. Nonspecific CT features are the isodense appearance to skeletal muscle, the absence of calcification, and homogeneous contrast enhancement [1,6]. Radiographs may demonstrate soft tissue fullness or mass but they are usually normal [6]. Muscle lymphomas are seen as hypoechoic masses on the US [2].

Conclusion

Muscle lymphoma should be included in the differential list in patients presenting with soft tissue mass arising in muscle. If lymphoma is suspected, further evaluation with CT of the body is needed, whereas, CT of the chest is enough for the staging of soft tissue sarcomas. Clinicians and radiologists dealing with geriatric population should be familiar with this rare entity.

Funding

None.

Conflicts of interest

The authors declare that they have no conflict of interest.

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