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Case report

Proliferative myositis: case report and review of the literature ☆,☆☆

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ABSTRACT

Proliferative myositis is a rre benign pseudosarcomatous inflammatory process that rapidly grows in muscles. Its clinical and radiological features may, however, simulate a malignant tumor. We report ultrasound and MRI appearances of a 63 years-old woman with no significant anterior pathological history presented to our radiology department with two weeks history of a painful mass in the left musculus latissimus dorsi, increasing progressively in size, without history of recent trauma. This study describes the imaging features of these pseudo inflammatory process, which may help to suggest the diagnosis, but the imaging finding are variable and nonspecific. However, histopathological examination is usually recommended to confirm the diagnosis. In our case, the final diagnosis was proved by ultrasound-guided biopsy. We also review the imaging features of this entity in the current literature.

Introduction

Proliferative myositis is a rare pseudosarcomatous inflammatory process, intramuscular benign tumor that may clinically mimic malignant one. Patients with proliferative myositis have a median age of 50 years, without gender predominance [1].

The preferred locations for proliferative myositis are the muscles of the shoulder, the upper limb, the trunk, the head and the neck [1]. They appear as a single mass, solid and painful, doubling in size in a few days or weeks [1].

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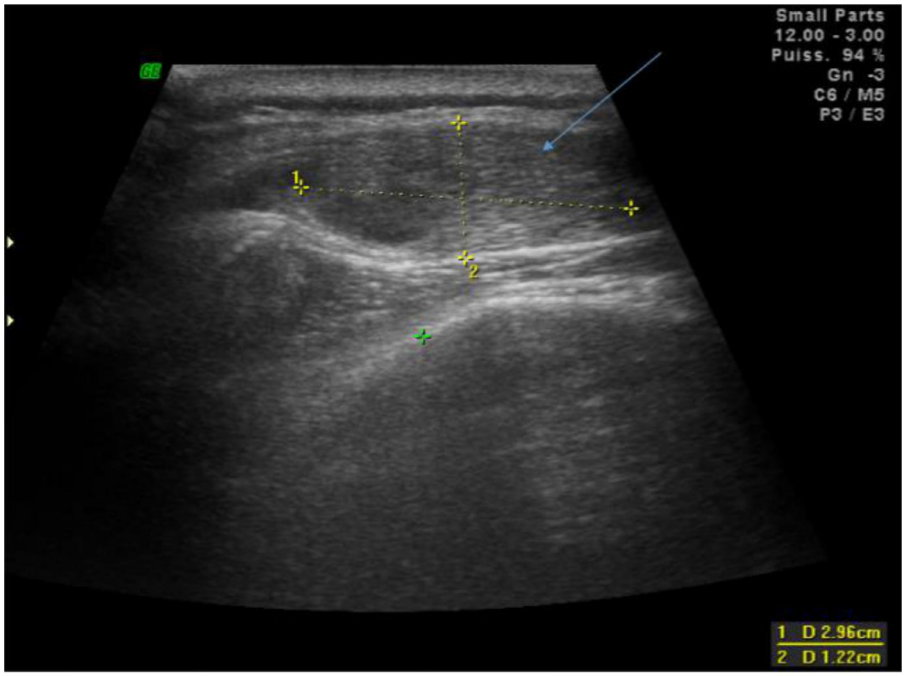


Fig. 1 – Ultrasound appearance of proliferative myositis. Longitudinal ultrasound image demonstrated the heterogeneously echogenic mass with traversing continuous muscle fibers.

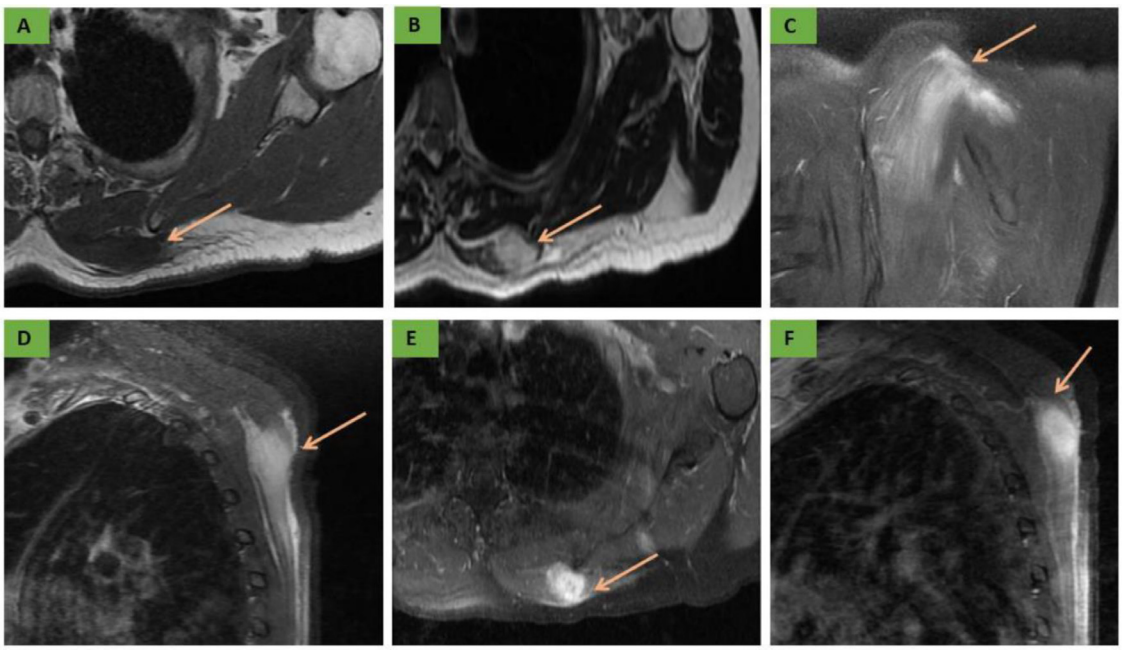


Fig. 2 – MRI appearances of proliferative myositis. • Mass developed within the large musculus latissimus dorsi, presented with iso signal to the muscle on axial T1 weighted images (A), hypersignal on axial T2 weighted images (B). • The pattern of preserved continuous muscle fibers is a specific finding in PM more marked on coronal DP (C), and sagittal DP (D) with fat saturation. • The sequences after intravenous administration of gadolinium (E, F) showed homogeneous enhancement of the lesion.

The entity was first described by Kern in 1960 [2]. The major differential etiology is the sarcoma, which requires a different surgical approach [3]. Imaging findings in proliferative myositis have been described in a few case reports [4].

We describe the ultrasound appearance, the MRI findings which help to approach the diagnosis, but the certain diagnosis was proved by ultrasound-guided biopsy.

Case presentation

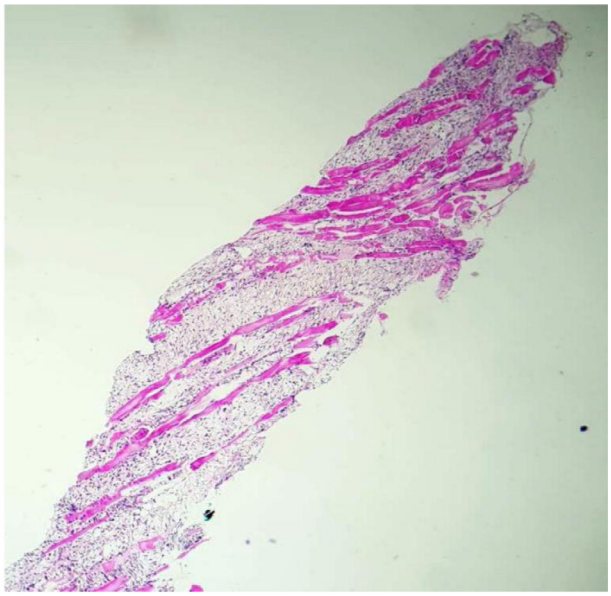
A 63 years-old woman with no significant anterior pathological history presented to our radiology department with a painful mass in the left musculus latissimus dorsi, evolving for 2 weeks ago, and increasing gradually in size, without history of recent trauma. Physical examination revealed a solid mass of 4 to 6 cm in the posterior side of the shoulder. Although the corresponding skin was normal. Routine laboratory tests were negative.

Transverse ultrasound image demonstrated the heterogeneously echogenic mass within the large musculus latissimus dorsi with gross preservation of its normal fibrillary pattern (Fig. 1)

MRI showed a well-defined mass in the posterior side of the shoulder at the expense of the large musculus latissimus dorsi. The lesion has the same signal of the skeletal muscle with similar appearance to muscle on T1 weighted images (Fig. 2A) and homogeneously hyper intense on axial and proton density weighted images (Fig. 2 B, C and D).

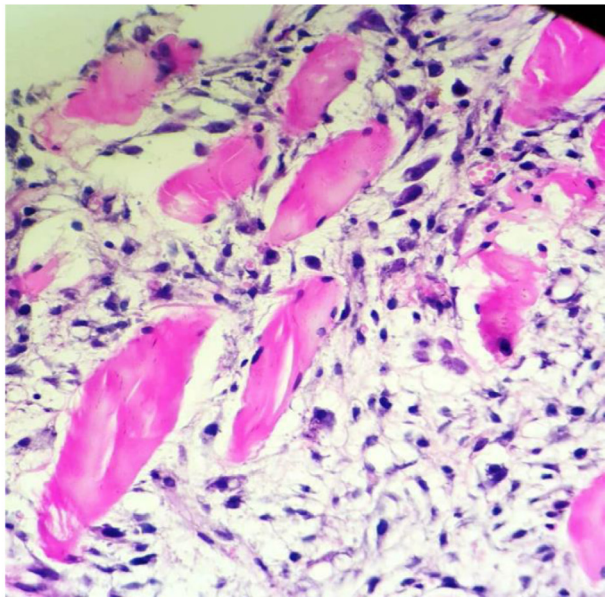
HESx100:

Carrot biopsy showing diffuse proliferation



HESx400

Fusiform tumor cells with finely nucleolated nuclei. The cells are arranged on a myxoid background and infiltrate a few striated muscle fibers with presence of large eosinophilic ganglion-like cell.



MRI also showed continuous muscle fibers within the lesion more marked on coronal proton density images (Figure 2 C). There was no sign of hemorrhage nor adjacent bones abnormalities were seen.

Imaging performed after intravenous administration of gadolinium revealed a huge homogeneous and ill-delimited enhancement of the lesion (Fig. 2 E and F).

These results suggest significant edema in the muscle and fascia, as well as an ill-defined intramuscular lesion suggesting an inflammatory process, although a neoplasm cannot be excluded.

After a multidisciplinary discussion, histological confirmation by ultrasound-guided biopsy was considered necessary.

Pathological examination revealed a proliferation of cells that adopt a morphology similar to fibroblast-like. These cells were placed on a myxoid background rich in small, thin-walled vascular structures. This proliferation infiltrated striated muscle fibers with presence of large eosinophilic ganglion-like cell.

An immunohistochemical complement was performed and in conclusion, the histological and immunohistochemical aspect was compatible with proliferative myositis.

Discussion

This entity is considered to be one of a large category of benign sarcomatous lesions including proliferative fasciitis, nodular fasciitis and intravascular fasciitis. PM classically presents with symptoms of a rapidly growing intramuscular mass, which may or may not be painful. The median age of presentation is 50 years with common locations including the trunk and extremities, although cases have been reported in the pediatric population [4].

The etiology of PM is still not identified, but a history of recent trauma was noticed in some cases [5]. Other potential causes including ischemia, vasculitis, and chromosomal abnormalities were described [5].

Differential diagnoses of proliferative myositis contain common entities including trauma and ossifying myositis, but also more rare diagnoses such as inflammatory myopathies and malignancies. Although benign, the significance of PM resides in its fast growth rate, which can be make a clinical confusion with soft tissue neoplasms such as sarcomas [5].

The PM appears as a non-specific intramuscular inflammatory process on various imaging modalities [5].

Given the often-superficial nature of the muscle ultrasound is the first modality for initial characterization [5]. Ultrasound finding include a “scaffolding” pattern on longitudinal views or “checkerboard” pattern on transverse views [6]. These patterns are thought to represent hyperechoic muscle with intersecting edematous and hypoechoic connective tissue that may be analogous to the "checkerboard" pattern observed during macroscopic pathological examination [6].

Different ultrasound finding of proliferative myositis revealed an inhomogeneous intramuscular mass that may contain calcifications suggesting ossificans myositis. The appearance of a well-defined, lobulated, expansive intramuscular lesion suggestive of a tumor has also been described [6].

CT usually showed a mass that is hypo- or isoattenuation relative to the skeletal muscle, and contrast enhancement may be homogeneous, heterogeneous, or absent. Hasan et al, however, reported a case of proliferative myositis that presented linear reticulated hypodensities on CT characteristic of the “checkerboard-like” pattern [7].

MRI finding of PM have been reported in several cases, with a hypo- or similar signal compared to the muscle on T1-weighted image, with homogeneous enhancement [4]. T2-weighted MR images typically reveal a hyperintense soft-tissue mass [4].

This is not clearly stated in the literature, but it must be possible for her to be in close contact with fascia, such as nodular fasciitis [4].

The MRI appearance of proliferative myositis is often more evocative of a myositis inflammatory than of a tumor: [5,8]. Its limits are indistinct (oedema) suggesting an inflammatory process [8]. This process can take the form of a fusiform mass well defined by the muscle fibers or an enlarging soft tissue (in particular intramuscular) mass, that appears in hypo or iso signal compared to the muscle on T1- weighted sequences [8]. On T2 weighted sequences, the lesion appears hyperintense, with linear hypointense structures, corresponding to Preserved muscle fibers within the mass [8]. This preserved continuous muscle fibers are a specific finding, not described in other similar diagnoses or in soft tissue malignancies [5]. Identifying the preserved continuous muscle fibers within the mass, was also considered to be the key to the diagnosis of proliferative myositis [5]. The homogeneous enhancement of PM can also help to distinguish it from a traumatic injury, which is often more heterogeneous [5].

Once the diagnosis has been established, the recommended follow-up strategy is no specific treatment, since PM may disappear spontaneously. Excision may be indicated to assess a diagnosis and for cosmetic reasons. Recurrence is extremely rare [4].

The differential diagnosis included traumatic muscle injury with hematoma, infectious myositis, myositis ossificans, and soft tissue neoplasm.

Myositis ossificans appear as a post-traumatic intramuscular mass and can be identified by its MRI enhancement and peripheral calcifications in the subacute stage. After two weeks injury some calcifications can be revealed on radiographs and appear as a hypointense rim on MRI T1- and T2- weighted sequences. In the acute phase, however, myositis ossificans may appear nonspecific with reported cases of homogeneous enhancement that make it impossible to distinguish from PM [5].

Two primary aspects of PM are seen in histopathology: infiltration of the muscle with large eosinophilic giant cells that resemble ganglion cells and proliferative fibroblasts-like primarily affecting the interfascicular connective tissue. Unlike other similar pathologies such as myositis ossificans or nodular fasciitis, the actual muscle was rarely involved and largely preserved [5]. It is this pattern of normal muscle fascicles interspersed with infiltrating fibrous tissue that leads to the classic “checkerboard” pattern of proliferative myositis [5].

Conclusion

Proliferative myositis is an important consideration in the differential diagnosis of a rapidly growing soft tissue (in particular intramuscular) mass. It's a benign pseudo sarcomatous inflammatory process that may clinically mimic malignancy. The clinical history combined with imaging features, specifically the MRI finding, may be useful to suggest the diagnosis of proliferative myositis. However, ultrasound guided biopsy should be performed to make the diagnoses of certainty, which can avoid a radical surgery.

Patient consent

Oral and signed consent was obtained from the patient concerned. The study was conducted anonymously

Availability of data and materials

The data sets are generated on the data system of the CHU hassan II of Fes, including the data of the anatomopathological analysis.

REFERENCES

[1] Pagonidis K, Raissaki M, Gourtsoyiannis N. Proliferative myositis: value of imaging. J Comput Assist Tomogr 2005;29(1):108–11.
[2] Kern WH. Proliferative myositis: a pseudosarcomatous reaction to injury. Arch Pathol 1960;69:209–16.
[3] Enzinger FM, Dulcey F. Proliferative myositis. Report of thirty-three cases. Cancer 1967;20(12):2213–23.
[4] Demir MK, Beser M, Akinci O. Case 118: proliferative myositis. Radiology 2007;244(2):613–16.
[5] Shi J, Lewis M, Walsworth MK, Modaressi S, Masih S, Chow K. Proliferative myositis. Appl Radiol 2018;47(1):43–5.
[6] Wlachovska B, Abraham B, Deux JF, et al. Proliferative myositis in a patient with. AIDS. Skeletal Radiol 2004;33:237–40.
[7] Yiğit H, Turgut AT, Koşar P, Astarci HM, Koşar U. Proliferative myositis presenting with a checkerboard-like pattern on CT. Diagn Interv Radiol 2009;15(2):139–42.
[8] Jarraya M, Parva P, Stone M, Klein MJ, Guermazi A. Atypical proliferatve myosits: original MR descripton withpathologic correlaton: case report. Skeletal Radiol 2014;43:1155–9.