CHARACTERISTIC MR IMAGING FINDINGS OF PROLIFERATIVE MYOSITIS

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ABSTRACT

Aims: Proliferative myositis (PM) is a rare benign inflammatory. The aim of this paper is to present the characteristic magnetic resonance imaging (MRI) findings of PM, and thus to avoid the pitfalls of overdiagnosis.

Case report: A 56-year-old male patient presented to the orthopedic clinic with a 2-week history of a painful mass in his left thigh without a history of trauma, fever, or neurovascular symptoms. Physical examination revealed an ill-defined palpable mass at the root of his left thigh, without overlying skin changes. MRI was performed, which revealed an ill-defined, approximately 1.9×2.5×5.2 cm sized, oval-shaped mass in the left sartorius muscle. This mass was empirically diagnosed as malignancy and a radical surgery was recommended. Finally, the lesion was diagnosed as PM by histopathology after surgery. The patient was well and asymptomatic with a follow-up of 9 months.

Conclusions: PM can easily be misdiagnosed as malignancy because of the clinical history of the rapidly growing mass. Characteristic MRI findings can be helpful for radiologists to avoid misdiagnosis of a malignant tumor.

Key words: Magnetic resonance image, Proliferative myositis.

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Introduction

Proliferative myositis (PM) was first described by Kern in 1960(1). It is a rare benign nonneoplastic reactive lesion of soft tissue. It occurs primarily in adults between 40 and 70 years without gender predilection. The etiology of PM is obscure, but subclinical trauma or ischemia are suspected as initiating events(2). It usually appears as a solitary, ill-defined, rapidly growing, painful soft tissue mass(3).

The majority of cases arise in the muscle of the trunk and extremities, and less commonly in the thigh. Radical surgery is the first choice of treatment. The prognosis of PM is excellent.

We report a rare case of PM in which the magnetic resonance imaging (MRI) presentations have characteristic features. We believe this MRI appearance should be known to radiologists in order to make accurate diagnose and narrow the differential diagnoses.

Case presentation

A 56-year-old male patient presented to the orthopedic clinic with a 2-week history of a painful and rapidly growing mass in his left thigh without a history of trauma, fever, or neurovascular symptoms. Physical examination confirmed a solitary, firm, ill-defined, painful mass approximately 3×5 cm in the sartorius muscle of left thigh. The rest of physical examination was normal. Conventional radiography and laboratory studies did not reveal any abnormalities. MRI was advised for further evaluation. The MRI of the left thigh confirmed an ill-defined and oval-shaped mass in the left sartorius muscle, approximately 1.9×2.5×5.2 cm. The mass had homogeneous signal intensity similar to muscle on T1-weighted images (Fig. 1A).

On T2-weighted images, the lesion was hyperintense with linear hypointense structures meaning preserved muscle fibers without discontinuation (Fig. 1B).
The involved fascia showed hyperintense signal clearly on fat-saturated T2-weighted images (Fig. 1C).

**Figure 1**: Magnetic resonance imaging (MRI) of the left thigh.
A-B: Coronal MR images demonstrate an ill-defined mass (arrows) in the left sartorius muscle, which is isointense with the muscle on T1-weighted image (A), while hyperintense and preserved muscle fibers without discontinuation (arrowheads) on T2-weighted image (B). C: On axial fat-saturated T2-weighted image, the involved fascia shows hyperintense signal (arrows). D-E: After injection of gadopentetate dimeglumine, the mass is almost homogeneous enhancement (arrows) on axial (D) and coronal (E) fat-saturated T1-weighted images.

Contrast-enhanced T1-weighted images showed marked homogeneous enhancement (Fig. 1D and 1E). No signal intensity changes related to blood or calcification were detected on MR images.

The clinical history and MRI appearance were indicative of malignancy. However, histopathology confirmed proliferative myositis after radical excision. Microscopically, the mass is composed of muscle tissue separated and surrounded by cellular fibrous connective tissue (Fig. 2A).

The connective tissue contains variable numbers of spindle-shaped fibroblasts embedded in a collagenized stroma. The fibroblasts contain a variable amount of basophilic cytoplasm with large nuclei and prominent nucleoli (Fig. 2B).

Hence, a pathological diagnosis of PM was inferred. With a follow-up of 9 months, he was well and asymptomatic.

**Discussion**

PM is the intramuscular counterpart of proliferative fasciitis, a pseudosarcomatous process. It often forms a poorly circumscribed lesion, presenting in shoulder, trunk, thigh, and neck. Patient with PM present with a rapidly enlarging solitary soft tissue mass that is often firm and painful. The mass may appear and double in size within a few days or week. The cause of PM is unknown, but a history of recent local trauma is noted in some cases (2,3).

PM is such a rare disease, which is often difficult for a radiologist to make an accurate diagnosis. Conventional radiography is often performed at first without abnormalities. Computed tomography usually revealed a mass that is hypo-or isoattenuating relative to the skeletal muscle, and contrast enhancement may be homogeneous (4). MRI provides high soft tissue resolution and can display diagnostic features for PM (2-5).

It is helpful for surgery by displaying the localization, size, shape, margin, adjacent soft tissue and bone condition. On T1-weighted images, PM has a hypo-or isointense signal intensity compared with normal muscle, while T2-weighted images revealed hyperintense.

The sign of muscle fibers without discontinuation is often distinctly seen on T2-weighted and contrast-enhanced images. The involved fascia shows hyperintense clearly on fat-saturated T2-weighted images. After injection of gadopentetate dimeglumine, the mass was almost homogeneous enhancement. The phenomenon of muscle fibers without discontinuation is the characteristic MRI finding of PM, which means this disease is benign. Indeed, this finding has never been described in other disease.
PM usually differs from other pseudosarcomatous lesion such as nodular fasciitis (NF) or myositis ossificans (MO). NF is a benign proliferation of fibroblasts and myofibroblasts in the subcutaneous tissues. It is most commonly seen in young adults between 20 and 40 years, with a solitary, well-defined, rapidly growing firm mass for only a few weeks. On MR images, the lesion shows isointense on T1-weighted images, hyperintense on T2-weighted images and typical homogeneous enhancement.

Although these appearances are similar to PM, the particular appearance of preserved muscle fibers within the lesion has never been described in NF. MO is the main cause of an intramuscular soft-tissue mass. The patient often has a history of local trauma. MRI appearances are different corresponding to the stages of maturation. Usually, conventional radiology and computed tomography can display specific peripheral ossifications. The clinical history and specific peripheral ossifications enable us to rule this out.

In summary, PM is a benign tumor of the soft tissue that may mimic malignancy. The prognosis is excellent after radical surgery. The patient we report was well and asymptomatic with a follow-up of 9 months. Characteristic MRI findings can help radiologists to avoid misdiagnosis of a malignant tumor. The keys to assigning the correct diagnosis were combined clinical history, characteristic sign of radiology, and histopathology.

References