



Case report

Pyomyositis of piriformis muscle, as a rare cause of deep venous thrombosis



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ABSTRACT

The differential diagnosis of low back pain is long and rarities are under-diagnosed, with problems generally simplified as lumbar vertebral spondylosis or rheumatic conditions. Abscesses of piriform muscle are a particularity worth of evaluating when specific MRI changes are detected, and the condition might be underdiagnosed leading to delays in the treatment. We describe the case of an 18-year-old male with pyomyositis of left piriform muscle, complicated with iliac and femoral vein thrombosis, that responded well to combined antibiotherapy, anticoagulants and drainage.

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Introduction

Pyomyositis is a suppurative infectious disease of the skeletal muscle. The muscles of the lower limbs are affected predominantly, most commonly the quadriceps and iliopsoas, followed by the gluteal muscles [1]. The pathogenesis of the disease is not clear, but local trauma and intensive exercise have been suggested as risk factors [2].

Inflammatory changes in piriformis muscle, resulting from trauma or infection, can compress the surrounding structures including hip joints, nerves and blood vessels [3]. Although low back pain is one of the most common cause of scheduled medical consultations, pyomyositis of pelvic muscle is a rare cause of low back pain. Because of its rarity and lack of specificity in clinical presentation, it is unusual for pyomyositis to be considered as an initial differential diagnosis in a patient with low back pain.

We present a case with pyomyositis of left piriformis muscle, complicated with deep veins thrombosis, in a young patient.

Case presentation

A previously healthy, 18-year-old male was presented to the emergency department with a two days history of sudden onset of

severe lower back pain, high fever and impossibility to move his legs. The pain radiated to his left leg and foot, and was exacerbated by movement.

He was not able to stand up due to severe leg and back pain. The patient had high fever; his temperature was 39,2 °C on admission. He was unable to straight and raise his leg due to pain. Other hip movements including flexion were painful. Neurological and rheumatologic examinations of the lower limbs presented normal, without any loss of sensation or muscle power reduction.

The hematological investigations on admission showed elevated white blood cell count (17.700/mm [3]) with 87 % neutrophils and an increase of inflammatory markers: erythrocyte sedimentation rate (ESR) 78 mm/h and C reactive protein (CRP) 83.2 mg/dL (range 0.1–0.8 mg/dL). The plain radiograph images of his lumbar spine, pelvic and hip x-rays were unremarkable. A cardiological examination (including heart echography) was within norm; the patient had no history of drug or substance abuse. Serology for HIV/AIDS was negative.

As the initial suspected diagnosis was spondylodiscitis, we asked for an urgent computed tomography (CT scan) of thoracic and lumbar spine and also of the abdomen. The CT images did not suggest any vertebral or disc pathology. The radiological consultancy revealed a poorly defined abscess of 33 × 34 mm in size which was localized in the left piriformis muscle and a significant edema of the low left extremity, with partial thrombosis of left inferior cava vein, below the left renal vein, as well as in the left iliac and femoral vein with expressed swelling of the leg (Fig. 1a and b).

A pelvic MRI performed with intravenous contrast showed multifocal abscesses localized in piriformis muscle and the

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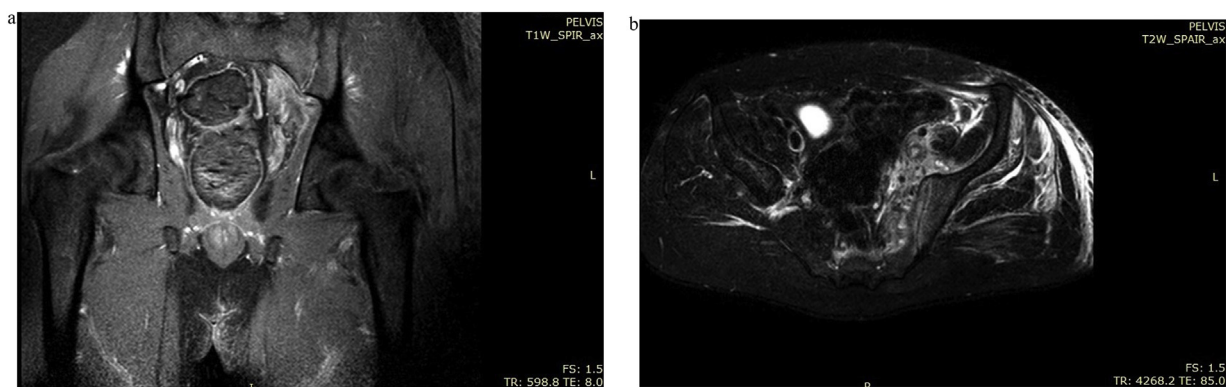


Fig. 1. (a): T1-weighted coronal images of pelvis MRI; (b): T2-weighted axial images. Hypersignals are detected in the left piriformis muscle, and radiologic sign of diffuse edema with extension in the gluteal muscles and adjacent skin structures.

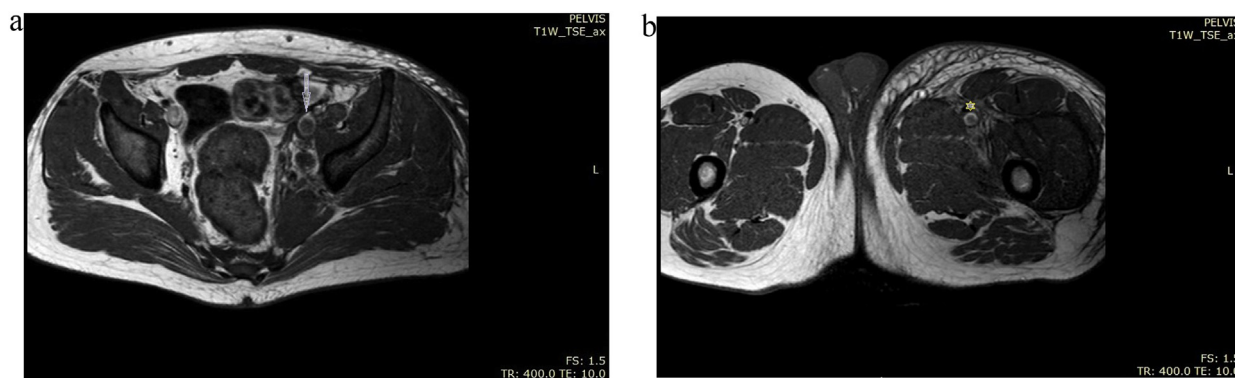


Fig. 2. (a): T1-weighted images with a ring-like contrasting defect in the left iliac vein (arrow) confirming the thrombotic process; (b): the thrombotic process extended to the left femoral vein as well (asterisk).

presence of thrombi in left iliac external vein, in left common iliac vein and in left common femoral vein (Fig. 2a and b).

The condition was diagnosed as pyomyositis of left piriformis muscle, complicated with deep venous thrombosis (left cava inferior vein, left iliac vein and left femoral vein).

Our patient blood cultures resulted positive for methicillin-sensitive *Staphylococcus aureus* (MSSA). An empirical antibiotics therapy that was previously started with ceftriaxone, ciprofloxacin and metronidazole was discontinued, and switched to vancomycin and cefazolin. Simultaneously anticoagulation therapy with enoxaparin 0.6 UI X 2 s/c was initiated. High fever and severe pain persisted, despite this therapy.

On day 14 of the hospitalization, we performed ultrasound-guided drainage of the abscess. We did not have microbial growth on cultures from the material obtained through drainage. Our patient received 6 weeks of antibiotics, four of which were administered intravenously (vancomycin [1 g intravenously every 12 h] combined with cefazolin [2 g intravenously every eight hours]). Oral anticoagulation therapy was warranted for a period of three months after the drainage, and the patient was put on rivaroxaban 20 mg daily.

He was discharged once the intravenous therapy (lasting four weeks) was switched to oral route. A follow-up one month after hospital discharge showed a complete recovery of the clinical symptomatology, with a remarkable improvement of all the inflammatory indices (C-reactive protein 2,4 mg/dL; WBC 9800/mm [3]).

Discussion

Pyomyositis is a suppurative infectious disease of the skeletal muscle. The term “tropical pyomyositis” (TP) was previously used to describe the occurrence. The first case of TP was described by Scriba in 1885 in Japan, as an endemic disease in tropics [4].

Since then, many cases have been reported from different geographical regions of the world, including non-tropical countries [5,6]. This increase in incidence might be related to an improvement in diagnostic techniques as well as to a raise in the awareness of the medical staff [7].

Pyomyositis can be of primary form, due to an occult focus of infection (bacteremia), or secondary as a consequence of direct extension from an infectious process, most usually Crohn’s disease, infectious colitis, appendicitis and neoplasia [8].

Transient bacteremia is the usual source for primary pyomyositis [2]. Recent data indicate that up to 75 % cases of pyomyositis affect immunocompromised patients, with HIV infection, diabetes mellitus, leukemia, chronic renal failure, asplenia, rheumatologic accompanying disease, or patients that have been on cancer chemotherapy or immunosuppressive drugs [7,9].

Pathogenesis of the primary pyomyositis is not completely clear. It is known that the muscle is intrinsically resistant to infection unless it presents prior alterations. Muscle damage, induced by trauma or overuse increases the susceptibility of the affected muscle for bacterial translocation, but only a third of patients have evidence of these factors [2,10].

Formation of a small hematoma in muscle may provide a critical bacterial nutritional requirement in the form of iron from myoglobin, creating a favorable site for the migration of bacteria, while the surrounding damaged and necrotized tissue might also impede the host immune response [11]. We found a few cases in literature of pyomyositis of piriformis in a swimmer, a rugby and tennis player, and a patient with daily history of dancing, as a probable consequence of a sport-induced trauma [12–15].

Our young patient presented a primary pyomyositis of left piriformis muscle. Swimming and trampolining, that he occasionally performed some days before the condition was installed, could have been contributing factors.

Conclusions

Pyomyositis is rarely considered as an initial differential diagnosis for low back pain. Diagnostic difficulties, mainly related to the rarity of this entity and to the fact that the clinical manifestations are non-specific, can sometimes lead to a delay of diagnosis and treatment, consequently to the emergence of major complications, such as deep venous thrombosis, septic shock and multiorgan system failure. In our case, the primary pyomyositis of piriformis muscle was related to direct muscle trauma. Deep venous thrombosis should be considered as a possible complication of pyomyositis of piriformis muscle.

Author's statement

EK, ER and ER are the treating clinicians that diagnosed and followed up the case. EK and ER wrote the manuscript. GV reviewed the literature and wrote the manuscript. All authors have approved the submitted version.

Declaration of competing interest

The authors report no declarations of interest.

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