



Acute Osteomyelitis of the Posterior Column of the Acetabulum: About a Case

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Authors' contributions

This work was carried out in collaboration between all authors. Authors MJ, NJ and KK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors DS, KB and AK managed the analyses of the study. Author YT managed the literature searches. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Introduction: Acute osteomyelitis usually occurs in the metaphysis of the long bones, the lower limb being more commonly affected than the upper limb. Pelvic localization is rare.

Observation: An 11-year-old boy with no remarkable history of illness visited our emergency room complaining from high fever and atomatic right hip pain. The orthopedic examination objectified a limitation of the right hip joint motions especially in extension, the palpation of the groin's crease was slightly painful without local inflammatory signs nor lymphadenopathies. Blood laboratory tests found an inflammatory syndrome. Hip X-rays did not show any abnormality, the ultrasound of the right hip showed a joint effusion of low abundance measuring 1 mm. Magnetic resonance imaging detected anhypointense signal on T1-weighted sequences and a high intensity signal on T2-weighted on the right acetabulum with contrast enhancement after gadolinium administration. It combines a fat infiltration and a collection of 13x6 mm in the internal obturator muscle. The diagnosis of acute osteomyelitis of the posterior column with soft tissue invasion and

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reactive arthritis was confirmed. The blood cultures did not isolate a germ and the urinalysis was negative. The child was given antibiotic therapy: amoxicillin clavulanic acid and fusidic acid intravenously for a period of 21 days and then orally for a total duration of 12 weeks. The evolution was marked by a clinical improvement and a negation of the CRP. A 3-month control MRI showed total regression of the soft tissue collections.

Discussion: Pelvic osteomyelitis is rare, patients with pelvic osteomyelitis can present various clinical signs, which gives place to late or erroneous diagnosis. The prognosis of pelvic osteomyelitis is very favorable. The rate of recovery without sequelae is greater than 95%, but decreases with late diagnosis and treatment failure.

Conclusion: Osteomyelitis remains an endemic pathology in Tunisia despite the development of diagnostic means and antibiotic therapy. Pelvic osteomyelitis is rare; it poses a diagnostic problem especially with Ewing's sarcoma. Its prognosis is favorable but decreases with a delay of antibiotic administration.

Keywords: Acute osteomyelitis; acetabulum; Ewing's sarcoma; MRI.

1. INTRODUCTION

Acute osteomyelitis usually occurs in the metaphysis of the long bones [1], the lower limb being more commonly affected than the upper limb. Pelvic localization is rare. The most commonly affected bone is ilium (38%), because of its abundant vascularity. It is followed by ischium (19%), pubis (14%) and acetabulum (12%) [2]. Certain factors may predispose to the development of pelvic osteomyelitis, such as pelvic surgery, urinary tract infections, trauma and Crohn's disease.

We present the case of an 11 - year - old boy who had acute osteomyelitis of the posterior acetabulum, in order to present the diagnostic and radiological difficulties as well as the prognosis of acute haematogenous osteomyelitis of the acetabulum.

2. OBSERVATION

An 11-year-old schoolboy without any remarkable history of illness visited our emergency room complaining from a week-old high fever and atraumatic right hip pain. The temperature was 38.3°C, the blood pressure 112/76 mm Hg, the heart rate 109 beats / min and the respiratory rate 20 cycles / min.

The orthopedic examination objectified a limitation of the right hip joint motions especially in extension; the palpation of the groin's crease was slightly painful without local inflammatory signs or lymphadenopathies.

Blood laboratory tests found an inflammatory syndrome: C-reactive protein (CRP) at 71 mg / L and a sedimentation rate at the 1st hour at 114. The rate of white blood cells and procalcitonin were normal.

Hip X-rays did not show any abnormality (Fig. 1), the ultrasound of the right hip showed a joint effusion of low abundance measuring 1 mm (Fig. 2).



Fig. 1. Hip X-rays did not show any abnormality

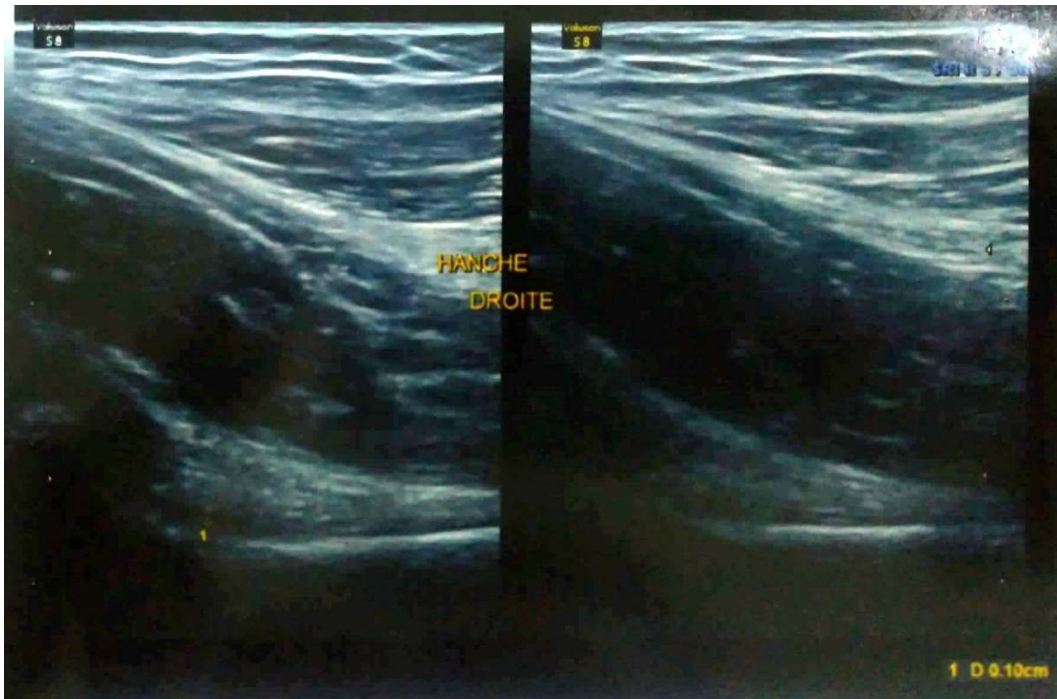
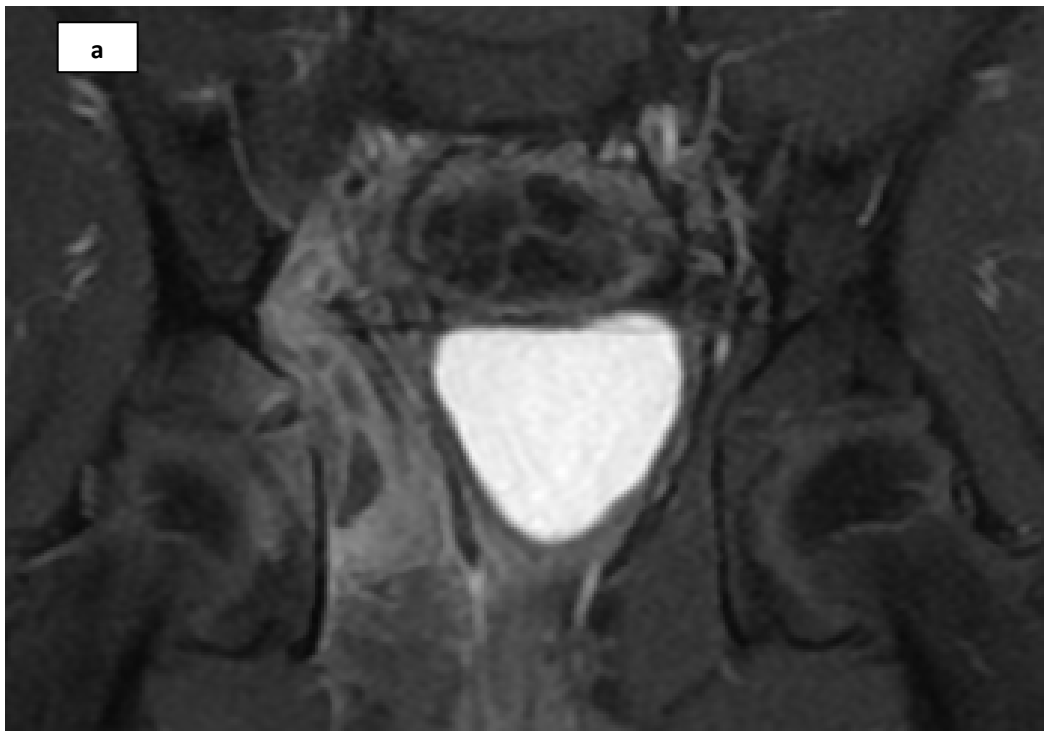


Fig. 2. The ultrasound of the right hip showed a joint effusion of low abundance measuring 1 mm

Magnetic resonance imaging detected a hypointense signal on T1-weighted sequences and a high intensity signal on T2-weighted on the right acetabulum with contrast enhancement after

gadolinium administration. It combines a fat infiltration and a collection of 13x6 mm in the internal obturator muscle (Fig. 3).



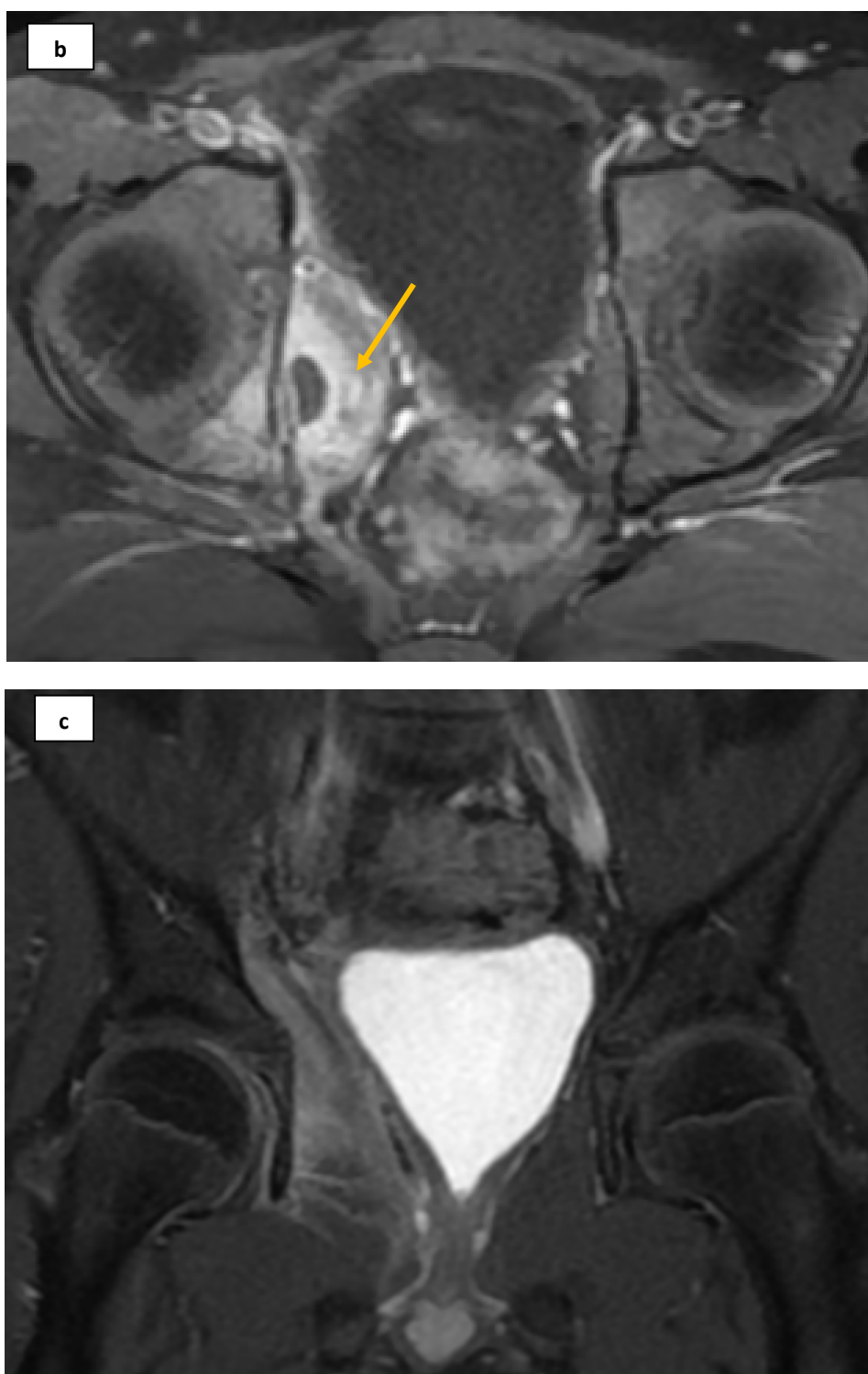


Fig. 3. Axial (a) and coronal (b) sections of an MRI of the pelvis, T1 sequence with fat suppression and gadolinium injection showing enhancement of the posterior wall of the acetabulum (arrow) associated with infiltration of the soft tissues and peripheral enhancement related to abscesses repressing the internal obturator muscle inwards. Coronal sections (c) of an MRI of the pelvis, STIR sequence showing infiltration of soft tissues next to the right iliac' wing

In front of this clinical context ; the conservation of the general state and the absence of the signs of malignancy; and the fact that Tunisia is an endemic country we retained the diagnosis of acute osteomyelitis of the posterior column with soft tissue invasion and reactive arthritis. The blood cultures did not isolate a germ and the urinalysis was negative.

The child was given antibiotic therapy: amoxicillin clavulanic acid and fusidic acid intravenously for a period of 21 days and then orally for a total duration of 12 weeks.

The evolution was marked by a clinical improvement and a negation of the CRP. Hip X-rays is a normal (Fig. 4).

A 3-month control MRI showed total regression of the soft tissue collections and the persistence of discrete bone high signal intensity (Fig. 5).

3. DISCUSSION

The diagnosis of pelvic osteomyelitis is often difficult because of the depth of the localization and the various entangled diagnoses having the same symptomatology hence the diagnosis delay that leads to bad results. Zvulunov et al. [3] reported an average 12-day diagnostic delay resulting in permanent disability in 3.4% of the revised cases. It accounts for 1% to 11% of cases of hematogenous osteomyelitis [3].





Fig. 4. Hip X-rays did not show any abnormality

The diagnostic difficulty is often posed with Ewing's sarcoma, which can mimic pelvic osteomyelitis. Since the anatomopathological examination comes up against a difficulty of sampling and with a good clinical surveillance, an analysis of the various radiological explorations, especially the MRI associated with the epidemiological context of our country (endemic osteomyelitis) we retained diagnosis of pelvic osteomyelitis hence the rapid start of parenteral antibiotic therapy that allows an improvement of the clinical and radiological symptomatology: important element of diagnosis' confirmation.

Some MRI criteria for differentiating between osteomyelitis and Ewing's sarcoma have been

described in the literature. Alteration of normal bone marrow architecture with a T1-weighted hyposignal and T2-weighted or STIR (short tau inversion recovery) hypersignal with well-defined contours favors Ewing's sarcoma. On the other hand, a signal abnormality of the bone marrow (an intermediate signal in weighting T1 and T2), without alteration of the global architecture and whose limits are unclear, is in favor of bone edema and sepsis [4]. The presence of the penumbra sign is also an orientation criterion. In fact, the presence of a T1-weighted hyperintense peripheral lining that enhances after injection of contrast medium reflecting the presence of a granulation tissue favors osteomyelitis [4,5].

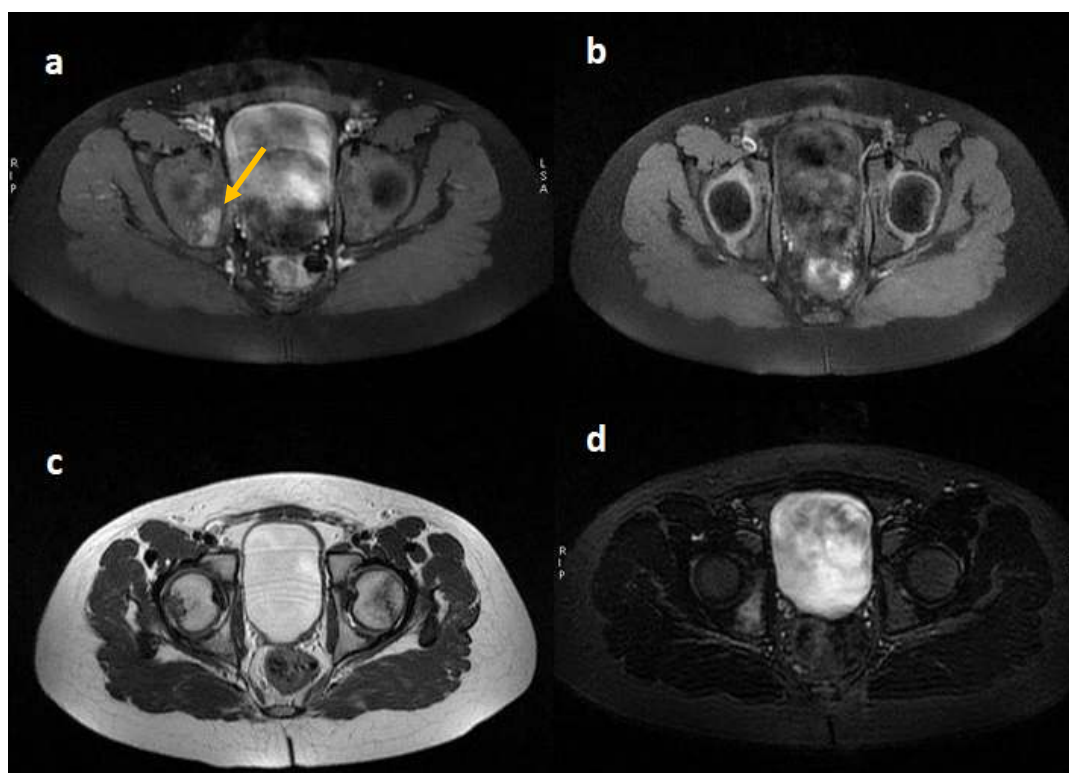


Fig. 5. Axial sections of a pelvic MRI made after 3 months of treatment showing total regression of the soft tissue collections and persistence of a discrete high signal intensity at the posterior wall of the right acetabulum on T2-weighted sequences (c) and STIR (d) as well as enhancement after gadolinium injection (a) (arrow)

Another differential diagnosis of osteomyelitis of the posterior acetabulum is the pyomyositis, particularly of the internal obturator muscle. The clinical picture is similar. The absence of an abnormality of the bone signal during uncomplicated pyomyositis makes it possible to correct the diagnosis [6].

The etiology of pelvic osteomyelitis is unknown. In some cases, the concept of minor trauma was reported, Davidson et al. [7] found in 13 cases of 64 cases of pelvic osteomyelitis a history of minor trauma.

Patients with pelvic osteomyelitis may present various clinical signs simulating other diagnoses. The primary reason for consultation is fever and pain in the hip, thighs or even the abdomen. Fever was present in only 35% of pediatric pelvic osteomyelitis cases reviewed by Klein and Leach [8]. Weight loss and anorexia can be observed [8]. In the case of Scillia [9], the diagnosis of osteomyelitis of the acetabulum was delayed because of the administration of antibiotics for another cause.

In the rare cases of acute osteomyelitis of the acetabulum, blood cultures were able to identify causative microorganisms in 50% of cases. *Staphylococcus aureus* is the most common causative organism (90%), which is similar to hematogenous osteomyelitis. In rare cases, *Haemophilus influenzae*, subspecies of *Salmonella*, Group A *Streptococcus*, *Enterobacter cloacae* and *Pseudomonas aeruginosa* may be the cause. In the case of *S. aureus*, effective empiric therapy should be given immediately. Cephalosporins and intravenous clindamycin are the most commonly used treatment agents. If the microorganisms responsible are isolated, it is necessary to adapt the treatment against them according to the antibiogram [2,10].

The prognosis of pelvic osteomyelitis is very good. The rate of recovery without sequelae is greater than 95%, but decreases with late diagnosis and treatment failure. Unfortunately, there may be cases of recurrent osteomyelitis and deformities [11].

4. CONCLUSION

Our observation concerns a rare localization of pelvic osteomyelitis. Diagnostic discrepancies, especially with Ewing's sarcoma, underline the interest of early MRI. The prognosis is favorable but decreases with a delay in antibiotic administration.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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