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Magnetic resonance imaging findings of infectious sacroiliitis associated with iliopsoas abscess: a case report in a young male

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SUMMARY

Infectious sacroiliitis is an infection of the sacroiliac joint, not easy to diagnose because of its non-specific signs, symptoms and laboratory abnormalities. We describe a case of a 16 year-old male with 5 days' history of fever, abdominal pain, constipation, low-back and left hip pain extended to the left knee associated with sudden inability to walk. In the first place, magnetic resonance imaging (MRI) examination of his sacroiliac joint revealed an enlarged corpuscolated fluid collection near the left iliopsoas muscle, extended to homolateral paravertebral muscles and a little fluid at the left sacroiliac joint. Drainage by aspiration of the iliopsoas abscess was applied; *Staphylococcus aureus* was found in the aspirated fluid and isolated from the blood too. Therefore intravenous antibiotic therapy was begun. Follow-up MRI exams confirmed the muscle abscess and revealed also a spongy bone edema of the left sacroiliac joint, persisting despite the disappearance of symptoms and the normalization of inflammatory values. It is important to make an early diagnosis of infectious sacroiliitis in order to begin antibiotic therapy as soon as possible, because of the increasing morbidity of infection of sacroiliac joint. In our case MR findings have provided significant orientation towards the final diagnosis of infectious sacroiliitis.

Key words: *Infectious sacroiliitis; inability to walk; Iliopsoas abscess; Magnetic resonance imaging.*

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INTRODUCTION

Infections of the sacroiliac joint (SIJ) represent less than 2% of all septic arthritis cases (1). The major risk factors, such as local traumas, intravenous drug abuse, immunosuppression, pregnancy, endocarditis and hemoglobinopathies, may be identified in only 55-60% cases (2, 3). One of the most frequent cause of acute sacroiliitis syndrome is pyogenic sacroiliitis (4), which is typically unilateral with fever and severe pain, originating from the affected SIJ and often extending to the lower back and/or hip area; sometimes pain can radiate down to the lower leg (5). It is not so easy to diagnose an infectious sacroiliitis because it presents nonspecific signs and symptoms. Laboratory abnormalities are nonspecific too, including leukocytosis and an elevation of inflammatory markers such as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) (6-10). We report a case of infectious sacroiliitis associated with iliopsoas abscess in a 16-year-old male with no specific clinical symptoms; our case showed that MRI has significantly assisted diagnosis and has helped to distinguish infectious from non-infectious sacroiliitis.

CASE REPORT

A 16-year-old male came to the emergency department with a 5 days' history of fever, not responsive to therapy with anti-inflammatory drugs (paracetamol, diclofenac) and abdominal pain with constipation. He did not take any antibiotics. He had lower back and left hip pain extending to the left

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knee, with sudden inability to walk. He reported a former (five years previously) trauma in the sacral region; no history of drug abuse. He had β-thalassemia minor. The patient's vital signs were: temperature of 39°C, pulse of 72 beats/min, blood pressure of 130/70 mm Hg, respiratory rate of 16 breaths/min, and oxygen saturation of 100%. Laboratory exams showed an elevation in inflammatory markers: CRP 30 mg/dL (normal values: 0-0.5 mg/dL) and ESR 45 mm/h (normal values <20 mm/h), leukocytosis (15,000 G/L).

A chest-X-ray was performed without showing anything relevant. The day after, he was admitted to the Rheumatology Department. Physical examination revealed reduced range of motion of the left hip with intense discomfort at external rotation. Lasègue sign and Faber test were positive on the left side. Two days later, magnetic resonance imaging (MRI) exams of the SIJ were performed at the Radiology Department: images were obtained using 1.5 MRI (Avanto; Siemens) and 3T MRI (Discovery 750; GE) with T1, T2 weighted and T2 Fat Sat sequences without contrast.

The first MRI of SIJ and lumbar spine revealed an enlarged corpuscolated fluid collection near the left iliopsoas muscle, extending to the homolateral paravertebral muscles and with intraarticular fluid at the SIJ. Furthermore, MRI showed a well-defined fracture of the left sacral wing without evidence of peripheral edema, as a result of the reported previous trauma. Nothing of pathologic significance was observed at the right SIJ and at the lumbar spine (Figure 1A). Drainage by aspiration of the iliopsoas abscess was performed; *Staphylococcus aureus* was found in the aspirated fluid and also isolated from the blood. Intravenous antibiotic therapy was therefore begun (oxacillin and rifampicin). Five days later, an MRI-enterography using oral contrast was obtained, in order to study the small intestine and to exclude Crohn's disease, because of the presence of intestinal symptoms in a young male. The exam showed no evidence of parietal alterations of the small bowel while bone marrow edema (BME) at the left SIJ was

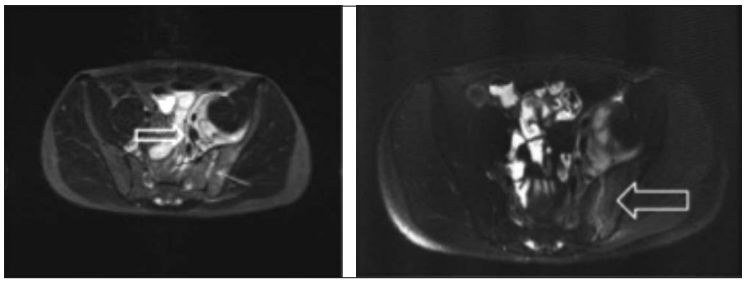

Figure 1 - A) Axial T2 TIRM 1.5 T MRI shows enlarged corpuscolated fluid collection near the left iliopsoas muscle (open arrow). On the left SIJ, a small hyperintensity signal in the articular interosseous space reveals the presence of intraarticular fluid (white arrow). Fracture of the left sacral wing without evidence of peripheral edema (black arrow); B) Five days later, axial T2 Fat Sat SSFSE 3T MRI enterography shows hyperintensity at the left sacroiliac joint as a sign of early bone marrow edema (open arrow), while the corpuscolated fluid collection near the left iliopsoas muscle is unchanged compared with the previous exam.

described. The corpuscolated fluid collection, described at the previous MRI, was unchanged (Figure 1B).

Transesophageal echocardiography was performed without evidence of endocarditis. Immunoglobulin levels, lymphocyte subsets and nitro blue tetrazolium (NBT) test had normal values.

Scintigraphy with marked leukocytes was performed, confirming the presence of inflammatory tissue at the left sacroiliac joint.

Because the patient continued to have fever, lower back and left hip pain twenty days after antibiotic therapy, a third MRI was performed to check the size of the ab-

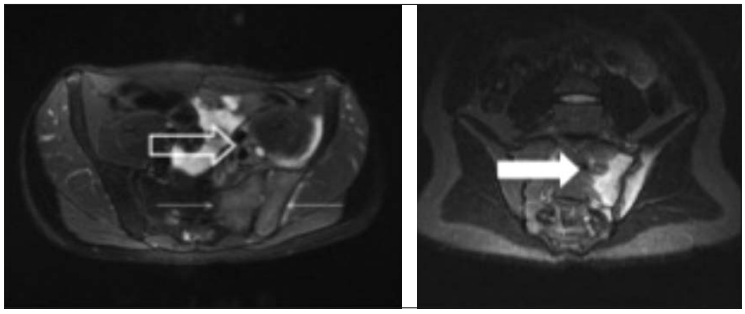

Figure 2 - A) Follow-up axial T2 Fat Sat FRFSE 3T MRI (twenty days later) shows reduction of the iliopsoas abscess (open arrow) and increase of bone marrow edema (white arrows). B) Follow-up axial T2 TIRM 1.5 T MRI shows resolution of the iliopsoas abscess but confirms the bone marrow edema on the left SI joint (open arrow).

scess after antibiotic therapy and drainage. The MRI exam showed reduction of the iliopsoas abscess but revealed an increase of BME and the appearance of an edema near the left piriform muscle and also his nervous root (Figure 2A). A month after antibiotic therapy, the patient was asymptomatic and inflammation blood values resulted normal. No further antibiotic therapy was administrated. The last MRI, obtained three months after the onset of symptoms, showed a resolution of the iliopsoas abscess while the BME at the left SIJ continued to be present, though reduced as a sign of a slow and partial resolution of the sacroiliitis (Figure 2B).

DISCUSSION

Infectious sacroiliitis is a rare condition and often misdiagnosed because it presents an aspecific clinical pattern with symptoms frequently mimicking other disorders originating in the neighboring structures. Pyogenic sacroiliitis is one of the most frequent causes of acute sacroiliitis syndrome (4) and it is unilateral, with fever and severe pain, originating from the affected SIJ and extending often to the lower back and/or hip area, and sometimes radiating down to the lower leg (5). According to the anatomical architecture of the SIJ, the ventral part is composed of a joint capsule which has strong core ligaments essential to stabilize the joint, but which is thin and allows fluid substances, such as joint effusion or pus, to leak out onto the surrounding structures such as the psoas muscle or other muscles near the SIJ. The lumbosacral plexus can be irritated by the acute sacroiliac process and, through the dorsal lumbosacral branches which innervate the SIJ itself, contribute to increasing sacroiliac pain. Radiographic and CT imaging are useful only in the late phase of disease, showing widening of the joint space, erosive changes of the subchondral plate and reactive bone sclerosis (3, 10). The risk of complications as well as the risk of recurrent disease, arthritis, and chronic pain increases with delayed diagnosis (4). Tc-99m scintigraphy is a sensitive tool for the diagnosis of septic arthritis, useful in patients with pyogenic sacroiliitis, restricting the poorly localized process to the affected joint. MRI allows an early diagnosis of infectious sacroiliitis showing BME, synovitis of SIJ and edema or abscess in the neighborhood soft tissues, which may help to distinguish an infectious from non-infectious inflammation (10).

Our case involved a young patient who presented fever not responsive to therapy and sudden disability to walk despite the absence of a recent trauma, with lower back and left hip pain extended to the left knee. Physical examination provided suspect clinical signs for sacroiliitis on the left side. MRI exams showed the presence of an iliopsoas abscess and the BME on the left SIJ allowed diagnosis of infectious sacroiliitis, distinguishing it from SIJ inflammation. The first MRI demonstrated an iliopsoas abscess and a small amount of intraarticular fluid at the SIJ, but nothing of pathologic significance was observed on the right sacroiliac joint. The following MRI revealed the late presence of BME as a sign of sacroiliitis, suggesting that the abscess could be the cause of SIJ infection, even though this was not certain. Despite the disappearance of symptoms and of the normalization of inflammatory values, the final MRI showed continuing presence of the BME on the left SIJ. Sturzenbecher et al reported that BME at MRI persists for months after infective sacroiliitis has been treated (11), suggesting a slow resolution of the sacroiliitis and not an infection in progress. No contrast medium was used to make diagnosis because, as known in literature, its role in detecting a sacroiliitis is under debate. According to some authors (12), only BME observed at STIR images is necessary to obtain or confirm a diagnosis of sacroiliitis by MRI. In particular, some reports (13-15) comparing the usefulness of contrast enhanced T1 weighted images with FatSatT2 weighted or STIR images underline how contrast administration is not necessary to detect bone marrow inflammation in the sacroiliac joint. Furthermore, The European Society of Skeletal Radiology (ESSR) arthritis subcommittee

consensus paper (16) suggests the administration of the contrast medium only in doubtful cases. In any case, some authors (17) agree that contrast enhanced MRI can improve detection of hyperemia and have a role in the characterization of the abscess by enhancing the capsule, while the fluid center remained non-enhanced. These inflammatory changes in the bone and soft tissues, and the presence of the abscess, are useful to distinguish infectious from non-septic inflammatory sacroiliitis.

CONCLUSIONS

In conclusion, infectious sacroiliitis is a rare condition, not so easy to diagnose early. Nevertheless, it is important to know this disease and diagnose it early because of its increasing morbidity. MRI findings, furthermore, such as abscess of soft tissue, bone marrow edema and fluid in the joint space, are important pointers towards diagnosis of an infectious sacroiliitis, following confirmation by scintigraphy with marked leukocytes and blood culture, allowing the beginning of antibiotic therapy immediately.

Conflict of interest: the authors declare no conflict of interest.

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