Infectious Sacroiliitis Secondary to an Iliopsoas Abscess – A Case Report

Sacroileítis infecciosa secundaria a un absceso del iliopsoas – Reporte de un caso

Isaac Vásquez-Cárdenas[1] Enrique Fernández Rojas[2] Nicia Moldenhauer Barrientos[3] Waldo González Duque[1] Jaime Valencia Estay[1] Cristian Vásquez Parra[4]

[1] Traumatology and Orthopedics Service, Hospital Regional Coyhaique, Coyhaique, Aysén, Chile
[2] Traumatology and Orthopedics Service, Hospital Las Higueras, Talcahuano, Biobío, Chile
[3] Internal Medicine Service, Hospital Regional Coyhaique, Coyhaique, Aysén, Chile
[4] Radiology Service, Hospital Regional Coyhaique, Coyhaique, Aysén, Chile

Address for correspondence Diego Isaac Vásquez Cárdenas, MD, Hospital Regional Coyhaique, Jorge Ibar 068, ZIP code 5950000, Coyhaique, Aysén, Chile, +569 88809274 (e-mail: iivasquezc@gmail.com).

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Abstract

Infectious sacroiliitis (ISI), also described in the literature as septic or pyogenic sacroiliitis, is an infrequent pathology, and its diagnosis constitutes a challenge due to its relative rarity and the diverse clinical presentation, frequently imitating other more prevalent disorders originating in neighboring structures.

A high index of suspicion and a thorough physical examination are required in order to establish an opportune diagnosis, while laboratory and imaging studies help confirm the diagnosis and direct the appropriate treatment strategy to avoid complications and sequelae in the short and medium terms.

We herein present a case of a female patient aged 36 years, with a clinical picture of left ISI, secondary to an iliopsoas muscle abscess, a condition that usually presents as a complication of the infection. The clinical, imaging and microbiological diagnoses were made, the timely antibiotic treatment was initiated, and an excellent clinical evolution without sequelae was achieved.

Level of evidence IV.

Keywords

- infectious sacroiliitis
- iliopsoas abscess
- septic arthritis

Resumen

La sacroileítis infecciosa (SII), también descrita en la literatura como sacroileítis séptica o piógena, es una patología infrecuente, y su diagnóstico constituye un reto debido a su rareza relativa y la diversa presentación clínica, que frecuentemente imita otros trastornos más prevalentes originados en estructuras vecinas.

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Se requiere un alto índice de sospecha y un examen físico acucioso para un diagnóstico oportuno, mientras que los estudios de laboratorio y de imagen ayudan a confirmar el diagnóstico y dirigir la estrategia de tratamiento apropiada para evitar complicaciones y secuelas a corto y mediano plazos.

Presentamos un caso de paciente de género femenino de 36 años, con cuadro clínico de SII izquierda, secundaria a un absceso del músculo iliopsoas, condición que generalmente se presenta como una complicación de la infección. Se realizaron los diagnósticos clínico, imagenológico y microbiológico, se inició el tratamiento antibiótico oportuno, y se logró una excelente evolución clínica, sin secuelas.

Nivel de evidencia IV.

Palabras Clave
- sacroileítis infecciosa
- absceso del iliopsoas
- artritis séptica

Introduction

Infectious sacroiliitis (ISI) was first reported in 1878 by Poore, and since then the literature on this infection has mainly originated from case reports and small series of patients.[1] Infectious sacroiliitis has a relatively low incidence, of approximately 1% to 2% of all cases of septic arthritis.[2,3] It can be caused by multiple etiologies, ranging from degenerative disorders, trauma, pregnancy, intravenous drug abuse, immunosuppressive therapy, hemoglobinopathies, inflammatory diseases, and infections such as endocarditis, urinary tract or skin infections; however, these risk factors can be identified in only 55% to 60% of the cases.[1] Unilateral sacroiliitis should guide the diagnosis of ISI,[4] although there is also a common association of unilateral sacroiliitis with spondyloarthropathies (psoriatic arthritis, reactive arthritis, early-stage ankylosing spondylitis), which poses a challenge in the differential diagnosis with other causes.[5,6] Contamination can be the product of bacteremia, due to a contiguous infection or by direct inoculation, as in the case of joint infiltrations.[7] Infection can be caused by pyogenic microorganisms and tuberculosis.[5,8]

Nonspecific initial symptoms and variable physical examination findings make the diagnosis of ISI difficult, and it is often initially missed. The clinical presentation is varied, but the most common finding is pain in the lower back and in the gluteal region, which increases with walking. Pelvic magnetic resonance imaging (MRI) is the gold standard for the diagnosis of ISI. Prolonged antibiotic treatment for more than four weeks is considered an adequate regimen.[9,10]

Clinical Case

This clinical case was reviewed and approved by the Scientific Ethics Committee of Servicio de Salud Aysén Health Service, authorized by the board of directors of Hospital Regional Coyhaique, and informed consent of the patient was obtained.

We present the case of a 36-year-old female patient with a history of obesity, insulin resistance, and vitiligo, without a history of trauma or drug use. In March 2019, she presented with a left iliac psoas abscess that had been operated on (surgical cleaning and drainage of the abscess) and treated non-continuously for a month with various antibiotic treatment schemes: vancomycin, piperacillin/tazobactam, cloxacillin, and amoxicillin/clavulanic acid. At that time, the cultures of the abscess were positive for multisensitive *Staphylococcus aureus.* After discharge, mild discomfort remained for eight weeks. The patient was readmitted to the Emergency Department due to intense and disabling pain in the left gluteal region radiating to the lumbar region of three days of evolution, without feverish sensation. Upon admission, she was afebrile, with normal heart rate and blood pressure, no local inflammatory signs, pain with a described location, positive flexion, abduction, external rotation (FABER) test, negative left hip log roll test, negative signs of radicular irritation, and no palpable inguinal lymph nodes. The control tests revealed elevated inflammatory markers: erythrocyte sedimentation rate (ESR) of 58 mm/h, C-reactive protein (CRP) of 46.1 mg/dl, and leukocytosis of 15,070 mm^3, with a predominance of neutrophils. The radiographs and computed tomography (CT) scans of the pelvis showed increased joint amplitude and joint erosions compatible with left sacroiliitis associated with increased volume of the iliopsoas and inflammatory changes of the adjacent fat, without evidence of abscess (►**Figure 1** and **2**). The patient evolved with elevation of the inflammatory parameters 48 hours after admission (PCR: 218 mg/dl; ESR: 61 mm/h).

Admission to the ward was decided to take cultures by percutaneous aspiration of the left sacroiliac joint (SIJ); the samples were sent for culture and, subsequently, the empirical antibiotic treatment with 1 g of intravenous vancomycin every 12 hours was started. The bone and Koch tissue cultures were negative, and the SIJ aspiration and blood cultures were positive for multisensitive *Staphylococcus epidermidis*. The patient was referred to Puerto Montt for control with MRI with contrast of the SIJ and lumbar spine, which showed images suggestive of ISI, inflammation of the adjacent muscles up to the paravertebral muscles of L3, and lamellar collection in the left iliac muscle (►**Figures 3** and **4**).

The patient presented a satisfactory clinical evolution, with a considerable decrease in discomfort, and a progressive decrease in inflammatory markers. We decided to transfer the patient to Hospital Dr. Leopoldo Ortega R., in Chile Chico, due to its proximity to her home, to continue

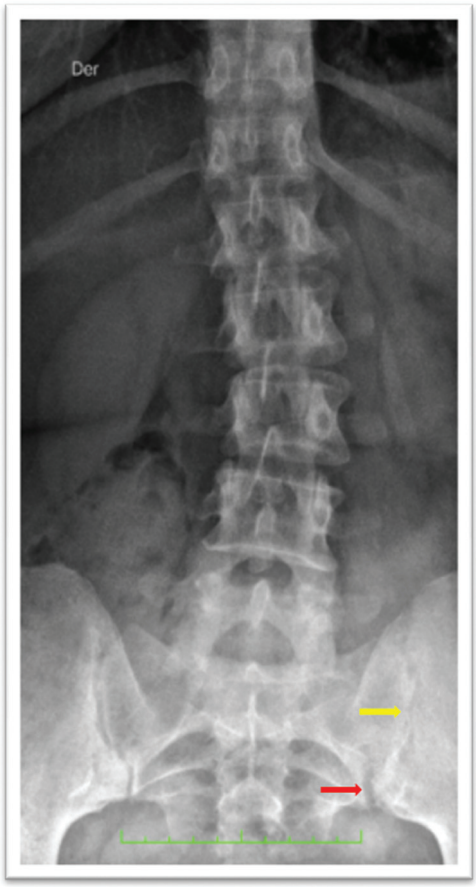

Fig. 1 Anteroposterior lumbar spine X-ray showing increase in amplitude (red arrow) associated with erosive changes (yellow arrow) of the left sacroiliac joint.

with antibiotics until completing four weeks of the intravenous treatment and then continue with the oral antibiotic treatment with 1 tablet of sulfamethoxazole/trimethoprim (at doses of 800 mg and 160 mg respectively) every 12 hours for 4 more weeks. In the outpatient control at twelve weeks, complete disappearance of the discomfort and normalization of the inflammatory parameters were observed. The control with a pelvis CT showed maintained amplitude of the left sacroiliac joint space, with disappearance of other inflammatory signs.

Discussion

Infectious sacroiliitis is a rare disease with nonspecific symptoms, which often causes a delay in the diagnosis. Its initial manifestations can lead to more common conditions, including lumbago, sciatica, intra- or extrapelvic abscesses, abdominal infection, and nephrolithiasis or pyelonephritis. It is usually unilateral. The typical symptoms include low fever, pain in the gluteal region, which is present in up to 100% of the patients, pain in the lower back and in the posterior aspect of the thigh, and difficulty walking on the affected side, so it is not surprising that more than half of the reported cases present a delay in diagnosis of 10 or more days after the onset of symptoms.[2,9] Upon early physical examination, there are specific findings including tenderness in the posterior region of the SIJs and pain on posterior pelvic compression, but direct palpation of the SIJs is difficult due to their anatomical location, which requires provocative tests to reproduce pain and symptoms: the Gaenslen sign (forced flexion of the contralateral hip and forced hyperextension of the ipsilateral hip, with the patient in the supine position) and the FABER test, which is positive in up to 91.7% of the patients.[11] These provocative tests have been shown to be reliable in terms of sensitivity, specificity, and positive predictive values (60%) in determining the origin of pain, but are often not performed in the current clinical setting due to a low index of suspicion. Berthelot and Laslett[12] reported that, in the clinical examination of ISI, no clinical sign could clearly indicate pain, but that the probability of joint or periarticular pain increases when three of the five most reliable provocation tests are positive: 1) the iliac wing distraction maneuver; 2) the iliac wing compression maneuver; 3) direct compression on the sacrum; 4) the Gaenslen test; and 5) the Mennell test (Gaenslen test with the patient in lateral decubitus). These tests must be performed on a hard surface, with sufficient duration and force to mobilize

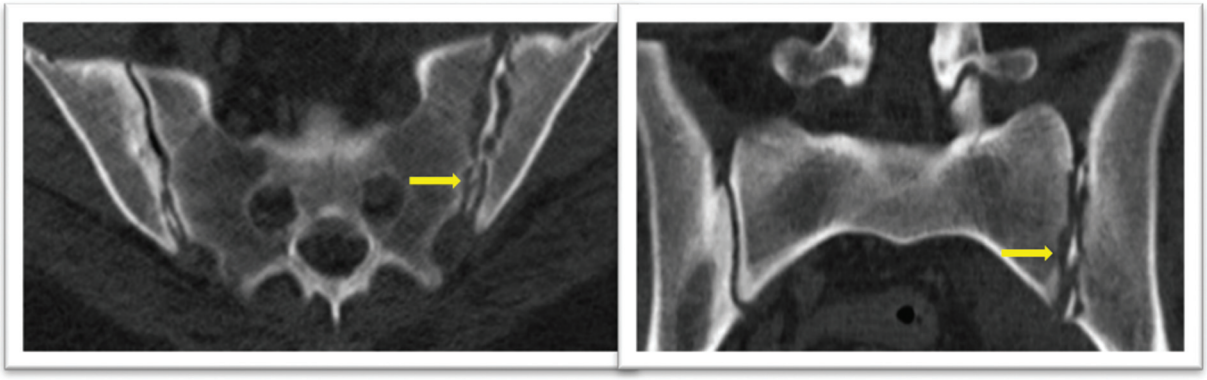

Fig. 2 Axial (left) and coronal (right) sections of a pelvic computed tomography scan showing lysis of the subchondral bone, which determines the irregularity of its contour, with linear fragments of subchondral bone in the joint space (yellow arrows) associated with widening of the joint space.

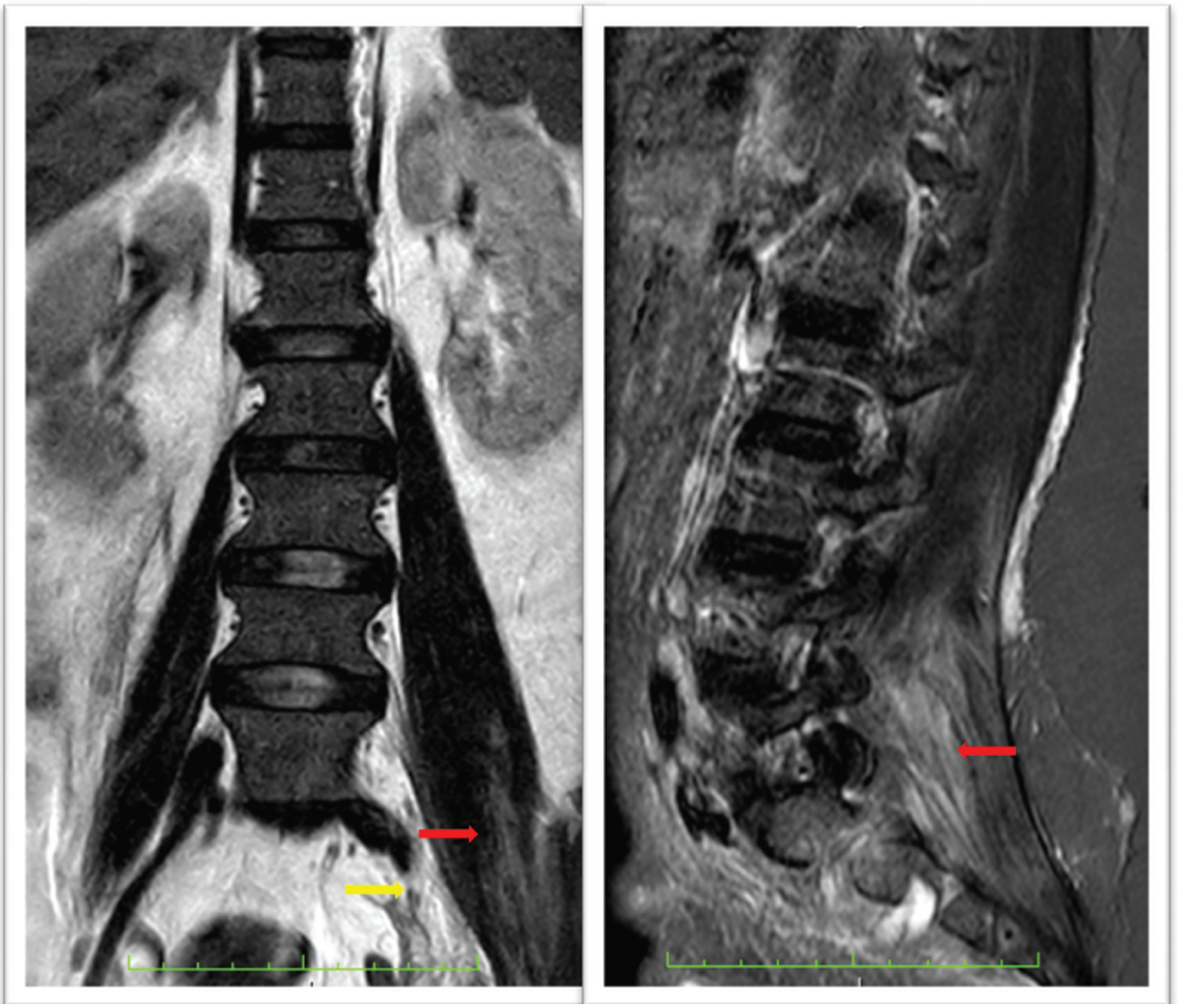

Fig. 3 Coronal (T2) (left) and sagittal (short time investment recovery [STIR]) (right) lumbar spine magnetic resonance imaging scan, showing inflammatory changes in the soft tissues adjacent to the sacroiliac joint (yellow arrow), up to the paravertebral musculature of L3 and lamellar collection in the left iliac muscle (red arrows).

the joint and reproduce the pain.[12] The risk of complications, recurrence and sequelae, such as chronic pain, increases with the delay in diagnosis.[13]

Patients may also present with leukocytosis in about 50% of the cases,[14] but the most reliable laboratory tests are inflammatory markers, including ESR and CRP, and although these markers are sensitive, they are not specific for diagnosis or to differentiate between those of inflammatory cause and those of infectious cause.[3]

In the pathophysiology of ISI, infection may be due to hematogenous spread of bacteria from a source distant to the SIJ; the subchondral circulation on the iliac side of the joint is a site of arterial terminations that can act as an entry point for microorganisms with an extension posterior to the joint. Other routes are by contiguous infection, either muscular or intestinal, or by direct inoculation, as in the case of infiltrations.[7,11]

According to the anatomical architecture of the SIJ, the ventral part is composed of a joint capsule that has strong ligaments to stabilize the joint, but is thin and enables fluids, such as joint effusion or pus, to seep over neighboring structures such as the iliopsoas or other muscles near the SIJ. The lumbosacral plexus can be irritated by the inflammatory process and, through the dorsal lumbosacral branches that innervate the SIJ itself, contribute to increasing joint pain.[1]

Blood cultures are positive in 40% to 69% of adults and 46% of children, mainly in febrile patients.[2,15] Regarding the laboratory tests and the etiological study, human leukocyte antigen (HLA) B27 antigen, which is positive in 11% to 22% of the cases of ISI, and serology for HIV must be ruled out.[16,17]

The study with radiographs is not very useful in the diagnosis; Vinceneux et al.[4] reported that the time interval for the appearance of clinical signs that guided the diagnosis was 15 to 30 days, depending on the bacteria.[4] Computed tomography can be useful in the early diagnosis, showing inflammatory changes consistent with ISI.[16] Magnetic resonance imaging is the technique with the highest sensitivity and specificity (95% and 100% respectively), and is considered the gold standard to confirm the diagnosis of ISI.[11] The MRI combines good visualization of the complex anatomy of the SIJ, with the ability to identify different degrees of joint

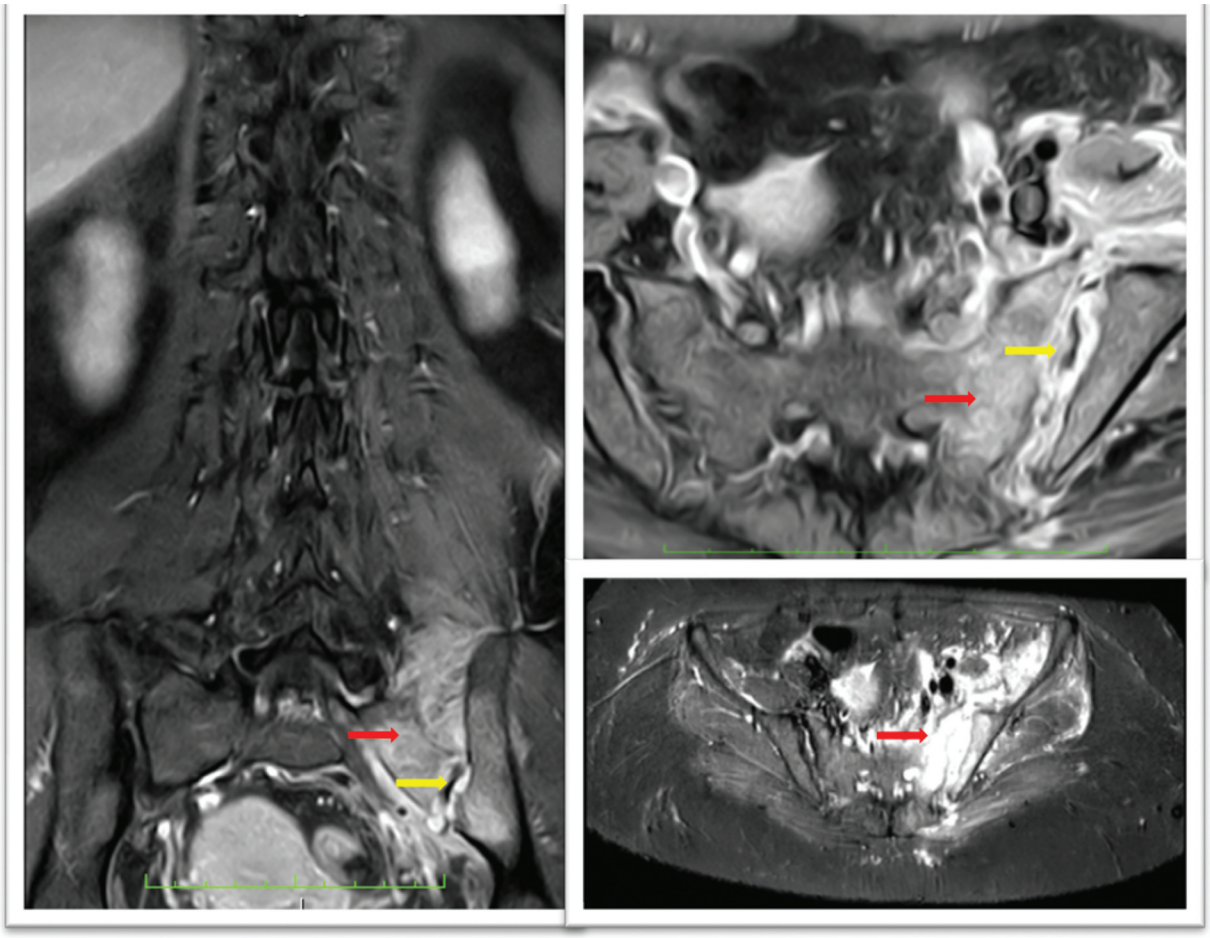

Fig. 4 Coronal (left) and axial (T1-STIR) magnetic resonance imaging scan of the left sacroiliac joint (left), showing irregularity and loss of definition of the subchondral compact bone on both joint surfaces, with erosive phenomena on the bone surfaces (yellow arrows), joint effusion, and accentuated edema of the sacral and iliac spongy paraarticular bone tissue (red arrows).

inflammation and injury, such as fluid in the joint and periarticular collections, bone marrow edema, muscle abscess, presence of bone erosion and sequestrations, capsulitis, or widening of the joint space. Bone marrow edema in sacroiliitis associated with spondyloarthritis showed iliac predominance, while ISI showed sacral predominance or a uniform distribution.[18] In the MRI with contrast, unilateral increased uptake can be seen three days after symptom onset.[6,18–20] However, these findings are not specific, and they are also unreliable in the delimitation between pyogenic and tuberculous etiologies, which is essential for the initiation of treatment.[21] Regarding the need to use contrast, its role in the diagnosis of ISI is the subject of debate, and some authors[22,23] indicate that the administration of contrast is not necessary to detect bone marrow inflammation in the SIJ. The European Society of Musculoskeletal Radiology (ESSR) arthritis subcommittee developed a consensus document that suggests the administration of contrast medium only in doubtful cases.[24]

The Tc-99m scintigram is a sensitive tool for the diagnosis of septic arthritis, useful in patients with ISI, because it restricts the location of the affected joint, and is able to detect it up to 48 hours after the onset of symptoms, although it is not specific.[1,25]

Definitive microbiological diagnosis can be based on blood cultures, fluid sampling by percutaneous puncture guided by X-ray or CT, or surgical cleaning. Aspiration of the SIJ is technically difficult due to its location. The technique consists of placing the patient in the prone position on a radiolucent table, under general or spinal anesthesia, raising the contralateral pelvis with a small, padded cushion approximately 4 cm high, and placing the affected SIJ in line with the image intensifier, positioned at zero degrees of mediolateral tilt. Under radioscopic guidance, a needle of sufficient caliber is placed to take a sample of tissue and perform the aspiration of the SIJ, to send them for the histopathology, existing cultures, and tuberculosis studies.[26] *Staphylococcus aureus* is the most frequently isolated microorganism, in 45% to 83.3% of the cases, according to different authors, followed by coagulase-negative *Staphylococcus*, group-B *Streptococcus*, *Streptococcus pneumoniae*, *Enterobacteriaceae* such as *Escherichia coli* and *Salmonella species*, *Mycobacterium catarrhalis*, *Mycobacterium tuberculosis*, *Haemophilus influenzae*, Brucella species, and *Pseudomonas aeruginosa*.[2,17,27,28] However, in 27% to 40% of the cases, the cultures are negative.[26] Septic arthritis caused by anaerobic microorganisms, such as *Clostridium*, is rare, and is only isolated in 1% of all cases, both in children and adults.[15]

Tuberculous sacroiliitis corresponds to 10% of the cases of osteoarticular tuberculosis.[29] In the absence of identification of any microorganism, empiric antibiotic therapy should be considered against *Staphylococcus*, and in the case of no response, it should be expanded to include gram-negative bacilli.[28]

Delayed diagnosis and/or inadequate treatment of ISI can lead to serious consequences, such as bacteremia with septic shock, osteomyelitis, or abscess formation.[13,26] Currently, there is no consensus on the duration of the antibiotic treatment; the usual duration ranges from 4 to 6 weeks,[2] although some authors[30,31] propose a duration of 4 to 8 weeks, and others, such as Matt et al.,[17] reported that the absence of clinical relapses observed in their group of 18 patients after a minimum follow-up of 6 months suggests that 6 to 12 weeks of antibiotic treatment are sufficient to obtain a cure.[17] The choice of antibiotic is based on the culture and antibiogram.

Surgical intervention is reserved for failure of the conservative treatment, and presence of complications such as abscesses and osteomyelitis.[30,32]

Patient follow-up is prolonged; the absence of symptoms is the first element to consider, in addition to the normalization of the inflammatory parameters. Regarding imaging follow-up, it is important to bear in mind that bone edema persists for up to 20 months after the completion of the treatment, suggesting a slow resolution of ISI, not an acute infection.[33,34]

Conclusion

ISI is a rare disease; however, its complications can cause serious consequences and functional sequelae. A high index of suspicion enables an early diagnosis and timely initiation of treatment. Although a definitive diagnosis requires isolation of the microorganism in a blood culture or joint aspiration, the acute onset of the clinical picture, unilateral involvement, and intense gluteal pain, accompanied by fever, are considered findings that support the diagnosis of ISI. Imaging studies, the MRI in particular, should be performed early to aid in the timely diagnosis. There is still no consensus on the duration of the antibiotic treatment, but a schedule of 4 to 6 weeks is the most appropriate. The current information is based on case reports and small series of patients, so prospective studies are required in the appropriate time with larger series, to define the diagnosis, and the minimum duration of the treatment and follow-up necessary for the control of this infection.

Disclaimer

The opinions expressed in the present article are exclusively the responsibility of the authors, and do not correspond to an official position of the institution.

Conflict of interests

The authors have no conflict of interests to declare.

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