The Egyptian Journal of Hospital Medicine (October 2021) Vol. 85 (1), Page 2785-2787

Acute Pyogenic Sacroiliitis: Brucellosis and Early Diagnosis

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ABSTRACT

Acute pyogenic sacroiliitis is an uncommon condition caused by multiple infectious agents, and a few cases are reported to be caused by brucella species. We present the case of a 20-years-old woman who developed afebrile low back pain of sudden onset, few weeks after the ingestion of unpasteurized milk. Thorough physical examinations with provocative tests were done. Suspected acute sacroiliitis and the brucella etiology were addressed by serological tests completed by multiple imaging. The rapidly favorable response to the antimicrobial therapy was further supportive for the diagnosis.

Keywords: Acute, Pyogenic, Brucella, Sacroiliitis, Brucellosis.

INTRODUCTION

Sacroiliitis is defined as the inflammation of the sacroiliac joint, and can have an acute or chronic presentation. Chronic presentation refers commonly to ankylosing spondylitis, but can also be caused by other rheumatic inflammatory and non-inflammatory conditions. However, acute sacroiliitis is rare and is more likely underlaid by infectious or neoplastic processes [1, 2]. The sacroiliac joint is stabilized by two strong ligaments, the anterior and posterior sacroiliac ligaments. The anterior complex is bordered by a thin capsule that allows joint effusion to diffuse anteriorly into the psoas muscle. Moreover, due to the adjacent lumbosacral plexus, mainly L4-L5 nerves, patients can present with severe pain due to nerve irritations. In acute sacroiliitis, pain can be severe, causing inability to bear weight or walk, and its topography commonly involves the buttock area in 94% of the cases, radiating to lower extremities or groin area in 50% and 14% of the cases respectively [2, 3].

A thorough physical examination with provocative tests is required to diagnose acute sacroiliitis. Early diagnoses can be challenging, and wide differentials can be considered including hip pathology, intervertebral disk injury, gluteal muscle injury, psoas muscle collection or an abdominal etiology [3].

Infectious or pyogenic sacroiliitis, the most common cause of acute sacroiliitis, occurs in young adults with fulgurant onset, causing disability [4, 5].

Biologically, high inflammatory markers and leukocytosis are the hallmark of the infectious etiology, which may be completed by further tests to identify the causing organism [2, 4]. Although, staphylococcus aureus is the most prevalent organism, pyogenic sacroiliitis has often been reported as one of the manifestations of brucellosis, in which case serological tests, polymerase chain reaction (PCR) and enzyme-linked immunosorbent assays are warranted to address the diagnosis at a timely manner, in addition to radiological imaging [6–8].

CASE PRESENTATION

A 20-years-old female having iron-deficiency anemia presented to our emergency department with a 4-day complaint of low back pain of sudden onset. She was transported on a wheelchair and reported no preceding history of trauma. The pain was described as severe, radiating to the left gluteal area with no associated numbness. The patient denied any history of fever or chills, and reported a history of raw milk ingestion.

On examination, the patient was unable to stand or walk. Her vitals were within normal ranges. Low back examination revealed localized tenderness in the lumbar spine region and left sacroiliac joint. The hip range of motion was limited and Faber provocative test was positive. Lower limb neurological examination showed intact motor and sensory function bilaterally.

Laboratory investigations showed elevated C-reactive protein (CRP = 147 mg/L) and erythrocyte sedimentation rate (ESR = 65 mm/hr). Serological testing showed elevated brucella specific antibodies including IgM (unit) and IgG (unit/ml). Imaging including ultrasonography of the hip was carried out showing no fluid collection or joint effusion. Radiographs of pelvis and spine showed normal osseous appearance. An urgent lumbosacral magnetic reasoning imaging (MRI) revealed edematous changes and increased signal intensity at the left sacroiliac joint, along with trace of fluid at the left sacroiliac joint. In addition, edematous changes were noted in the left obturator internus and iliac muscle, and a juxta-articular collection was evidenced superior to the left sacroiliac joint (**Figure 1**).

A multidisciplinary team was constituted to evaluate and co-manage the patient. The team involved infectious

Received:8 /5 /2021
Accepted:4 /7 /2021

diseases, physiotherapy and interventional radiology specialties.

The patient was started on anti-brucella protocol, which included gentamicin 240 mg IV once daily for 7 days, doxycycline 200 mg orally once daily and rifampicin 600 mg orally once daily.

Collection of drainage using minimally invasive techniques or CT guided was considered; however, a consensus against any invasive procedures was reached as the collection was estimated to be minimal and difficult to reach, and given the reputed good response of brucellosis to antimicrobial therapy.

After two days of treatment initiation, the patient reported reduction in pain and started to get mobilized out of bed. She was maintained in hospitalization for 9 days, showing daily clinical improvement and gradual decrease in inflammatory markers.

She was discharged home with an oral antibiotic course, for a total of 12 weeks. During her follow up, no recurrence of symptoms was observed. Informed consent was taken from the patient to write and publish this article while maintaining confidentiality of the patient's identity. This paper was carried in accordance with the code of ethics declared by Helsinki and our hospital ethical approval guidelines.

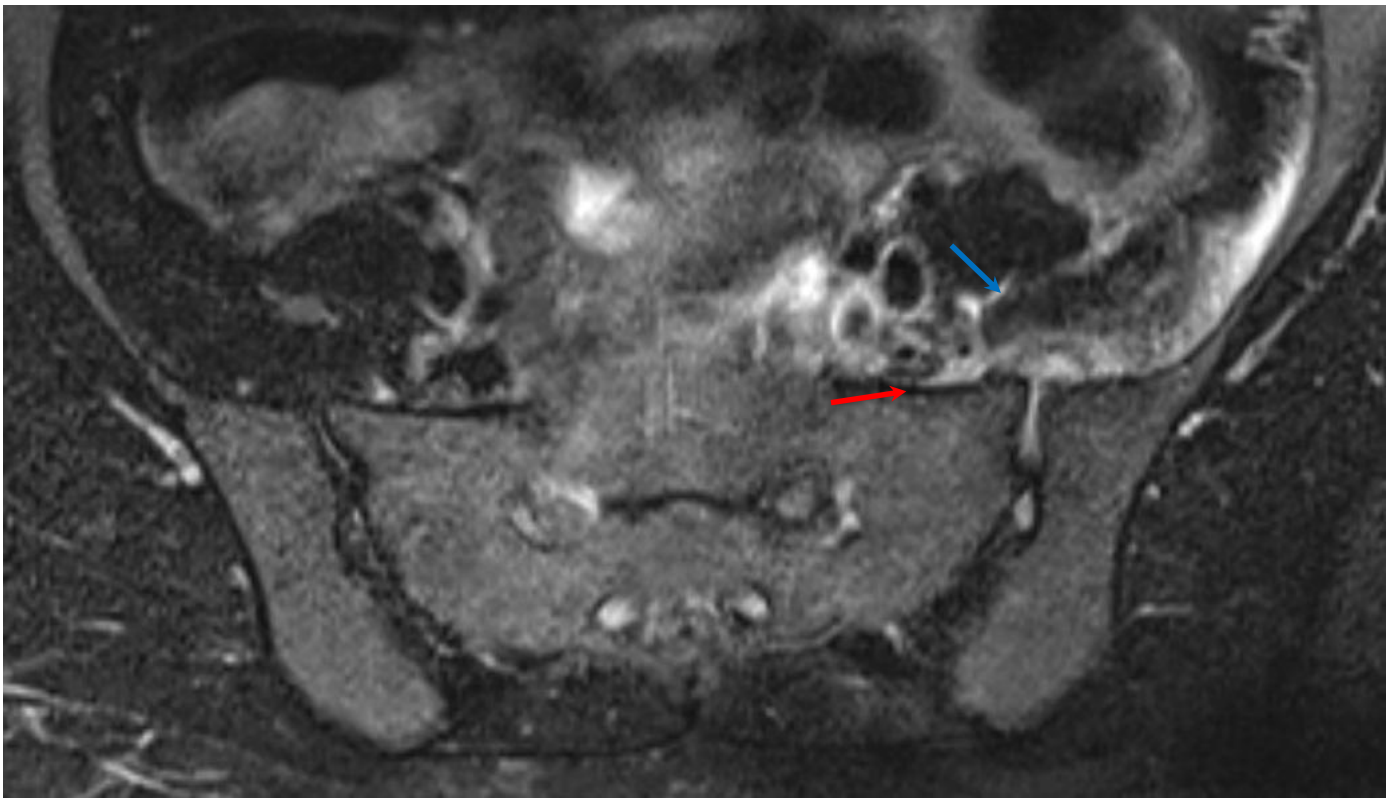

Figure 1: Cross-sectional magnetic reasoning imaging (MRI) of the left sacroiliac joint showing intra articular trace of fluid (red arrow) and juxta-articular collection (blue arrow)

DISCUSSION

Pyogenic sacroiliitis is a rare condition that can be caused by various infectious agents. The sudden severe onset of pain with localized findings are a hallmark in diagnosing acute sacroiliitis clinically, and unilateral presentation associated with marked disability is evocative of the infectious or etiology [3]. Brucellosis is a zoonotic disease caused by Brucella species, which are gram-negative coccobacilli that has principally systemic manifestations such as fever and can affect joints of the axial skeleton beside. Unpasteurized dairy products constitute a common vector of brucella species to human, and the worldwide epidemiological figures vary by region with the existence of profound endemic areas [6, 9, and 10]. In Saudi Arabia, the prevalence of brucellosis reaches up to 15% of the general population, with a markedly higher prevalence in shepherds and farmers (41% and 28 % respectively) [6]. Although many programs were initiated across the globe to eradicate brucellosis, it remains one of the most common zoonotic infections in humans [11].

The case presented here was characterized by an afebrile presentation with acute sacroiliitis. Prompt thorough evaluation and low threshold for obtaining MRI to detect subtle early changes was crucial in managing our case. Early diagnosis and initiation of treatment contribute in enhancing therapeutic response, which prompts recovery and decreases the risk of morbidities [12]. Nonetheless, a delay in diagnosing acute sacroiliitis is frequent, ranging from 1 - 37 days. Diagnosis of acute sacroiliitis is challenging, raising several differential due to the heterogeneous anatomical composition of the concerned area. In acute settings, lumbar disk herniation, septic hip or pelvic abscess can hinder the diagnosis of sacroiliitis. In one series led by **Doita *et al***. [12] five out of nine patients with sacroiliitis were suspected to have other pathologies. In the present case, time to diagnosis was estimated at 2 days, and the immediate start of treatment enabled achieving mobilization 6 days later. Diagnostic modalities for brucellosis included serological testing, in addition to blood or tissue cultures as the gold standard [7].

Different bacterial agents have been incriminated in pyogenic sacroiliitis, including staphylococcus aureus, pseudomonas aeruginosa, streptococci and others. However, blood cultures can be negative in up to 50 % of the cases [3]. In the present case, we could not confirm the diagnosis using fluid culture from the drainage, as the collegial decision was against any invasive procedure unless necessary. Yet, confirmatory blood antibodies for brucella were remarkably high, notably IgM, thereby confirming an active disease. Furthermore, the clinical presentation, especially the history of unpasteurized milk ingestion, in addition to the rapidly favorable response to the treatment supported the diagnosis of brucellosis. We followed our patient for a total 12 weeks with no relapse or recurring symptoms. **Thoma *et al.*** [11] described the optimal management of brucella sacroiliitis as being determined by an early diagnosis, bed rest and properly conducted antibiotic therapy.

CONCLUSION

Brucella sacroiliitis is a rare disease with atypical presentation, yet requiring a low threshold of suspicion in endemic countries as the prognosis is determined by the earliness of diagnosis and management. Early use of MRI is advisable as it detects the early signs of the disease. In absence of tissue culture, serological testing combined with accurate clinical assessment may be sufficient to confirm the diagnosis. A well conducted antimicrobial therapy produces excellent results and may spare the patient unnecessary invasive procedures.

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