

Acute Sacroiliac Joint Infection in a Rugby Player With Atopic Dermatitis

Tadashi Yasuda, MD, PhD*† and Hidekazu Nisimatsu, MD*

Abstract: In athletes, acute bacterial infection is an unusual cause of pain in the sacroiliac joint. Although an entry site for infection is not always evident, the present case of a 15-year-old rugby player suggests the association between right sacroiliac joint infection and skin lesion of atopic dermatitis (AD) infected with group A streptococcus. Magnetic resonance imaging revealed inflammation around the sacroiliac joint with abscess formation. The infection resolved after a course of antibiotics. Because atopic skin lesion is a potential portal of bacteria, treatment for AD is essential for the prevention of pyogenic arthritis in athletes.

Key Words: sacroiliac joint infection, atopic dermatitis

(*Clin J Sport Med* 2012;22:508–510)

INTRODUCTION

In athletes, acute bacterial infection is one of the uncommon causes of pain in the sacroiliac joint (SIJ).¹ Because infected skin lesions of atopic dermatitis (AD) are potential entry sites of causative bacteria, however, the present case report of SIJ infection emphasizes the importance of a high index of clinical suspicion for the correct diagnosis in athletes with AD as well as that of treatment for skin disorder.

CASE REPORT

A 15-year-old male high school rugby player felt right buttock pain during jogging. Two weeks after onset, severe pain made the patient unable to walk and visit the hospital. The patient had a history of AD with no previous treatment with oral corticosteroids. One month before his visit, cellulitis had occurred in the right elbow expanding from the AD skin lesion of the right hand exacerbated during rugby training. Colonization of group A streptococcus had been found in the lesion. Since the cellulitis had improved after a week of antibiotics, the patient had discontinued treatment for AD at his discretion, leading to relapse of eczematous skin lesions with some lichenified portions in the hand. This history raised a suspicion of infection in the SIJ. On physical examination, right SIJ was markedly tender with positive hip flexion-abduction-external rotation test. He had a temperature of 36.9°C. Blood examination revealed elevation of leukocyte count (10500/ μ L), C-reactive protein

(103 mg/L), and erythrocyte sedimentation rate (>100 mm/hour). In contrast to plain radiograph with no clear finding, magnetic resonance imaging (MRI) demonstrated inflammation around the right SIJ (Figure 1). Magnetic resonance imaging also revealed abscess formation ventral to the right SIJ (Figure 1), although no aspirate was obtained through dorsal approach to the joint. No blood culture was performed. Based on the antimicrobial susceptibility to group A streptococcus from the skin lesion, the patient received flomoxef (3 g/d) intravenously and his symptom improved over the next 7 days. After 14 days of intravenous antibiotics, MRI confirmed disappearance of the abscess with decreased signal (Figure 2). The patient took oral cefdinir (300 mg/d) for subsequent 4 weeks. Thereafter, 3 months elapsed before he resumed normal rugby training under strict control of AD.

In summary, this case report indicated the association between acute SIJ infection and AD skin lesion infected with group A streptococcus. Previous remote infection from the AD skin lesion reached the correct diagnosis with MRI demonstrating inflammation around the SIJ concurrent with abscess formation, followed by successful treatment with antibiotics. Although an entry site for the SIJ infection is not always evident, AD skin lesion is a potential portal of causative bacteria and a therapeutic target for prevention of pyogenic arthritis in athletes.

DISCUSSION

Sacroiliac joint infection is relatively rare, representing 1%-2% of all cases of septic arthritis² and is frequently associated with diagnostic delay. Although initial symptoms are usually nonspecific and difficult to differentiate from sciatica or septic arthritis of the hip, the infection typically presents with fever, antalgic gait, and buttock pain. Sacroiliac joints should be specifically examined by palpation in a prone position and a maneuver to stress the joint for patients with atypical presentations.³ Blood tests commonly reveal elevation of C-reactive protein, erythrocyte sedimentation rate, and leukocyte count.⁴ In the early stage, plain radiography and computed tomography have low sensitivities to the infection.^{3,4} In contrast, MRI clearly demonstrates inflammatory reaction and abscess formation around the SIJ.⁴ Thus, MRI is the best imaging modality for diagnosis.

In athletes, infection is an unusual cause of pain in the SIJ. However, it should not be overlooked. Acute bacterial infection may result from torsional injury in the SIJ.⁵ As suggested in the previous case report of a rugby player,¹ it should be mindful that athletic training involving sudden changes in speed or direction could cause chronic and repetitive strain in the SIJ, which provides predisposition to infection.

Bacteriological confirmation of the diagnosis is desirable. Blood culture yield rate is relatively low (~50%). Local

Submitted for publication November 18, 2011; accepted April 4, 2012.

From the *Department of Orthopaedic Surgery, Tenri Hospital, Tenri, Japan; and †Department of Sports Medicine, Faculty of Budo and Sports Studies, Tenri University, Tenri, Japan.

The authors report no conflicts of interest.

Corresponding Author: Tadashi Yasuda, MD, PhD, Department of Sports Medicine, Faculty of Budo and Sports Studies, Tenri University, 80 Tainosho, Tenri 632-0071, Japan (tadyasu@sta.tenri-u.ac.jp).

Copyright © 2012 by Lippincott Williams & Wilkins

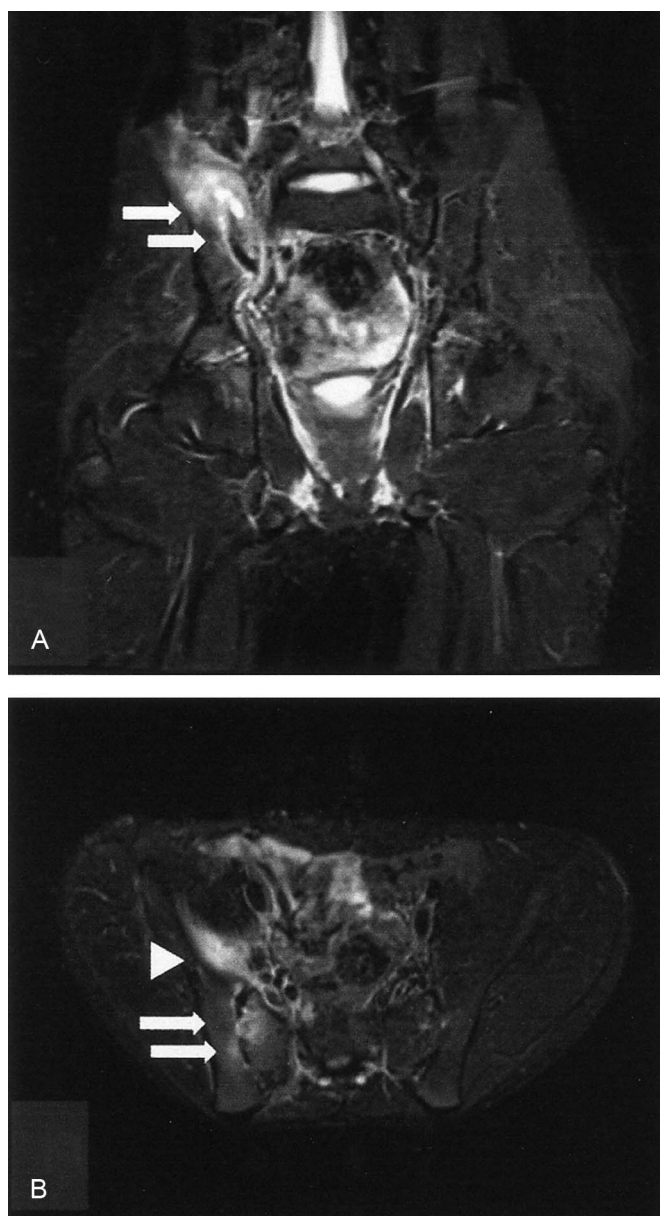


FIGURE 1. Magnetic resonance imaging taken 2 weeks after onset of the patient's symptom. A, Coronal STIR sequence image shows increased signal around right SIJ (arrows), indicating active inflammatory reaction. B, Transverse STIR sequence image demonstrates increased signal around right SIJ (arrows) with abscess formation ventral to right SIJ (arrowhead), which displaces right iliopsoas muscle anteriorly.

synovial fluid culture has a higher yield rate for the pathogens (~75%), although aspiration from the SIJ is technically difficult.⁴ *Staphylococcus aureus* (*S. aureus*) is the most frequently isolated pathogen. Streptococci and gram-negative strains have also been isolated.^{3,4} Therefore, anti-staphylococcal agents are the drug of choice for empirical therapy. Poor response to initial anti-staphylococcal therapy requires other antibiotics with broad coverage of bacteria. High doses of intravenous antibiotics are needed, followed by oral treatment to prevent recurrence.^{3,4}

Other infections at remote areas may be concurrent with SIJ infection.^{3,4} In a literature review, however, the association between SIJ infection and AD has never been described. This is the first report that AD may play a pathological role as a potential portal of bacteria that causes SIJ infection.

The lifetime prevalence of AD is estimated at 15%-30% in children and 2%-10% in adults, whereas the incidence of AD has increased by 2- to 3-fold during the past 3 decades in industrialized countries.⁶ Thus, a considerable number of athletes may suffer from AD. Chronic inflammatory skin condition in AD is often complicated by recurrent microbial superinfections. Defense against microbes is mediated by the early reactions of innate immunity and the later responses from adaptive immunity. Alterations in both innate and adaptive immunity in AD cause frequent bacterial superinfections.⁷

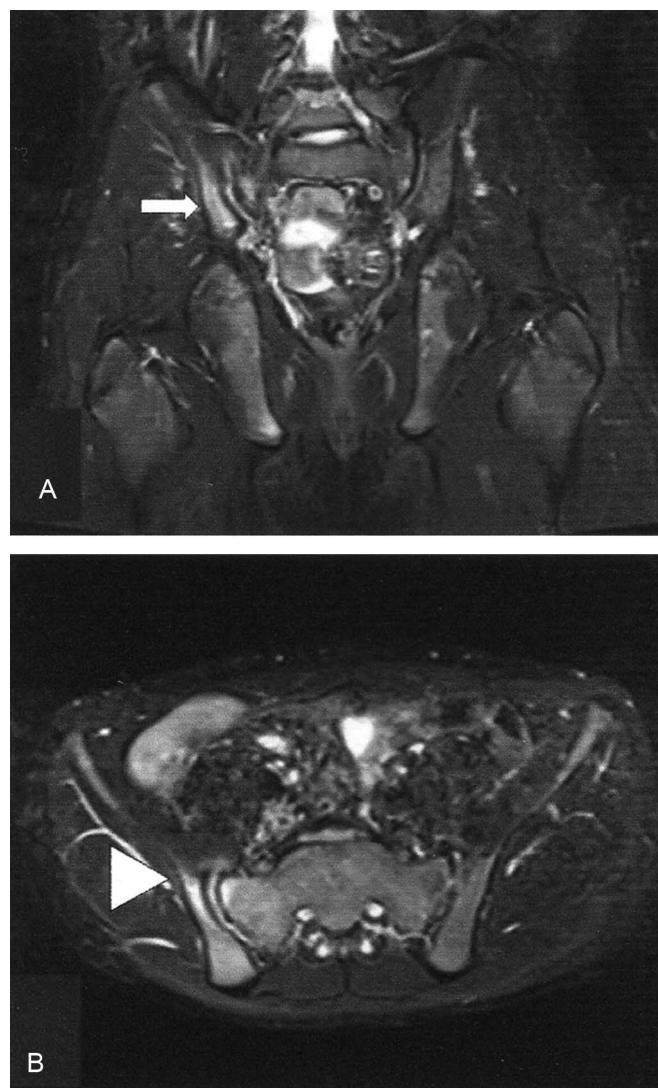


FIGURE 2. Follow-up MRI taken 14 days after intravenous administration of antibiotics. A, Coronal STIR sequence image shows decreased signal around right SIJ (arrow). B, Transverse STIR sequence image shows no obvious abscess in the pelvis (arrowhead).

Infection provokes aggravation of skin lesions and is one of the objectives in AD management.⁶

Atopic dermatitis skin lesions are highly colonized with *S. aureus*. Compared with *S. aureus*, group A streptococcus, which is less frequently infected, significantly causes bacteremia and cellulitis.⁸ In the present case, the antibiotics with susceptibility to group A streptococcus isolated from the AD skin lesion resulted in complete resolution in the present SIJ infection. These indicate that bacteremia of group A streptococcus from the AD skin lesion could induce the SIJ infection, although no data from blood cultures were available. Because frequent abrasion in AD skin lesions during training like rugby becomes a potential portal of pathogens, strict skin care including control of bacterial colonization should be required for athletes with AD, especially those infected with group A streptococcus, to prevent pyogenic arthritis in cooperation with the dermatologist.

REFERENCES

1. Cheer K, Pearce S. Osteoarticular infection of the symphysis pubis and sacroiliac joints in active young sportsmen. *BMJ*. 2009;339:b5019.
2. Hodgson BF. Pyogenic sacroiliac joint infection. *Clin Orthop*. 1989;246:146–149.
3. Shanahan MDG, Ackroyd CE. Pyogenic infection of the sacro-iliac joint. A case of 11 cases. *J Bone Joint Surg*. 1985;67B:605–608.
4. Wu M-S, Chang S-S, Lee S-H, et al. Pyogenic sacroiliitis-a comparison between paediatric and adult patients. *Rheumatology*. 2007;46:1684–1687.
5. Bindal M, Krabak B. Acute bacterial sacroiliitis in an adult: a case report and review of the literature. *Arch Phys Med Rehabil*. 2007;88:1357–1359.
6. Bieber T. Atopic dermatitis. *Ann Dermatol*. 2010;22:125–137.
7. Maintz L, Novak N. Modifications of the innate immune system in atopic dermatitis. *J Innate Immun*. 2011;3:131–141.
8. Sugarman JL, Hersh AL, Okamura T, et al. A retrospective review of streptococcal infections in pediatric atopic dermatitis. *Pediatr Dermatol*. 2011;28:230–234.