Case Report

Postpartum pyogenic sacroiliitis with methicillin-resistant Staphylococcus aureus in a healthy adult: A case report and review of the literature

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A B S T R A C T

Objective: Back and buttock pain during pregnancy and the postpartum period generally improves spontaneously and rarely causes problems. However, such pain is infrequently induced by pyogenic sacroilitis.

Case report: We herein present a 37-year-old female patient with no previous medical history who developed pyogenic sacroilitis with severe right buttock pain 7 days after cesarean delivery. Arthrocentesis was performed, and a culture revealed the presence of methicillin-resistant Staphylococcus aureus (MRSA). After 6 weeks of treatment with intravenous antibiotics, her infection became quiescent. Eight cases of pyogenic sacroilitis during the postpartum period and seven cases during pregnancy have been reported, but most of the causative pathogens were methicillin-sensitive Staphylococcus or Streptococcus species.

Conclusion: This report describes the first case of postpartum pyogenic sacroilitis caused by MRSA. The frequency of infection with MRSA has recently increased, and community-acquired MRSA, which affects even healthy young people, has also become a problem. Antibiotics for empirical therapy after a diagnosis of pyogenic sacroilitis, including anti-MRSA antibiotics, should be carefully selected.

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Introduction

Back and buttock pain during pregnancy and the postpartum period is frequently observed and generally resolves spontaneously. However, it is sometimes associated with gynecological diseases (e.g., abnormal pregnancy), urological diseases (e.g., urinary calculi and pyelonephritis), and orthopedic diseases (e.g., lumbar disc herniation). It has been reported that back and buttock pain is infrequently induced by pyogenic sacroilitis. Rapid diagnosis of pyogenic sacroilitis is important because a delay in the diagnosis and treatment may result in irreversible joint destruction. In this report, we present an extremely rare case of severe buttock pain due to pyogenic sacroilitis caused by methicillin-resistant Staphylococcus aureus (MRSA) during the postpartum period.

Case report

A 37-year-old female patient with no medical or family history had no particular problems during pregnancy. However, at 36 weeks of pregnancy, a nonreassuring fetal status was found, and her first child was born by cesarean delivery. She had no postoperative abnormalities, and the surgical wound site healed well. However, 7 days after surgery, right buttock pain developed with no trigger. She visited the hospital because of the gradually worsening buttock pain, gait disturbance, and fever. Her body temperature was 38.4°C, and severe tenderness was present in the right buttock. A pelvic compression test was positive for the right buttock. Blood testing showed a white blood cell level of 13.96 × 10^9/L, a left shift on the differential white blood count, and a remarkably elevated C-reactive protein level of 220 mg/L. A pelvic radiograph showed no remarkably abnormal findings such as osteolysis or osteosclerosis (Fig. 1), but contrast-enhanced computed tomography revealed enlargement of the right iliac muscle and an abscess accompanied by ring-enhancing lesions anteroposterior to the right sacroiliac joint (Fig. 2).
Magnetic resonance imaging centered on the right sacroiliac joint was performed. The T1-weighted image showed low intensity, and the T2-weighted image revealed abnormal high intensity of the bone marrow and a lesion believed to be an abscess 1.5 cm in diameter in the region anteroposterior to the joint (Fig. 3). Based on these results, the patient was diagnosed with pyogenic sacroiliitis. X-ray-guided puncture of the sacroiliac joint and abscess was performed, and approximately 2 mL of milk–tea-like puncture fluid was collected. Culture of the puncture fluid revealed the presence of MRSA. Blood and urine cultures were negative. After a 3-week combined administration of vancomycin and rifampicin, a 3-week administration of arbekacin was performed. Her symptoms subsequently disappeared, her blood test results became normal, and she was discharged from the hospital. One year after discharge, no recurrence was observed, and she has a favorable prognosis.

Discussion

It is generally reported that pyogenic sacroiliitis accounts for 1.5–10% of all cases of septic arthritis and is a rare disease. It is highly associated with gynecological infection, pelvic trauma, and drug abuse [1]. Therefore, when the major complaints comprise relatively frequently observed symptoms such as back pain, it is difficult to achieve a diagnosis, and treatment delay becomes a problem. In particular, pyogenic sacroiliitis occurring during the postpartum period and pregnancy is very rare, and only seven cases during pregnancy and eight cases during the postpartum period have been reported (Table 1) [1–14]. With respect to the pathogenesis of pyogenic sacroiliitis, increased joint laxity of the pelvis influenced by hormones and hematogenous infection evoked by damage to the sacroiliac joint caused by enlargement of the uterus and childbirth have been reported [15]. In our case, pyogenic sacroiliitis occurred 7 days after childbearing, and in all previously reported cases, it developed within 3 weeks after childbearing and after a midterm pregnancy. These time frames might correspond to the period of uterus enlargement and the duration until stabilization of the postpartum pelvis.

In terms of the clinical symptoms of pyogenic sacroiliitis, most patients, including the present patient, have buttock pain that is often severe and is sometimes accompanied by gait disturbance. In previous reports, pathogenic bacteria were identified in 12 of 15 cases of pyogenic sacroiliitis during pregnancy and the postpartum period. These 12 cases included seven of 13 cases in which blood culture was performed and five of eight cases in which culture of pus via joint aspiration was performed. In our case, blood and urine cultures were negative, but a joint aspirate culture identified MRSA. Because effective antibiotics could be used from the early phase, our case had a favorable prognosis. In all cases, pyogenic sacroiliitis occurs after the organogenesis period of the fetus. Therefore, we conclude that when pyogenic sacroiliitis is suspected, joint puncture with fluoroscopic guidance and culture of both the puncture fluid and blood should be performed. It was previously reported that Staphylococcus species (6 cases, 50%) and Streptococcus species (5 cases, 41.7%) account for the majority of bacterial species causing pyogenic sacroiliitis. Delbarre et al [16] reported that approximately 50% of pathogenic bacteria of pyogenic sacroiliitis are S. aureus. Therefore, penicillin or cephalosporin antibiotics might be the most appropriate first-line drugs for empirical antibiotic therapy.

Pyogenic sacroiliitis caused by MRSA has not been previously reported, and our case is very rare. However, the fatality rate of MRSA infection is reportedly higher than that of methicillin-sensitive
The use of anti-MRSA drugs probably led to the favorable prognosis.

**References**


**Table 1**

Characteristics of the 15 reported cases of pyogenic sacritisitis in pregnancy and postpartum.

<table>
<thead>
<tr>
<th>Study</th>
<th>Age (y)</th>
<th>Pregnancy week or interval from delivery</th>
<th>Risk factors</th>
<th>Symptoms</th>
<th>Cultures</th>
<th>Species</th>
<th>Treatment (duration of drug use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1]</td>
<td>33</td>
<td>25 wk</td>
<td>IDU, UTI</td>
<td>Buttock &amp; thigh pain</td>
<td>Blood/joint</td>
<td>NA/Staphylococcus epidermidis</td>
<td>Nafcillin (42 d)</td>
</tr>
<tr>
<td>[2]</td>
<td>31</td>
<td>23 wk</td>
<td>None</td>
<td>Back and buttock pain</td>
<td>Blood/joint</td>
<td>Staphylococcus aureus/NA</td>
<td>Cloxacillin (75 d)</td>
</tr>
<tr>
<td>Postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[8]</td>
<td>30</td>
<td>2 d</td>
<td>None</td>
<td>Buttock pain</td>
<td>Blood</td>
<td>NA</td>
<td>Clindamycin (8 wk)</td>
</tr>
<tr>
<td>[9]</td>
<td>37</td>
<td>6 d</td>
<td>None</td>
<td>Hip pain</td>
<td>Blood</td>
<td>Group A Streptococcus pyogenes</td>
<td>Benzylpenicillin (3 mo)</td>
</tr>
<tr>
<td>[10]</td>
<td>26</td>
<td>21 d</td>
<td>None</td>
<td>Buttock pain</td>
<td>Blood/urine</td>
<td>NA/Escherichia coli</td>
<td>Clindamycin (3 mo)</td>
</tr>
<tr>
<td>[12]</td>
<td>32</td>
<td>2 d</td>
<td>None</td>
<td>Buttock pain</td>
<td>Blood</td>
<td>Group B Streptococcus</td>
<td>Pristinamycin + RFP (3 mo)</td>
</tr>
<tr>
<td>[13]</td>
<td>23</td>
<td>14 d</td>
<td>None</td>
<td>Buttock pain</td>
<td>Blood</td>
<td>NA/NA</td>
<td>Penicillin G (42 d)</td>
</tr>
<tr>
<td>[14]</td>
<td>23</td>
<td>1 d</td>
<td>IDU</td>
<td>Back &amp; buttock pain</td>
<td>Blood/joint</td>
<td>Staphylococcus aureus</td>
<td>Ceftriaxone (56 d)</td>
</tr>
<tr>
<td>[15]</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

**S. aureus**, and more than 64% of *S. aureus* species identified in intensive care units are MRSA [17]. In addition, the incidence of community-acquired MRSA infection, which even occurs in young people with no risk factors, has increased, and MRSA is one of the most alarming pathogenic bacteria [18–20]. In the present case, the onset was immediately after the patient’s discharge from the hospital, and she had no contact with any animal that could have been the source of the infection. Furthermore, based on its resistance to multiple antimicrobial agents including β-lactams, hospital-acquired MRSA infection was strongly suspected in our case; however, we did not perform genetic screening for MRSA. Among the reported patients with pyogenic sacritisitis during the postpartum period and pregnancy, only six patients had risk factors such as urinary tract infection, and more than half were healthy young people as in our case. Generally, MRSA infection is hardly suspected in healthy individuals and especially young people. However, the number of patients with MRSA infection, as in the present case, might increase. In previous cases of pyogenic sacritisitis, when the pathogenic bacteria could not be identified and the effect of antibiotics was insufficient, the use of anti-MRSA drugs probably led to the favorable prognosis.

**Conflicts of interest**

The authors have no conflicts of interest relevant to this article.

**References**