Pyogenic sacroiliitis and adult respiratory distress syndrome: a case report

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ABSTRACT

Staphylococcus aureus sacroiliitis is uncommon and may lead to bacteraemia, sepsis, and death if diagnosis and treatment are delayed. Its association with pulmonary symptoms has not been reported. We report a 36-year-old Thai woman who presented with a 4-day history of right buttock pain, aggravated by walking, which came on after having a traditional foot massage. She later developed adult respiratory distress syndrome. She was treated with open drainage, respiratory support, and antibiotics.

Key words: infection; respiratory distress syndrome, adult; staphylococcus aureus; suppuration

INTRODUCTION

Pyogenic sacroiliitis is rare in both adults and children. Its diagnosis is based on a medical history, physical examination, skeletal scintigraphy, and computed tomography (CT), or magnetic resonance imaging (MRI) of the sacroiliac joint. Staphylococcus aureus is the most common causative organism. Treatment outcomes have been excellent and mortality rates low since the availability of antimicrobials. Sacroiliitis caused by a group G streptococcus leading to adult respiratory distress syndrome (ARDS) has been reported. S aureus sacroiliitis with sepsis and ARDS has not been reported before. We report one such patient, successfully treated with open drainage, respiratory support, and antibiotics.

CASE REPORT

In June 2005, a 36-year-old Thai woman presented with a 4-day history of right buttock pain, aggravated by walking, which came on after having a traditional foot massage. The patient could not recall any injuries or incidents that may have caused the pain. She had no
medical problems nor was she taking any medication. She was treated unsuccessfully with a non-steroidal anti-inflammatory drug and acetaminophen, and was referred to an infectious diseases specialist one week after onset of her symptoms. She was admitted to hospital for fever, petechiae on all her extremities, and progressive buttock pain. She had pain at night, especially when sleeping on the affected side.

An initial physical examination revealed a 38.4°C fever, generalised erythematous petechiae on the trunk and extremities, tenderness over the right buttock and groin area, and severe pain in the right pelvis. Both hips had a full range of movement.

Laboratory studies showed a haematocrit of 39%, a white blood cell count of 6 400 cell/mm³ with 76% polymorphs, and the erythrocyte sedimentation rate was elevated to 73 mm/h. C-reactive protein was 248 mg/dl (normal range, 0–5 mg/dl). The patient had a fever rising to 39°C for 18 hours and a respiratory rate of 45 per minute.

Blood cultures grew \textit{S} aureus, so parenteral cloxacillin (2 g/4 h) and gentamicin (80 mg/8 h) were administered. Plain radiographs of the chest, hips and sacroiliac joints were unremarkable (Fig.

\textbf{Figure 1} (a) An initially normal posteroanterior chest radiograph. (b) An anteroposterior pelvis radiograph showing normal hip and sacroiliac joints on admission, with a tiny bone island on the right ischial area (arrow).

\textbf{Figure 2} (a) The T2-weighted coronal short tau inversion recovery magnetic resonance image of the right sacroiliac joint shows infiltrating diffuse inflammatory changes with an abnormally high signal intensity and interoposterior loculated fluid (arrowheads) in the right gluteus muscles and back muscles from L4 and L5 (arrows). The right sacroiliac joint space is wider than the left side. (b) The T1-weighted gadolinium transverse sequence magnetic resonance image shows sacroiliitis with extensive surrounding myofascitis appearing as erosion and an abnormal signal intensity in the subchondral bones (arrowheads) and intense enhancement of the periarticular soft tissue structure including the right iliacus and gluteus muscles (arrows).
1. A T2-weighted MRI of the pelvis revealed high-intensity, diffuse inflammatory changes in the right sacroiliac joint, right gluteus muscles, and right back muscles at L4 and L5; the right sacroiliac joint was widened with 2 fluid loculi adjacent (Fig. 2a). A T1-weighted gadolinium image of the right sacroiliac joint revealed intense enhancement of the right iliacus and gluteus muscles, and abnormal signal intensity in the subchondral bones (Fig. 2b).

On day 2, the patient was dyspnoeic with a respiratory rate of 60 per minute requiring oxygen supplementation. Chest radiographs showed patchy infiltrates on both lung fields (Fig. 3). Transoesophageal echocardiography was performed due to suspicion of sepsis and ARDS. Endocarditis was ruled out. Her respiratory status worsened and she was intubated and given ventilatory support in the intensive care unit. She underwent open drainage of the abscess via an extended ilioinguinal approach. An anterior sacroiliac arthrotomy was performed and 30 ml of pus was found inside the joint. Tissue debris detached from the joint cartilage was removed. Cultures of the pus and tissues removed grew *S aureus*.

On day 4, chest radiographs showed a reduction in pulmonary oedema. The endotracheal tube was removed and oxygen supplementation stopped. She received physical therapy and could walk independently 2 weeks after surgery. Parenteral gentamicin was stopped one week later, but cloxacillin was continued for 4 more weeks. Three months later, the patient had returned to work and made a good recovery.

**DISCUSSION**

*S aureus* is the most common causative organism in pyogenic sacroiliitis. Most patients have a history of skin infection, gynaecological infection, respiratory tract infection, and intravenous drug use. Both *Pseudomonas aeruginosa* and *S aureus* are common causative organisms in intravenous drug users. In a review of 163 cases of sacroiliac joint infection from 1878 to 1990, 41% of the patients had no identifiable infected site; 75% had an acute presentation and sudden onset, such as acute fever, infection, and severe continuous pain exacerbated by weight bearing or moving the sacroiliac joint; another 25% had a sub-acute presentation with slow onset, with or without a low-grade fever, and less intense pain.

Our patient had an acute presentation and had no history of trauma at the sacroiliac joint likely to cause the infection. The pain occurred after she had a foot massage. It is speculated that some features of the foot massage (such as gentle and hard rubbing with a towel or skin oil) might introduce infection through the skin.

The diagnosis of ARDS caused by sepsis was supported by diffuse progressive bilateral pulmonary infiltrates on the chest radiographs, decreasing lung compliance, arterial hypoxaemia, and the absence of any underlying cardiac pathology. Cases of group G *streptococcus* sacroiliitis and ARDS in intravenous drug abusers and septicaemia associated with ARDS have been reported. *S aureus* can cause infections of varying severity ranging from skin abscesses and wound infections to debilitating and even life-threatening diseases such as osteomyelitis, endocarditis, necrotising pneumonia, toxic shock syndrome, and sepsis. The pathogenicity of *S aureus* is multifactorial; it can cause a broad range of diseases because abundant virulence factors facilitate attachment, colonisation, tissue invasion, toxinoisis, and immune evasion. An animal study suggested that sepsis caused by *S aureus* may follow a 2-hit model. Both pathways (lipopolysaccharide [LPS] and superantigens [SAGs]) activate monocytes via pattern-recognition receptors, and large T cell subpopulations. Both LPS and SAGs are efficiently synergised in the induction of lethal shock in animal models.

Diagnosing pyogenic sacroiliitis is difficult and may be delayed. Its clinical presentation is often...
misleading and difficult to differentiate from septic arthritis of the hip, gluteal abscess, acute osteomyelitis of the ilium, sciatica, pyelonephritis, psoas abscess, retroperitoneal abscess, and appendicitis. A diagnosis can be made by careful history taking, physical examination, bone scanning, CT scanning, and MRI. Radiographs of the sacroiliac joint are usually normal during the early course of the disease. Bone scans are positive as early as 48 hours after the onset of symptoms. A CT scan and MRI can reveal very early erosive changes and abnormal fluid collections with accurate definition of the sacroiliac anatomy, and help physicians to make decisions on surgery, aspiration, or further drainage, especially when an abscess has formed. Despite the small volume of pus, we considered open drainage more adequate than percutaneously guided drainage because of the sacroiliac septic arthritis and pus collection at the iliacus. As pus was localised at the front right sacroiliac joint, we chose an anterior approach via an extended ilioinguinal incision. Appropriate parenteral antibiotics should continue for at least 4 to 6 weeks.

Our patient was given cloxacillin and gentamicin for their synergistic effect initially. Following open drainage and confirmation of the organism from pus cultures, cloxacillin was continued for another 4 weeks.

Early diagnosis and appropriate parenteral antibiotics, adequate drainage, and respiratory support can avoid the complications of metastatic spread and long-term debilitating effects of pyogenic sacroiliitis associated with ARDS.

REFERENCES