

METHICILLIN-SENSITIVE *STAPHYLOCOCCUS AUREUS* (MSSA) INFECTION RESULTING IN A RARE CASE OF OSTEOMYELITIS PUBIS IN AN ELDERLY FEMALE: A CASE REPORT

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Abstract

A 71-year-old lady with rheumatoid arthritis developed painful peripheral vasculitic neuropathy of the lower limbs and was treated with high dose steroid and cyclophosphamide. Eight months later, she presented with left hip and back pain for a week, with minimal relief from regular analgesia. Although the initial pelvic radiograph was normal, a repeat film performed two weeks later showed a destructive lytic lesion in the left pubic bone, confirmed as osteomyelitis with intramuscular collection by MRI. Cloxacillin was started empirically, and when the blood culture isolated methicillin-sensitive *Staphylococcus aureus* (MSSA), it was planned to be given for six weeks via a peripherally inserted central catheter. Despite an initial response, she became febrile on the fifth week of antibiotic therapy. Subsequent blood culture isolated *Trichosporon asahii*. Her condition deteriorated, and she succumbed on the fourth day of antifungal therapy. In conclusion, the diagnosis of osteomyelitis pubis, a rare complication of MSSA bacteremia, could be delayed in an atypical presentation.

Keywords: Bacteremia, Methicillin-Sensitive *Staphylococcus aureus*, Osteomyelitis, Pubic Ramus

Introduction

Staphylococcus aureus is a common cause of bacteremia. Methicillin-sensitive *Staphylococcus aureus* (MSSA) bacteremia is associated with high morbidity and mortality (1). It could lead to serious infective complications, especially with delay in treatment. A rare complication of MSSA bacteremia is osteomyelitis pubis (2). We describe an elderly patient with rheumatoid vasculitis who had MSSA bacteremia, causing osteomyelitis pubis and muscle abscesses.

Case presentation

A 71-year-old lady presented at the clinic with left hip and back pain for a week, associated with an ulcer in the right big toe which she had noticed a few days earlier. Blood investigations and a pelvic radiograph performed on the same day were normal. Upon review two weeks later, she reported minimal pain relief despite regular etoricoxib and she was admitted for a work-up. Seropositive rheumatoid arthritis was diagnosed 14 years ago, and her disease had been stable with leflunomide. Eight months ago, she

had complained of difficulty in walking with severe pain involving both feet. A peripheral neuropathy secondary to rheumatoid vasculitis was diagnosed. She was treated with high dose prednisolone and a three-month course of two-weekly intravenous (IV) cyclophosphamide. She responded poorly and required assistance in walking due to the neuropathic pain.

On examination, she was normotensive and afebrile. She was not able to sit or lie on her sides due to the severe pain localised to her left hip and suprapubic area. The pain also precluded a proper examination of the left hip. There was evidence of chronic rheumatoid arthritic deformity, but there was no active synovitis. Neurological examination of the lower limbs revealed peripheral neuropathy with 4/5 motor power at the ankles. There was also an infected ulcer on the right big toe.

Abnormal laboratory investigations included a leukocytosis of 15.3×10^9 g/L, an erythrocyte sedimentation rate of 79 mm/hour and a C-reactive protein (CRP) of 28.8 mg/dL. A repeated pelvic radiograph showed a destructive lytic lesion in the left pubic bone (Figure 1). IV cloxacillin was

empirically started for the infection, with amitriptyline, celecoxib, tramadol and paracetamol for more effective pain control. The blood culture taken on admission revealed MSSA and a workup for disseminated MSSA was performed. Magnetic resonance imaging (MRI) revealed a hyperintense lesion in the left pubic bone (Figure 2A) and rim enhancement with intramuscular rim enhancing collection (Figure 2B). Metastatic MSSA infection with osteomyelitis pubis and intra-muscular abscesses was diagnosed.



Figure 1: Plain radiograph of the pelvis shows a destructive lytic lesion in the left pubic bone (black arrow)

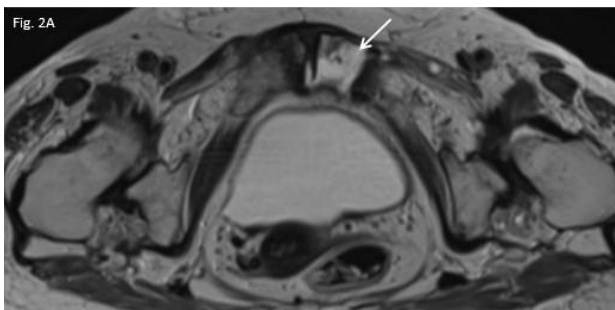


Figure 2A: T2- weighted axial MRI image shows a hyperintense lesion in left pubic bone (white arrow)

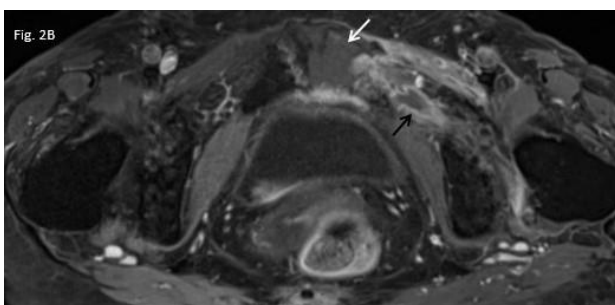


Figure 2B: Post contrast T1-weighted fat suppression MRI image shows left pubic lesion with rim enhancement (white arrow) and intramuscular rim enhancing collection (black arrow)

The orthopaedic team was consulted, and the decision was made to treat medically with IV cloxacillin 2 gm 4 hourly, through a peripherally inserted central catheter. She improved gradually, and after two weeks, her analgesia requirement had reduced to paracetamol as required, and she could move her left hip. On the fifth week of antibiotic therapy, she began to ambulate using a walking frame, the white cell count was normal, and the CRP was 1.9 mg/dL. Unfortunately, she deteriorated a few days before her antibiotic course was completed, and peripheral blood culture grew *Trichosporon asahii*. IV anidulafungin was started, but she continued to deteriorate and eventually succumbed on day 4 of anti-fungal therapy.

Discussion

Staphylococcus aureus is an important pathogen in human disease and is the leading cause of bacteremia, infective endocarditis, as well as skin and soft tissue, osteoarticular, pleuropulmonary and vascular catheter-related infections (3). The most common primary source of MSSA bacteremia was catheter-associated bloodstream infection (34.2%), followed by skin and soft tissue infection (20.5%) (4). Risk factors of MSSA bacteremia are vascular catheter access, hemodialysis, impairment of host human defence, IV drug abuse, especially in HIV-infected person and advanced age more than 70 years (3, 5). The patient had multiple risk factors for developing MSSA bacteremia as she was an elderly lady who was rendered immunocompromised from her medications of steroid, leflunomide and cyclophosphamide and the underlying rheumatoid arthritis.

Horino et al. (4) reported metastatic infections in 14 of 73 patients with MSSA bacteremia, which included infective endocarditis, septic pulmonary abscess, spondylitis, psoas abscess, epidural abscess and septic arthritis. Multiple metastatic infections occurred in six patients. Osteomyelitis pubis is a very rare complication of MSSA bacteremia, and it represents less than 1% of all cases of osteomyelitis (2). The pathogens reported causing osteomyelitis pubis in a review of 99 patients were *Staphylococcus aureus* (34%), *Pseudomonas aeruginosa* (24%) and polymicrobial (19%) (5). It occurred more frequently in women who had undergone urology or gynaecology procedure, athletes in sports requiring hip adduction, pelvic malignancies and IV drug users (5).

Typical features of pubic symphysis infection were fever (74%), pubic pain (68%), painful gait (59%), pain with hip motion (45%) and groin pain (41%) (5). The patient did not mount a fever response possibly due to her immunocompromised state and steroid use, and her painful gait was confounded by pre-existing neuropathic pain which made diagnosis more difficult. Pelvic radiographs are less sensitive in the detection of pubic osteomyelitis, especially in the early course of disease where only about two-thirds of patients had initial abnormal findings (5). Due to this, MRI is considered the most sensitive imaging test for early disease (5, 6).

The outcome of osteomyelitis pubis secondary to MSSA infection, with or without bacteremia, in various case reports, was favourable with the resolution of symptoms after antibiotic therapy alone, without surgical intervention (2, 7-9). However, unlike the patient, these cases were relatively younger patients aged between 16 to 56 years old. The outcome of MSSA was not as favourable with mortality rate reported to range between 20-35% in all age groups, even with treatment (7). The predictors of mortality in MSSA bacteremia included age 65 years and more (47.5 % in older versus 23.2% in younger patients), higher Charlson comorbidity index, female sex, impaired functional capacity, pneumonia or primary bacteremia, and non-performance of a transesophageal echocardiogram (10). Apart from fungemia, the patient had other predictors which contributed to her mortality which included older age, female gender, immunocompromised state and functional limitation.

Conclusion

Osteomyelitis pubis is a rare complication of MSSA bacteremia. The diagnosis should be considered in patients who have difficulty in mobility due to severe hip and back pain. Non-specific symptoms often lead to a delay in diagnosis and treatment; therefore, clinical suspicion should warrant an MRI, especially if the plain radiograph is normal.

Acknowledgement

We would like to acknowledge the orthopaedics and infectious disease teams for their help in managing this patient. We would like to thank the Director-General of Health Malaysia for his permission to publish this article.

Funding

This work received no specific grant from any agency.

Competing Interests

The authors have no conflict of interest to declare.

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