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Case Report

Osteomyelitis of the Ischium in a Hemodialysis Dependent Adult – A Rare Case Report

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Abstract

Introduction: Osteomyelitis of the pelvis is rare, and the correct diagnosis may be missed during the early stage when the correct treatment would be most beneficial. Osteomyelitis requires multidisciplinary treatment to cure or control symptoms.

Case Presentation: A 71-year-old woman, with end stage renal disease on hemodialysis, presented in emergency department for purulent drainage of a right buttock swelling. A pelvic computer tomography (CT) revealed a collection of the gluteal musculature and an activated chronic osteomyelitis with one osteolytic lesion on right ischiopubic branch. The patient underwent surgical treatment, with need of two interventions. First, she was only submitted to surgical drainage of the abscess. She completed a cycle of antibiotic therapy, with good response. Two months later, she returns with fever and drainage of the surgical wound. A pelvic CT showed an area of bone destruction at right ischium, with an increase in bone sequestration. She underwent a partial orchiectomy and surgical debridement of necrotic tissues. A *Klebsiella oxytoca*, *Proteus mirabilis* and multidrug-resistant *Staphylococcus epidermidis* was isolated. She was on antibiotic therapy for 4 months. Three years later, she remains without new symptoms or signs of active osteomyelitis.

Conclusion: Pelvic osteomyelitis represents a diagnostic challenge, because the symptoms and signs vary, depending on the initial site of infection, its duration and the direction of its spread. Osteomyelitis of the ischium is generally diagnosed in the late stage with complications. Treatment of pelvic osteomyelitis is challenging due to the anatomic constraints of the pelvis and the high degree of comorbidity in affected patients. A multidisciplinary approach is often required. This case of a chronic abscess with osteomyelitis of the ischium is rare and was neglected for months because of the absence of constitutional symptoms in a hemodialysis dependent woman.

***Keywords:** Osteomyelitis, Ischium, Ischiectomy.*

Introduction

Osteomyelitis is an infection characterized by progressive inflammation, local destruction, and the apposition of new bone.[1] Osteomyelitis of the pelvis is a rare disease which may be difficult to diagnose.[1,2,3] The incidence of this disease is low and the correct diagnosis may be missed during the early stage when the correct treatment would be most beneficial.[1,2] Osteomyelitis of the ischium is usually described in children and adolescents, but is uncommon in adults.[2,4] These infections are debilitating and potentially life-threatening conditions.[5]

A careful history and physical examination in combination with appropriate imaging and diagnostic tests generally leads to the correct diagnosis and appropriate therapy.[1,2] Osteomyelitis requires prolonged periods of multidisciplinary treatment to cure or control symptoms.[4,6] In surgical approach to pelvic osteomyelitis, is necessary the resection of all necrotic and infected tissue. Broad-spectrum empirical antibiotic treatment is often used due to the range of infecting organisms found, and frequent polymicrobial infection.[4,6] We report a case of a hemodialysis dependent woman with active suppurative abscess, with osteomyelitis of the ischium in which the diagnosis was delayed. She underwent an effective surgical treatment and three years later remains free of any sign of infect.

Case Presentation

A 71-year-old woman, with end stage renal disease on hemodialysis, presented in orthopedic emergency department for purulent drainage of a right buttock swelling, which had months of insidious evolution. She only had sustained fever for a week of evolution. The malaise and asthenia were common symptoms for this patient between hemodialysis sessions, so she didn't value those symptoms. She was treated in another institution and underwent drainage of the abscess months before. Analytically, she had elevated acute inflammation laboratory tests – elevated white cells count, erythrocyte sedimentation and C-reactive protein.

A pelvic computer tomography (CT) was performed. This revealed an abscessed collection on the gluteal musculature measuring approximately 11.5x6.5 cm, compatible with an abscess, and an activated chronic osteomyelitis with one osteolytic lesion of the posterior aspect of the right ischiopubic branch, with sclerosis of their boundaries and infiltration of their medulla, containing a bone sequestration (Figure 1). Thereafter, a magnetic resonance imaging was done which confirmed the CT images. A diagnosis was made of ischiatic osteomyelitis complicated by an abscess.

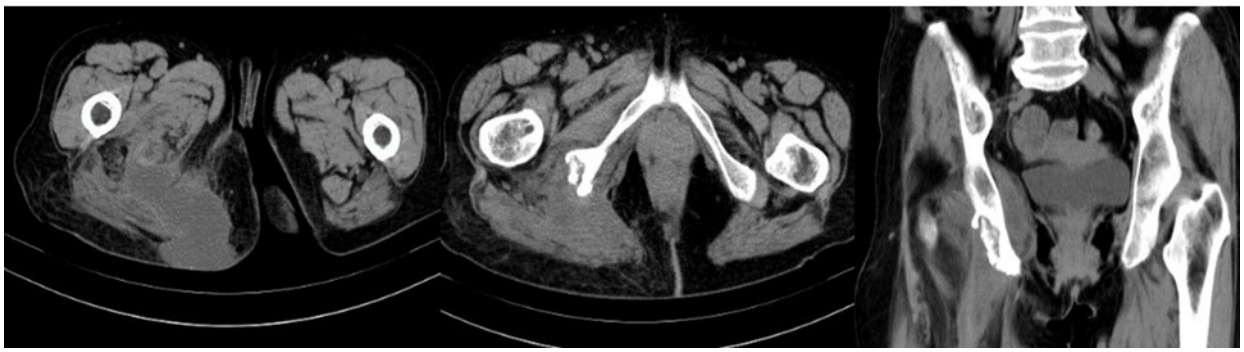

Figure 1 *- Collection of the gluteal musculature measuring approximately 11.5x6.5cm in the axial and osteolytic lesion of the posterior slope of the ischiopubic ramus, measuring approximately 2.5 cm, containing a bone sequestration and bone sclerosis adjacent to this lesion, translating phenomena of chronic osteomyelitis.*

The patient underwent surgical drainage of the abscess, with intraoperative samples sent for microbiology, without isolation of any agent. Post-operative control CT showed a decrease in the abscess. She was hospitalized for 34 days, under antibiotic therapy with vancomycin, metronidazole and imipenem (performed in hemodialysis sessions). At the time of discharge, she presented good response and improved general condition, decreased fever and pain, decreasing inflammatory parameters and a good wound healing, without drainage or inflammatory signs.

Two months after surgical drainage, she returns to emergency department, for fever and drainage of the surgical wound. Objectively, there was a fistula in the previously drained region, with an open path, without tension in the buttocks. Analytically, she had elevated acute inflammation laboratory tests and negative blood cultures. The tunneled-cuffed-catheters of hemodialysis showed no inflammatory signs. A pelvic CT was performed and showed an area of bone destruction at the level of the right ischium, with an increase in bone sequestration, with approximately 5 cm of greater longitudinal axis, compared to previous images (Figure 2).

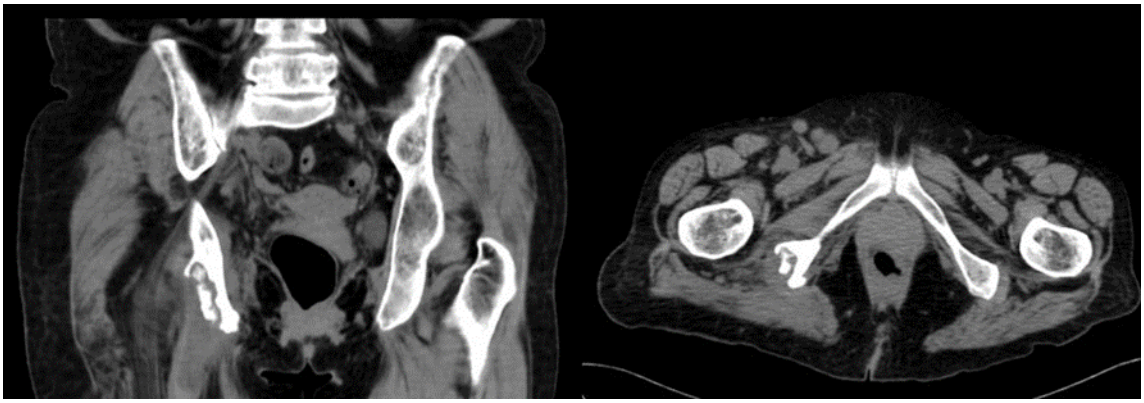

Figure 2 *– Sagital and axial planes of CT images showing an area of bone destruction at the level of the right ischium, with an increase in bone sequestration, with approximately 5 cm of greater longitudinal axis.*

She underwent a new surgical intervention, using a posterior surgical approach to ischium. A fistulectomy was performed. Care was taken to identify and isolate the sciatic nerve. A partial ischiectomy was done. The remaining bone, fistulous tract and necrotic tissues was debrided (Figure 3). Intra-operatively, a huge amount of pus and necrotic tissue were found. Biopsy for microbiology and pathology studies was taken, and the results was positive, with identification of *Klebsiella oxytoca*, *Proteus mirabilis* and multidrug-resistant *Staphylococcus epidermidis*.

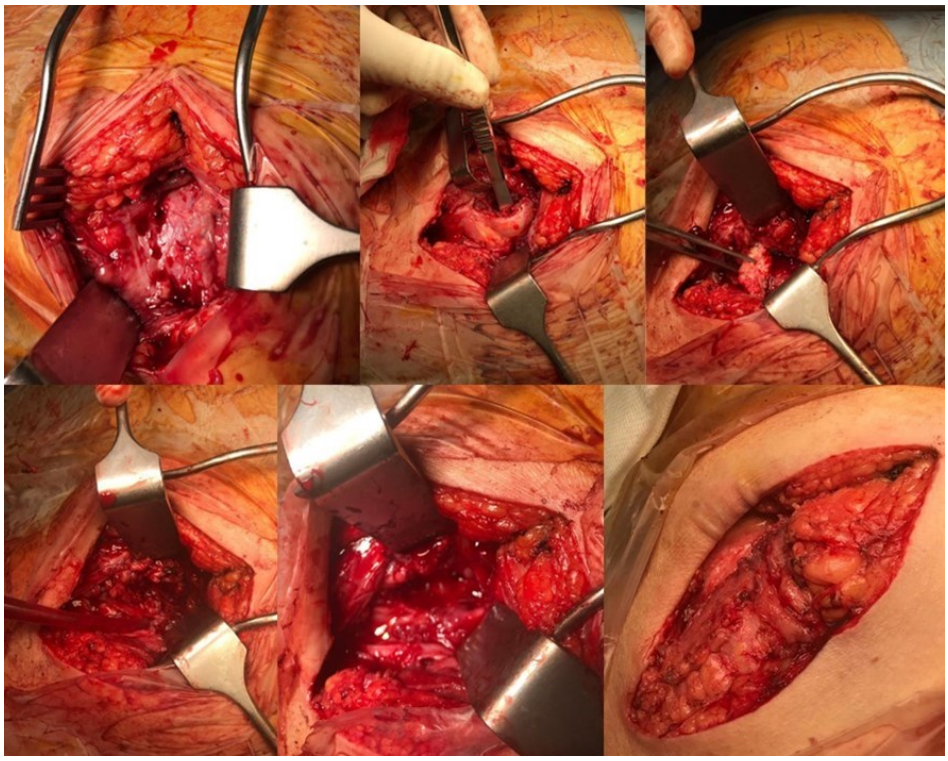

Figure 3 *– Intra-operatively image of isolation of sciatic nerve, identification of bone sequestration, partial ischiectomy and surgical debridement of remaining bone and necrotic tissues.*

A post-operative CT was performed, which confirmed the resection of the bone sequestration (Figure 4). A pelvic MRI was performed and identified destructive aspects of the right ischium, without collection.

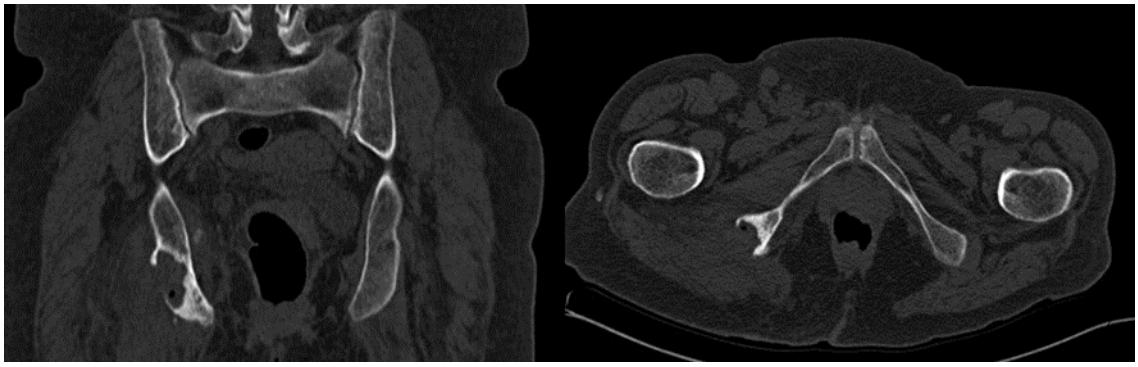

Figure 4 *– Coronal and axial images of CT performed post-operative shows bone sequestration resection.*

During hospitalization, the patient completed 24 days of ceftriaxone and vancomycin, with good response. Although the full length of antibiotic treatment was supposed to be 6 months, the patient only completed 4 months of linezolid due to myelosuppression.

At three years of follow up, the patient remains under surveillance, with sustained apyrexia, without new episodes of drainage or fistulas and overlapping images in lasts CT and MRI performed - structural alteration of the right ischiopubic branch, with bone sclerosis and erosive aspect of the ischial tuberosity, without new bone sequestration, collections, or other signs of active osteomyelitis (Figure 5).

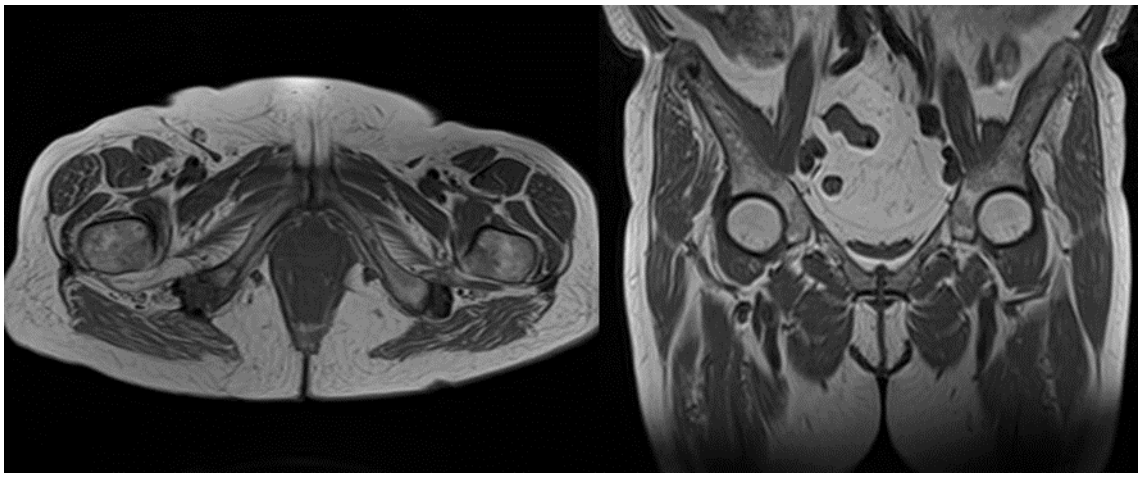

Figure 5 – *Axial and coronal MRI images of destructive aspects of right ischium, with bone sclerosis and erosive aspect of the ischial tuberosity, without new bone sequestration, collections, or other signs of active osteomyelitis.*

Discussion

Osteomyelitis of the pelvis and ischium was first described in 1953 by Ingelrans and Lacheretz.[1,3] Pelvic osteomyelitis is a rare but serious disease that can cause chronic pain around the hip and groin, it has been reported to represent 1–11% of all cases of haematogenous osteomyelitis.[1,3] Among the pelvic bones, the most commonly affected is the ilium.[7]

Ischiatic osteomyelitis, which is usually found in children and adolescents, is extremely rare in adults.[1-3] Most cases in adults are localized to a single bone, usually due to a local risk factor.[7]

Infections of pelvic bones may arise hematogenously, secondary to trauma or surgery via direct inoculation of pathogens into bone, via contiguous spread of infection from soft tissues, sequelae of spinal cord injury or pelvic inflammatory disease.[4,5] These infections may manifest as pelvic osteomyelitis or septic arthritis with contiguous spread to the adjacent bony margins.[7]

The rarity of the condition and the way in which its clinical signs imitate other diseases make it a challenging diagnostic.[3] Pelvic osteomyelitis is often characterized by vague symptoms of poorly defined hip pain, limited range of motion, and difficulty with ambulation, and often represent a diagnostic challenge.[3,7,8] The symptoms and signs vary, depending on the initial site of infection, its duration and the direction of its spread.[3]

Infection is commonly polymicrobial, as seen in our case. Staphylococcus aureus is the most commonly observed organism, while other entities are lesser frequent.[2,7] Osteomyelitis of the ischium is generally diagnosed in the late stage with complications: abscess, septicemia or secondary localizations.[1,9,10]

Laboratory tests can be misleading, with some patients with the white cell count and the erythrocyte sedimentation within the normal range in the beginning. Radiological changes appear late in the course of the disease or are so slight as to be detected only retrospectively. [1,3] The CT is more helpful in the early diagnosis and localization of the lesion, but requires very careful evaluation. Magnetic resonance imaging may be more useful, and is the technique of choice in the diagnosis of pelvic osteomyelitis. [1,3,10]

Treatment of pelvic osteomyelitis is challenging due to the anatomic constraints of the pelvis.[4] A multidisciplinary approach is often required, with surgical excision of all necrotic tissue in addition to broad-spectrum antibiotics covering *Staphylococcus aureus*, coliforms, and gram-negative rods.[4,5] In the presence of dead bone, infection cannot be successfully eradicated with antibiotics alone due to biofilm.[4,10] Following surgical debridement, the ideal duration of antibiotic therapy is not clear.[4]

In our patient, we observed polymicrobial infection, so we administered appropriate antibiotics guided by culture and sensitivity. But was necessary a reintervention probably because in the first surgery the surgical team only treated the abscess and the dead bone wasn't removed. In the second surgery, all necrotic tissue and bone was removed, resulted in rapid and complete recovery. If the patient had been diagnosed earlier and more aggressive intervention offered in an earlier stage, the patient could have avoided a second intervention and shortened her hospital stay. The earlier diagnose and treatment is extremely important because complicated cases may require hemipelvectomy or hemicorporectomy, procedures that carry significant mortality.[4]

This case of chronic abscess with osteomyelitis of the ischium was neglected for months because of the absence of constitutional symptoms in a hemodialysis-dependent woman. Additionally, the fact the abscess was treated initially as a soft tissue infection, and not as osteomyelitis, also delayed effective treatment of osteomyelitis.

Conclusion

This case reports a rare location of ischiatic osteomyelitis in a hemodialysis dependent patient, with a rare microorganism identified in microbiology, who underwent an effective multidisciplinary treatment. The delay of diagnosis of osteomyelitis in this case emphasizes the importance of considering this rare cause within the differential diagnosis. Appropriate investigations must be ordered to confirm the diagnosis, and early appropriate antibiotic therapy associated with effective surgical treatment must be performed to limit the significant morbidity that can result.

Conflict of Interest

The authors declare no conflict of interest.

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