

Piriformis pyomyositis: a rare cause of sciatica

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ABSTRACT

A 30-year-old Thai woman with piriformis pyomyositis presented with sciatica. Computed tomography showed swelling and enhancement of the right gluteus medius and piriformis muscles. She made a complete recovery after a course of intravenous antibiotics. This condition has only been reported three other times and is often diagnosed with difficulty. It could be erroneously dismissed as a lumbar disc prolapse. If untreated, it could lead to prolonged hospital stay and death. A high index of suspicion, early diagnosis and appropriate antibiotic or surgical treatment leads to full recovery.

Keywords: back pain, piriformis infection, pyomyositis, sciatica

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INTRODUCTION

Sciatica is a common presentation of a prolapsed lumbar disc. It may be encountered in both the primary health setting as well as in the orthopaedic clinic. Less common causes such as spinal stenosis, pelvic tumours or even primary nerve tumours can also cause this symptom. Most of the time, an acute episode is treated conservatively. We present a case of a patient with piriformis pyomyositis who presented with sciatica. There have only been three reported similar cases worldwide⁽¹⁻³⁾. This is a rare infective cause which, if promptly treated with intravenous antibiotics, has complete resolution. However, if there is a delay in diagnosis and treatment, it can result in deep abscess formation, sepsis and death.

CASE REPORT

A 30-year-old Thai woman was admitted to the Orthopaedic department for severe right-sided gluteal pain and sciatica that had started two months ago and had steadily become worse. She was unable to walk due to the pain. There was no history of trauma or past history of lumbar spine problems or similar symptoms.

The only interesting detail in her past history was that she was admitted three months ago to another hospital for a missed abortion for which she underwent a dilatation and curettage.

The patient was afebrile and non-toxic. She was healthy, well-nourished and the only problem was her right leg symptoms. She had reduced range of lumbar spine movements with paravertebral muscle and hamstring spasm. Straight leg raising test was normal on the left side but reduced to 30 degrees on the right. Lasègue and Bowstring tests were also positive. There was non-specific tenderness in her right gluteal region. Testing of lower limb power was non-conclusive as she could not cooperate due to pain, but sensation and reflexes were normal. Rectal and vaginal examinations were also normal. Radiographs of her lumbar spine were unremarkable.

The provisional diagnosis made was a lumbar disc prolapse, and she was put on bed rest and symptomatic treatment. Initial blood investigations subsequently showed mild leucocytosis of $10.2 \times 10^9/L$. Erythrocyte sedimentation rate (ESR) was 95mm/hr and C-reactive protein (CRP) was 141. At this point in time, she continued to have increasing right gluteal pain and sciatica. In view of the non-improving clinical condition and the raised ESR and CRP, magnetic resonance (MR) imaging of her lumbar spine was performed to rule out an epidural abscess or infective discitis. This was however normal, and there was no evidence of nerve root compression or prolapsed disc. Blood and urine cultures were also normal.

After five days of conservative treatment, she developed a fever. A repeat haematological investigation showed leucocytosis of $12.5 \times 10^9/L$, ESR of 121mm/hr, and CRP of 363. The right sciatica had worsened and the right gluteal pain was now more localised. She now adopted a flexed position in her right hip. Computed tomography (CT) of her abdomen and pelvis was obtained to look for retroperitoneal or deep pelvic abscesses. This time, it showed swelling of the inner fibres of the right gluteus medius and right piriformis muscles, suggestive of early abscess formation and piriformis pyomyositis (Fig. 1). Plans to drain the

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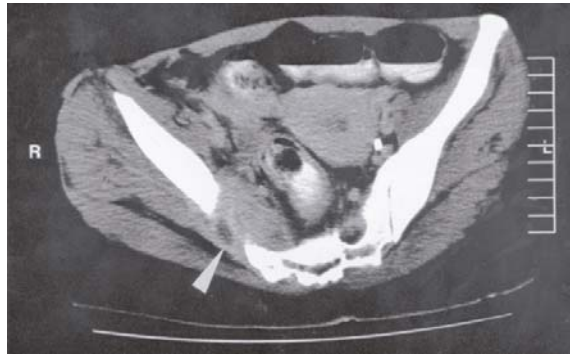


Fig. 1 Enhanced axial CT image of the pelvis shows swelling and moderate enhancement of the right gluteus medius and piriformis muscles. A small abscess is arrowed.

small collection by radiological-guided needle drainage were aborted as the abscess was felt to be small and too close to the sciatic nerve, thus risking nerve damage. She was empirically commenced on intravenous ciprofloxacin and vancomycin (as she was allergic to penicillin).

We also contacted her attending physician from the hospital where she was admitted to three months ago, to find out more about her clinical course at that time. It was made known to us that after her dilatation and curettage, she developed post-operative fever and pelvic pain. The curettage tissue samples at that time also grew methicillin-sensitive *Staphylococcus aureus*. She was given intravenous vancomycin for two weeks at the previous hospital. Based on this information, we stopped the ciprofloxacin and only continued the vancomycin. Her symptoms improved dramatically and her haematological results all showed an improving trend. Human immunodeficiency virus (HIV) testing was negative. She was discharged after two weeks of intravenous antibiotics. A follow-up visit in the clinic showed full recovery with normalised ESR and CRP.

DISCUSSION

The piriformis muscle is situated partly within the posterior wall of the pelvis and partly extending to the back of the hip joint. Its origin is from the anterior part of the first three sacral segments, the gluteal surface of the ilium, the capsule of the adjacent sacro-iliac joint, and the posterior part of the pelvic surface of the sacrotuberous ligament. The muscle then tapers and exits the pelvis via the greater sciatic notch, inserting into the piriformis fossa on the greater trochanter of the femur. As the sciatic nerve also leaves the pelvis by the greater sciatic notch, it is intimately related to the piriformis muscle. Any pathology in the muscle would push the nerve anteriorly, entrapping it between the piriformis and the gemellus superior muscle, and hence irritate the nerve. The endopelvic fascia in the pelvis overlies the psoas, iliacus, piriformis and obturator

muscles. Infections of the spine and pelvis drain into these retrofascial regions, potentially causing muscular infections. Such infections may then exit the pelvis, and may progress to a septic hip or lower limb cellulitis. This presentation of infection at the point of extension rather than the origin is a source of confusion for clinicians. This was also the reason why we were misled into performing MR imaging of the lumbar spine which turned out to be normal. This was exactly the mode of infection spread in our patient where a pelvic infection had spread to the retrofascial compartment.

Pyomyositis is a rare bacterial infection of skeletal muscle. Being more common in the tropics, it has also been known as tropical myositis or myositis tropicans⁽⁴⁻⁶⁾. The causative organism is usually staphylococcus or streptococcus. Pyomyositis of the piriformis muscle causing sciatica has, to our knowledge, only been reported three times⁽¹⁻³⁾. Various predisposing factors have been put forward, including vitamin C deficiency, sickle cell disease⁽⁷⁾, concomitant viral or parasite infection, human immunodeficiency virus infection and rheumatological disease^(8,9). The case reported by Kinahan and Douglas⁽²⁾ and our patient shared the same history of an obstetrical event. In our patient, we also set out to exclude the possibility of a concomitant HIV infection.

The diagnosis of pyomyositis is largely based on strong clinical suspicion. Proper clinical diagnosis is difficult as the infection is deep, making palpation or even needle aspiration difficult. Contrast-enhanced computed tomography is useful as the abscess contains a hyperaemic peripheral ring which shows enhancement. MR imaging is useful in defining the soft tissue boundaries and pre-surgical anatomy. Ultrasonography also has a role in evaluating suspected abscesses but may not be able to determine the extent of bony involvement⁽¹⁰⁾. Our patient's diagnosis was made by CT of the abdomen and pelvis as we were initially unsure whether we were dealing with a retroperitoneal or pelvic infection.

Chiedozi divided the infective process into three stages. The first or invasive stage has minimal signs of inflammation. The affected muscle is described as hard, there is no purulence, and only mild leucocytosis. The second stage is the suppurative stage where increased signs of inflammation appear. This often occurs about two to three weeks after the first onset of symptoms. The final stage manifests with systemic toxicity. Our patient is likely to have presented to us at the end of the first stage, tipping over into the second stage while in hospital and fortunately for her, not entering the third through timely diagnosis and intervention. Diagnostic delay could lead to a prolonged hospital stay and mortality rates of up to 10 percent⁽¹¹⁾.

The treatment of pyomyositis may consist of just intravenous antibiotics alone if diagnosed early, and minimal abscess collection has occurred. Antibiotic treatment should be based on cultures obtained directly from the abscess or from blood. In our case, we were fortunate to have the culture results from her pelvic infection relayed to us from another hospital. The small size of the abscess also meant that surgical or radiological-guided needle drainage was not necessary. If diagnosed late, surgical drainage would be inevitable⁽¹⁾. In Chen's case, an incision was made from the greater sciatic notch to the greater trochanter with the patient in a prone position. The gluteus maximus was split by blunt dissection to expose the piriformis muscle which was drained. Tenotomy of the piriformis tendon at its musculotendinous junction near the greater trochanter was performed to relieve compression of the sciatic nerve⁽¹⁾.

This case illustrates a rare pathology giving rise to a common symptom. This makes it difficult to come to a diagnosis and precious time may be wasted in treating such a patient conservatively as a case of prolapsed intervertebral disc. The suspicion that things are not what they seem therefore rests on frequent and careful review of the patient's signs and symptoms, as well

as judicious use of haematological investigations. Confirmation of the diagnosis then relies on radiological imaging. Early treatment is essential to avoid progression into stage two or three of the disease whereby surgery would be inevitable, and death probable.

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