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CASE REPORT

Intrapiriformis lipoma: an unusual cause of piriformis syndrome

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Abstract
Introduction We report on a patient with an unusual cause of non-discogenic sciatica.
Material and methods A 48-year-old woman presented with a 10-day history of gradually worsening left buttock pain radiating to the ipsilateral posterior thigh and calf. She had a similar episode of less intense pain 8 months before which lasted about 2 months. She denied any history of antecedent trauma or back pain. MRI scan revealed a well-defined, fat-containing lesion of the left piriformis muscle similar to a lipoma displacing the sciatic nerve but not invading it. The sciatica was relieved after excision of the lesion. The patient remained asymptomatic after the operation.
Conclusion The present case suggested that an intrapiriformis lipoma can cause secondary piriformis syndrome and medical practitioners should be aware of this condition and consider lipomas and other occupying lesions of the pelvic muscles as a differential diagnosis in patients presenting with radicular pain.

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Introduction

Piriformis syndrome (PS) is a neuromuscular disorder caused by the sciatic nerve becoming compressed in the infrapiriformis canal and is characterised by occasioning sciatic-type pain, tingling, and numbness in the buttocks along the sciatic nerve pathway down to the lower thigh and to the calf [1–4]. Patients usually benefit from non-operative treatment; however, in a small subset of patients, non-operative measures are not successful and surgical decompression of the sciatic nerve at the greater sciatic notch is performed.

Lipomas are common benign tumours of mature fat. They may occur in a subcutaneous, intermuscular or intramuscular location. Most remain asymptomatic and symptoms caused by nerve compression are unusual but a big intramuscular lipoma occurring in the piriformis muscle can be associated with compression of the sciatic nerve and a PS. We report the rare case of a patient with a large intrapiriformis lipoma causing intense symptoms similar to a piriformis syndrome.

Case report

A 48-year-old woman presented to the emergency department with a 10-day history of gradually worsening left buttock pain radiating to the left posterior thigh and calf. There was no back pain. The pain was exacerbated by movement, coughing or sneezing and relieved by lying supine and with fluctuating periods without pain

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throughout the course of the day. She was reluctant to move while in bed, and was not able to stand up or walk due to severe leg pain.

The patient was not febrile on admission and had no known infections. She was unable to straight leg raise on the left side due to pain. Other hip movements including flexion and internal rotation were painful and the pain was worse with ambulation. Lasegue's sign was positive. Buttock pain was localised by palpation next to the projection of the piriformis muscle and was reproduced by stretching (flexion-adduction-internal-rotation and Freiberg test) and contraction resisted manoeuvre (Beatty test) [5–7]. Neurological examination of the lower limb did not demonstrate any loss of sensation or reduced muscle power in any of the nerve root distributions. Her abdominal examination was unremarkable.

From the past medical history, the patient suffered from known polycystic kidney disease and had a similar episode of less intense pain in the left buttock radiating to the left posterior thigh and calf 8 months before. This episode lasted about 2 months. Blood results on admission showed normal electrolytes, normal full blood count, chronically raised creatinine to 119 μmol/l and urea to 9.0 mmol/l, raised C reactive protein to 80 mg/l.

The plain radiograph images of her lumbar spine and pelvis were unremarkable. Ultrasound examination revealed both kidneys to be enlarged and contain multiple cysts of varying sizes throughout, no obvious calculi or hydronephrosis, no evidence of haemorrhage into any cyst and normal appearances of the urinary bladder.

MRI scan of the lumbar/sacral area of the spine and of the left hip revealed that within the patient's left piriformis muscle there was a well-defined, fat-containing lesion measuring 7 cm mediolateral, 3 cm anteroposterior and approximately 6 cm craniocaudal (Figs. 1, 2). The sciatic nerve fibres were seen displaced anteriorly by this intramuscular mass with localised compression but with no encasement. There was no nerve root compression or bone-disc pathology of the lumbar/sacral spine.

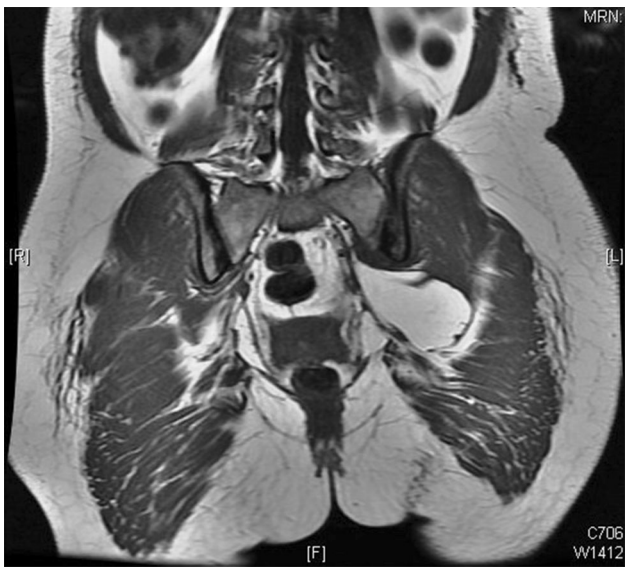

Fig. 1 MRI (axial T1 weighted) of the lesion showing a well-defined, fat-containing lesion measuring approximately 6 cm craniocaudal

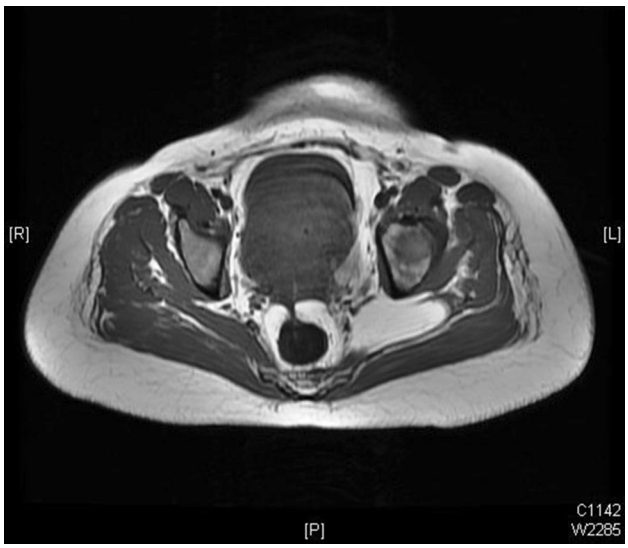

Fig. 2 MRI (transverse T1 weighted) of the lesion showing a well-defined, fat-containing lesion measuring 7 cm mediolateral

Outcome and follow-up

Analgesic medication was grossly ineffective and the patient continued to report intense symptoms after 1 month. Two months after the initial admission at the hospital the patient underwent surgical intervention. Tumour dissection was performed using a posterolateral approach to the hip and by dissecting the gluteal maximus muscle to provide access to the piriformis muscle. The intramuscular lipoma was subsequently exposed and excised with a marginal line of resection (Figs. 3, 4, 5).

Fig. 3 Intraoperative photograph of the large lipoma

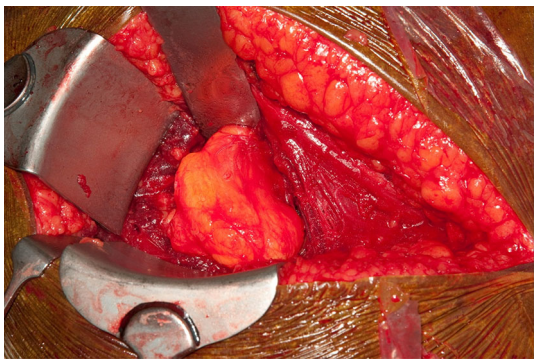

Fig. 4 Intraoperative photograph of the intrapiriformis lipoma

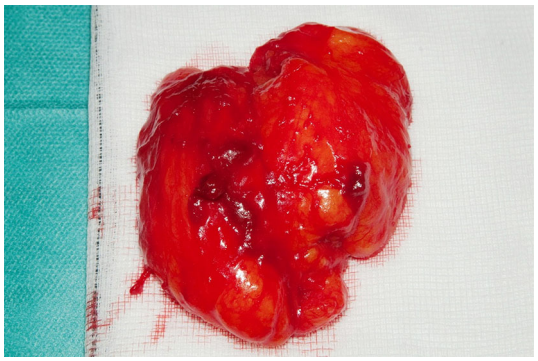

Fig. 5 Gross pathology of the lesion demonstrating a soft *yellow coloured* lobulated measuring 7 × 3 × 6 cm mass

Postoperatively there were no complications and she was discharged and was regularly reviewed in clinic, with full resolution of symptoms and return to everyday activities. Final histology confirmed the mass to be a lipoma with no evidence of malignancy.

Discussion

PS is a neuromuscular disorder occasioned by the sciatic nerve becoming compressed in the infrapiriformis canal causing sciatic-type pain, tingling and numbness in the buttocks along the sciatic nerve pathway down to the lower thigh and into the leg. The etiologies suggested in considerations of sciatic nerve compression are diversified: inflammatory, traumatic, tumoral and malformative [2, 8–10].

In most cases, however, the compression is originally muscular, and the piriformis muscle is suspected [11–14]. The aetiology of this compression involves the piriformis muscle due to its location in the gluteal fossa. An injury to the piriformis muscle resulting in spasm, edema and contracture of the muscle with subsequent compression of the sciatic nerve is thought to cause buttock pain that spreads ipsilaterally to the sciatic area of the buttocks [15].

In our case, an intrapiriformis lipoma enlarging the muscle was the cause of the sciatic nerve compression causing secondary PS. As the lipoma was growing, symptoms appeared initially and then recurred in a period of 8 months. Compression of peripheral nerves by lipomas has been described very rarely in medical literature.

In previously reported cases, there is a greater predilection for lipomas involving the upper extremity nerves when compared to those involving lower limb nerves [16]. To the best of our knowledge, an intramuscular lipoma of the piriformis muscle has not been previously reported in the literature as a cause of secondary PS.

Diagnosis of PS can often be missed or delayed because of the rarity, non-specific clinical symptoms and absence of definitive diagnostic tests. MR imaging can be useful for diagnosing this syndrome. Usually focus is on the lumbar spine and MRI is normal. In such cases, MRI of the pelvis and ipsilateral hip should be requested.

Intrapiriformis lipoma can be difficult to diagnose because of its deep location, and remains asymptomatic if it does not increase in dimension. However, if the lipoma becomes large enough, it can be the cause of sciatic nerve entrapment at the greater sciatic notch. MR imaging can effectively diagnose the lipoma and distinguish it from a soft tissue sarcoma, showing a well-demarcated lesion with the same signal characteristics as those of mature fat on all sequences.

Treatment of piriformis syndrome with non-steroidal anti-inflammatory agents and physical therapy has been well described [17–19]. Benson and Schutzer [20] reported non-operative therapy to be successful in 85 % of patients. For patients who do not benefit from non-invasive measures, the use of local corticosteroid or botulinum toxin injections is recommended [21–23]. However, a small subset of patients does not benefit from those measures and surgery is performed. The surgical treatment of piriformis syndrome has been well established and usually consists of releasing the piriformis tendon from its femoral insertion with neurolysis of the sciatic nerve [24].

In our case, conservative treatment failed and, according to the images from the MRI, surgical treatment was indicated. Surgery included excision of the intramuscular lipoma with a marginal line of resection and release of the piriformis muscle. The patient showed immediate relief of symptoms after surgery.

It is very important that front-line medical practitioners (general practitioners and emergency room doctors) be aware of this condition and to consider lipomas and other occupying lesions of the pelvic muscles as a differential diagnosis in patients presenting with radicular pain. Given its relative rarity, practitioners encounter it infrequently and can result in diagnostic delay, morbidity and unnecessary investigations. We would like to highlight the nature

of the symptoms with piriformis muscle intramuscular lipoma and recommend a thorough review of symptoms and signs in such cases, such that important diagnoses are not overlooked.

Conflict of interest No conflicts of interest/financial disclosure exist for the authors involved.

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