

DIAGNOSIS AND TREATMENT OF THE GLUTEUS MEDIUS SYNDROME:

a common cause of buttock and referred leg pain

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Thirteen patients were seen over an eight month interval with a characteristic clinical syndrome of unilateral buttock and lateral thigh pain with variable distal referral into the lateral or posterolateral calf. Standard neurological and back examinations failed to reveal a cause for the pain. Two patients required crutches or canes for ambulation. All thirteen patients had unilateral localised tenderness over the origin of the gluteus medius muscle, and all had isolated weakness of the affected limb when tested in resisted abduction. The diagnosis was confirmed by the injection of lidocaine into the tender area at the gluteus medius origin lateral and superior to the posterior superior iliac spine. This resulted in an immediate but transient restoration of normal strength and a temporary decrease in pain. Permanent relief of symptoms was obtained by repeated injections of lidocaine combined with corticosteroid or by the use of a connective tissue proliferant.

INTRODUCTION

Chronic pain in the buttock with variable radiation into the lower extremity often poses a diagnostic and therapeutic challenge. Diagnosis is most difficult when the pattern of pain referral is non-radicular and is accompanied by a paucity of neurological findings.

This report presents clinical data on a group of 13 patients, all of whom presented with a distinct constellation of signs and symptoms that define the 'gluteus medius syndrome'. Each of these patients had a primary complaint of unilateral bottom or 'hip' pain. The pain radiated to a variable extent into the ipsilateral lateral thigh, lateral or posterolateral calf, and at times into the lateral ankle and lateral foot. Low back pain was not a prominent feature in these patients.

Prior treatments with physical therapy, chiropractic manipulation, anti-inflammatory medications, and in some cases facet, piriformis, and epidural injections all failed to relieve the pain. In each case a careful history and specific physical findings led to a correct diagnosis and to treatment that improved pain and disability.

The gluteus medius muscle entirely overlaps the gluteus minimus. It arises from the large area of the wing of the ilium that lies between the crest of the ilium, the anterior gluteal line and the posterior gluteal line, as well as from the deep fascia covering the muscle (Figure 1). The muscle inserts into the posterior part of the upper surface of the greater trochanter. The gluteus medius and minimus receive

their innervation from the superior gluteal nerve (L4, L5, S1). The two muscles are so similar that it is not possible to clearly separate their actions. The posterior fibres extend and externally rotate, and the anterior fibres can flex and internally rotate. However the chief action of these muscles is abduction, and they are particularly important in walking by keeping the contralateral side of the pelvis from sagging markedly when the weight is put upon one limb¹.

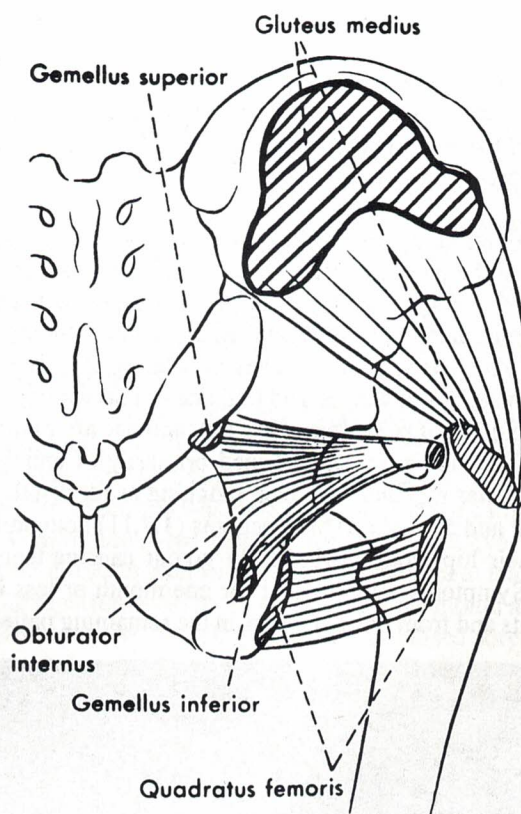


Figure 1
Attachments of the gluteus medius, the gemelli and the quadratus femoris. The gluteus maximus overlies this area

PATIENTS AND METHODS

The sample represents all patients with 'primary' gluteus medius syndrome (ie not associated with low back pain) seen over an eight month period by a rheumatologist at a multispeciality clinic. Patients were excluded if they had back pain as their primary complaint rather than buttock and limb pain. Table 1 lists the clinical characteristics of these patients.

Patient	Age/Sex	Pain (mos)	Pain Location	Surgery	Injury	'Twitch'
1 PT	46/F	24	Glut/Thigh/Calf	-	+	+
2 LB	36/F	12	Glut/Thigh/Calf	-	+	+
3 JB	44/M	1	Glut/Calf/4,5 Toe	-	+	-
4 RK	44/M	12	Glut/Thigh	-	+	-
5 BS	49/M	1	Glut	-	-	+
6 LM	52/M	1	Glut/Thigh	Fusion	-	-
7 TG	69/F	48	Glut/Thigh/Calf	Lam	+	+
8 WD	76/M	1	Glut	Fusion	+	+
9 DN	73/F	12	Glut/Thigh/Calf	-	-	-
10 SM	66/F	48	Glut/Thigh/Calf	-	-	+
11 ET	64/F	72	Glut/Thigh	Fusion	+	+
12 KW	21/F	1	Glut	-	+	+
13 LZ	73/F	12	Glut/Thigh	-	-	-

Table 1
Clinical Features

As a group they ranged in age from 21-76 (mean 55). There were 8 females and 5 males. Four had prior laminectomies and 3 of these also had fusions many years prior to the onset of the present problem.

All patients complained of buttock and lateral thigh pain. Three of the patients noted relative freedom from pain on first arising in the morning. Walking, especially up inclines, was mentioned by eight patients as aggravating their pain. Seven recalled specific injuries antedating the onset of symptoms. (Four slipped and fell, one fell off a horse, one had the onset of pain after a long run, and one after pulling weeds). One patient complained primarily of annoying paresthesias together with pain radiating as far distally as the 4th and 5th toes. Three patients (1,7,11) complained that their 'hip' would periodically 'go out' causing them to fall. Symptoms were present for one month or less in 5 patients and from one to 6 years in the remaining patients.

There were characteristic physical findings in all patients. Each had localised tenderness over the origin of the gluteus medius along the iliac crest. This was particularly noticeable along the inferior-most portion of the origin just lateral to the posterior superior iliac spine (Figure 1). In seven of the patients there was sufficient tenderness and hypersensitivity to produce an involuntary 'twitch' and withdrawal response to palpation. The contralateral side was minimally or non tender in all cases.

The most specific and consistent finding was the presence of distinct weakness of the affected limb when tested in a position of abduction and slight extension (Figure 2). This weakness was unique in these patients in that no other focal weakness was demonstrable, and a thorough neurological examination was normal in all patients except for an absent ankle or knee reflex in two of the patients with prior fusions.

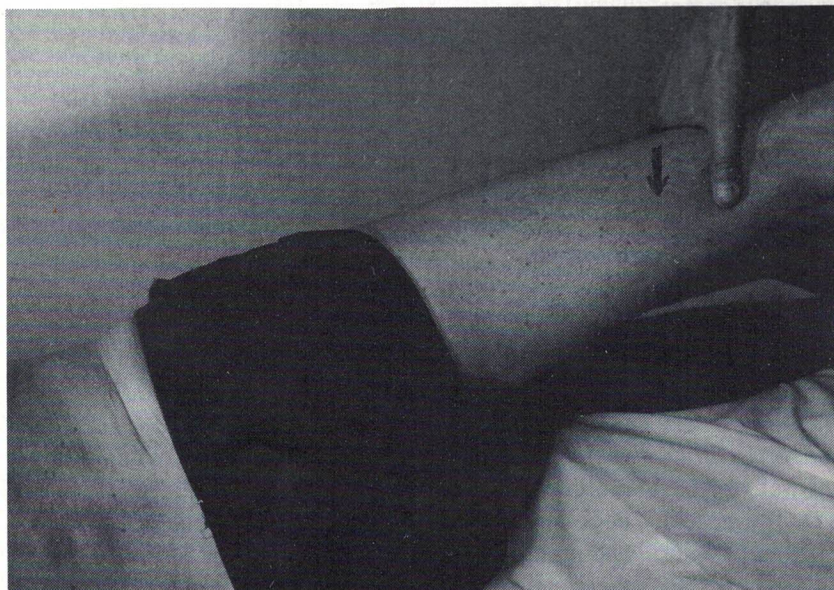


Figure 2
The limb being tested in a position of abduction and slight extension. The examiner applies firm downward pressure just above the knee and the

DETAILED CASE STUDIES

Patient 1

PT, a 46 year old, married white female homemaker fell down 5 or 6 stairs striking her low back and left buttock. She noted severe bruising, but was able to walk and carry on her normal activities. The left hip felt sore but she continued exercising and was given strengthening exercises by a chiropractor. Over the next 6 months she noted gradually increasing aching pain in the left buttock and lateral thigh with radiation down the lateral thigh, sometimes as far as the lateral malleolus of the ankle. There were no paresthesias or numbness and her pain was not made worse by coughing or sneezing. Over the next two years the pain became progressively worse. She was usually pain free on first arising in the morning but by mid-day she had to resort to a crutch in order to walk. During this period of time she was examined and treated by a chiropractor, an acupuncturist, and multiple physicians including orthopaedic and neurosurgeons, physiatrists, neurologists, and internists. A lumbar myelogram followed by a CT scan and an MRI scan of the lumbar spine and an MRI of the pelvis, retroperitoneal structures and sciatic nerve were all normal. Electromyography was normal. One month of bed rest, epidural corticosteroids, two piriformis injections with corticosteroid/lidocaine, a corticosteroid injection into the ischial tuberosity, multiple analgesics, and intensive physical therapy were all to no avail. She reported that walking inclines or stairs and getting in or out of cars was particularly painful. Repeated neurological evaluations were said to be normal without any focal weakness.

On examination by the author, this patient was found to have localised marked tenderness of the gluteus medius origin and definite weakness of the hip when tested in a position of abduction and extension. All other tests including neurological evaluation, muscle strength and lumbar movement were unremarkable. The origin of the gluteus medius muscle was injected with 10 ml 0.5% lidocaine to which was added 20mg triamcinolone. Immediate retesting of the hip demonstrated a dramatic improvement in abduction strength, suggesting that the weakness was secondary to reflex inhibition of muscle function secondary to pain. Over the next 48 hours she had significant improvement in her usual hip pain and she was able to discontinue using the crutch.

Residual discomfort persisted at the origin of the gluteus medius muscle and was treated with a series of 6 injections of a dextrose-glycerine-phenol-xylocaine proliferant solution². It is imperative to 'pepper' the areas of maximal tenderness at the gluteus medius origin making multiple insertions and withdrawals of a 22 gauge 3 inch needle and depositing no more than 0.5 ml at each site. At follow-up, 6 months and one year after completion of treatment, she was free of pain and had resumed all her normal activities.

Patient 7

TG, a 69 year old female was in good health except for obesity, degenerative arthritis of the right knee, and maturity onset diabetes mellitus. She presented to an orthopaedic

surgeon with right buttock, lateral thigh, and posterolateral calf pain without antecedent trauma. She did not complain of low back pain. The pain was worse with standing and walking but was usually mild on first arising and progressively worse during the day. Her straight leg raise test was normal as was a standard neurological examination but a lumbar metrizamide and CT scan demonstrated spinal stenosis at L4-5, facet arthritis, and incomplete filling of the right L4-5 nerve root sleeve. A laminectomy and foraminotomy were performed at L4-5.

The patient reported minimal improvement in her right leg pain postoperatively. On examination by the author she was noted to have a full and painless range of motion of the lumbar spine and a normal neurological examination. There was tenderness to deep palpation of the gluteus medius origin. The limb was weak in a position of abduction and extension and this was reversed with injection of local anaesthetic into the origin of the gluteus medius muscle. Treatment with a corticosteroid injection relieved her pain for only one week but pain resolved after a series of 5 treatments with the dextrose-glycerine-phenol solution. Four injections of the dextrose solution were also placed into the insertion of the muscle at the posterior superior aspect of the greater trochanter of the femur due to localised tenderness at this site.

RESULTS

Response to treatment: In all 5 cases of recent onset (less than one month), the lidocaine/corticosteroid injection improved the patient's subjective assessment of pain by at least 50% during a follow-up of three months. In two of these patients (3,5) the steroid injections were repeated due to a relapse of symptoms and one of these responded only for one week before again relapsing. In the 8 patients with longstanding symptoms relapses were typical after corticosteroid injections and therefore the dextrose based proliferant solution was employed. A series of 6 injections as a minimum were usually needed to achieve lasting improvement in pain with subjective relief of at least 75% being reported by all patients during a three month average follow-up. The only side effect was localised soreness at the injection site for one to three days. Three to seven ml of the sclerosant solution was used for each treatment.

DISCUSSION

This report was prompted by the realisation that the localised myofascial syndrome described here is common, and the diagnosis is rarely appreciated. Many of the patients in this series had multiple diagnostic and therapeutic interventions prior to establishing the diagnosis.

The syndrome is defined as:

- 1 Pain in the buttock with variable radiation to the lateral thigh and at times distally
- 2 Localised tenderness to palpation over the origin of the gluteus medius muscle
- 3 Absence of focal neurological abnormalities on neurological testing

- 4 Unilateral weakness of the affected limb when tested in a position of abduction and extension
- 5 Reversal of 'weakness' after injection of local anaesthetic into all the tender foci at the origin of the gluteus medius muscle.

There may be a history of injury prior to the onset of the symptoms. The pain may be exacerbated by walking, especially up inclines. This is in contrast to ligamentous type back pain which usually improves with walking/moving. The pain referral into the distal limb does not follow a simple segmental distribution and it does not correspond to the distribution of peripheral nerves.

The differential diagnosis is made easy by the unique and prompt, albeit temporary, response to xylocaine injections at the origin of the muscle. Other conditions in which there is weakness with or without pain of the gluteus medius muscle include posterior sacroiliac ligament injury, trochanteric bursitis, superior gluteal nerve injury, and radicular pain and/or weakness secondary to radiculopathy (most commonly from an L4-5 disc herniation with an L5 radiculopathy). The gluteal weakness does not reverse with injection of lidocaine into the origin of the gluteus medius in these conditions. Sacroiliac ligament injuries frequently cause a secondary weakness of gluteal function which responds to treatment of the underlying sacroiliac problem and temporarily improves with manipulation.

The etiology of the gluteus medius syndrome is unknown but may be secondary to injury to the relatively avascular aponeurosis or fascial the origin of the muscle. Soft tissue causes of localised myofascial pain with referred limb pain have been extensively discussed by Simons and Travell including the importance of the gluteus medius and minimus as potential sources of referred pain³. The 'iliac crest syndrome' has previously been described and may represent the same syndrome described in the present study⁴. However no mention was made of weakness of the gluteus medius in

the iliac crest syndrome, and the pain was localised to the ilium and did not radiate distally. All 6 patients with 'iliac crest syndrome' responded to injections of Marcaine without corticosteroid.

Four of the patients in the present series had previous back surgery. The lack of normal lumbar extension which occurs, especially following fusion procedures, may predispose to gluteal strain by placing excessive stress on the hip extensors.

In summary, the gluteus medius syndrome appears to be a common cause of unexplained buttock and limb pain. Diagnosis is established by a characteristic history, specific physical findings, and the immediate abolition of weakness with a carefully placed injection of local anaesthetic. Treatment with local anaesthetics and corticosteroids may succeed in cases of short duration, but proliferant injections may be necessary in resistant or chronic cases. Controlled studies are needed to determine whether repeated injections of local anaesthetics with or without added corticosteroids would be as effective as the dextrose based proliferant.

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LETTER TO THE EDITOR

Dear Sir,

Piriformis Injection

Dr Broadhurst (Journal of Orthopaedic Vol 13 No1 page 9), suggests injection of 5 ml of 1% lignocaine into the piriformis muscle if one suspects it as a cause of buttock pain. Since the sciatic nerve runs immediately beneath the body of piriformis, I would like to make three points:

- 1 If the tip of the injecting needle touches the sciatic nerve the patient is likely to experience an extremely sharp jolt of pain down the leg and will almost certainly make a convulsive jump. Thus, extreme care would have to be used as the needle tip was advanced towards piriformis

- 2 5 ml of 1% lignocaine goes a long way. Thus, structures adjacent to the body of piriformis would be quite likely to be partially anaesthetised as well.

- 3 The sciatic nerve itself lies immediately beneath the body of piriformis. Thus (even with X-ray screening) inadvertent blocking (partial or total) of the sciatic nerve is a real possibility. Although the sciatic nerve would recover function over the next few hours, I would have thought that both doctor and patient should be aware of this possibility before the injection is undertaken. I am surprised that Dr Broadhurst does not mention this possibility. Has it never happened to him?

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