Adductor Magnus Tear a Rare Cause of Sciatica: A Case Report

Kiran M Shete1*, Harshal Tukaram Pandve2 and Tanmayee Joshi3

1Founder and Medical Director, Spinalogy Clinic, Pune, India
2Associate Professor, Department of Community Medicine, Smt. Kashibai Navale Medical College, Narhe, Pune, India
3Physiotherapist, Spinalogy Clinic, Near Hotel Sarja, Aundh, Pune, Maharashtra, India

*Corresponding Author: Kiran M Shete, Founder and Medical Director, Spinalogy Clinic, Pune, India.

Received: August 10, 2017; Published: August 18, 2017

Abstract

Adductor magnus is the largest muscle in the groin and is one of the two long adductors of the hip joint. Working to adduct, flex and medially rotate the hip joint, it is a rare phenomenon for it to be torn independently, without any trauma. The main symptom of adductor strain is a sharp pain in the groin which might radiate in the inner thigh. The rarity in our case was that the patient presented with left sided low back and hip pain radiating posteriorly throughout the left lower limb, which aggravated on prolonged sitting. Herniated disc being the commonest cause of sciatica, and patient’s symptoms paralleling sciatica, the patient was clinically diagnosed as discogenic sciatica. However, with a normal Lumbo-sacral X-Ray and MRI, some other factors causing sciatica should be thought off, which often delays the diagnosis and treatment.

Keywords: Adductor Magnus Muscle; Adductor Magnus Tear; Sciatica; Sciatic Oedema

Introduction

The adductor magnus is the largest and the deepest muscle in the medial compartment of the thigh, triangular and fan shaped, anchored by its apex to the pelvis and attached by its expanded base to the femur. This muscle is made up of 2 parts: the adductor part and the hamstrings part. The adductor part originates from the ischiopubic ramus, runs vertically down and attaches to the medial supracondylar line of the femur. The hamstrings part originates from the ischial tuberosity of the pelvic bone and inserts into the adductor tubercle on the medial condyle of the femur. The adductor part of the adductor magnus is innervated by the obturator nerve while the hamstrings part is innervated by the sciatic nerve [1].

The sciatic nerve is derived from the lumbo-sacral plexus. The sciatic nerve supplies almost all of the skin of the leg, the muscles of the back of the thigh, and those of the leg and foot. It is derived from spinal nerves L4-5, and S1-S3. It contains fibres from both the anterior and posterior divisions of the lumbosacral plexus, giving off articular and muscular branches [2]. After its formation, it leaves the pelvis and enters the gluteal region via greater sciatic foramen, emerging inferiorly to the piriformis muscle and descends inferiorly. It lies posterior to the adductor magnus muscle and is overlapped by biceps femoris and semimembranosus muscles. It gives out branches to the hamstrings muscles and adductor magnus before bifurcating into its 2 terminal branches just above the popliteal fossa.

Subtotal or total ruptures of the adductor magnus muscle without any trauma causing oedema around the sciatic nerve are rare. The large mass of the adductor magnus muscle is regarded as a complex of functionally differentiable muscle portions which makes the tear of the muscle a rare phenomenon. Also, because of the largeness of the muscle, it receives relatively little attention in investigations of injury. This should be included in the differential diagnosis of sciatica pain which does not subside in 4 weeks, and in cases of groin and inner thigh pain. Due to the low incidence of this injury reports on the treatment are scarce in the literature. We pursued to describe an uncommon case and summarize the available literature.

Citation: Kiran M Shete, et al. “Adductor Magnus Tear a Rare Cause of Sciatica: A Case Report”. EC Orthopaedics 7.5 (2017): 197-201.
Adductor Magnus Tear a Rare Cause of Sciatica: A Case Report

Case Report

Presenting Complaints

A 25 year old male with a sedentary lifestyle presented to us with pain in the left low back radiating to left lower limb posteriorly, which had been present for 15 days, following a bout of running for 10 days. The pain mainly aggravated after sitting for a long time and was worse in the day and during any physical activity. There was no history of trauma or groin pain in the past. The patient had done a few unsupervised physiotherapy exercises at home, which had temporarily reduced his pain. When the patient presented to our clinic he still complained of low back, left buttock and leg pain.

Clinical Findings

At the physical examination, there was no significant swelling or external finding at low back or leg. Range of motion of both hip joints was normal. Lumbar flexion was painful and range was limited. Straight Leg Raise (SLR) test was negative and there was no neurological deficit. Hamstrings of both the lower limbs exhibited moderate tightness with the left one being more marked. Patient’s past medical history did not reveal any medical co-morbidities or connective tissue disorders. He did not have any family history or musculoskeletal or connective tissue disorders.

Imaging and Investigations

Conventional radiograph of the lumbo-sacral spine (AP and lateral views) showed no osseous abnormalities. Laboratory tests for vitamin B12 and serum uric acid were done which showed deficiency of the vitamin B12 (194.8) and raised serum uric acid.

Conservative treatment was started consisting of physiotherapy sessions which included core and back strengthening exercises, stretching and neurodynamic exercises. Also, vitamin B12 and vitamin D supplements were prescribed.

Follow Up and Outcomes

After 10 sessions of physiotherapy in the clinic, the patient had 70% reduction in pain. 5 weeks later, the patient returned with similar leg pain and lesser of low back pain. Magnetic Resonance Imaging (MRI) of the lumbo-sacral spine and screening of hip was advised. LS Spine revealed no abnormality, however, MRI hip showed a partial tear in the posterior part of adductor magnus muscle belly in the left thigh, with fluid in the intermuscular fat plane surrounding the sciatic nerve of the left side.

Figure 1: MRI Longitudinal Section of Left Thigh showing edema around Sciatic Nerve.

The patient was admitted in the hospital and was given Intravenous Dexomethasone 8 mg for 3 days followed by 3 weeks of complete bed rest. On examination after 1 week, there was occasional pain in the left leg, mild tightness on posterior thigh and SLR negative. 3 weeks later; there was minimal pain in the left groin and left sole.

The patient then underwent 7 sessions of electrotherapy (ultrasonic therapy) and muscle and nerve stretching exercises for lower limb after which his inner thigh and groin pain was 80% better.

Following up 2 months later, MRI hip was repeated, in which the previously seen hyperintense signal in posterior part of left adductor magnus muscle belly was not visualized. Then the patient underwent physiotherapy for 7 days which included strengthening and stretching exercises and a home program was given. The patient had 100% reduction in pain.

Discussion

Specific examination with respect to the anatomy and the course of the sciatic nerve and a normal lumbo-sacral X-ray and MRI, in finding the cause of sciatica, brought us to the etiology for the patient’s symptoms.

Sciatica affects many people. The most important symptoms are radiating leg pain and related disabilities. A herniated disc with nerve root compression is the commonest cause of sciatica. Exact data on the incidence and prevalence of sciatica are lacking [3]. Other causes sciatica can range from infective abscess in the nerve, tumours of the sciatic nerve, tumours originating from neighbouring soft tissues and osseous structures or injury of neighbouring tissues in relation to the nerve causing compression of the sciatic nerve, vascular causes.
like aneurysms, sacroiliitis, pregnancy, osteoarthritis and traumatic causes due to fractures, surgical interventions or intramuscular injections. It has been reported that compression of the sciatic nerve because of any cause, including endometriosis, piriformis syndrome, abscess, tumour or adjoining uterus provoke sciatic pain. Through this case report, we intend to note that an adductor magnus tear can also be the rare cause of sciatic pain. Extra-spinal causes of sciatic pain are extremely rare and thereby at times overlooked while assessing a patient with sciatica. Extra-spinal causes can be broadly categorized into traumatic, infective, inflammatory, tumoral, vascular and other etiology [4].

Adductor magnus muscle tear is a rare injury and it presents with inner thigh and groin pain. An important finding of rupture is the presence of a trauma or precipitating event prior to the onset of complaints. Our patient did not show any history of trauma. However, he had a 10 day running bout which he was not used to, which could be considered. Also, in cases with a tumour-like swelling in the proximal medial part of the thigh, an old rupture of the adductor magnus muscle should be considered. Anatomically, the sciatic nerve lies posteriorly to the adductor magnus muscle. Thus the sciatic nerve being in close proximity with the concerned muscle, it should be noted that any injury to the adductor magnus muscle can impact the sciatic nerve.

As literature shows scarce reports on adductor magnus muscle rupture, we tried to look into the pathophysiology of a large muscle tear. Typically, 3 phases have been identified in the process of muscle injury. The destruction phase, followed by a repair phase and then finally the remodelling phase. The destruction phase is characterized by the rupture and the ensuing necrosis of the myofibers, hematoma formation between the ruptured muscle stumps and inflammatory cell reaction. This phase begins from the time of injury (tear), and may last up to 10 days to 2 weeks post injury. When the muscle is injured, an excessive mechanical force usually extends across the entire cross section of the individual myofibers, subsequently tearing the sarcoplasm of the ruptured muscle stumps and then leaving it wide open. The propagation of necrosis is halted to a local process forming a protective barrier in which the torn plasma membrane can be repaired. The blood vessels of the muscle are also naturally torn with the myofibers, giving a direct entry of the blood borne inflammatory cells into the injury site. The beginning of the inflammatory reaction is later “amplified” as the satellite cells and the necrotized parts of the myofibers release various substances (wound hormones), which serve as chemo-attractants enhancing the extravasation of the inflammatory cells. This leads to internal swelling in the tissue with the accumulation of inflammatory metabolites. This theory can be related with the partial tear of the adductor magnus muscle of the patient in our case. This inflammation with fluid accumulation irritated the sciatic nerve which is in close proximity with the posterior part of the muscle where the tear was seen. Various studies have shown that sciatica can be caused due to a number causes other than disc herniation, inflammation indenting on the nerve being one of them. In this case, the injury to the adductor muscle gave rise to inflammation irritating the sciatic nerve. The sciatica travelled proximally as well as distally, and hence the patient complained of low back pain when he first visited us.

Conclusion

Sciatica symptoms with a normal LS spine X-ray and MRI, should incline clinicians towards presence of other pathologies mainly around the hip joint. Examination should rule out hip pathology when assessing sciatica, as 90% of the cases are due to intervertebral disc herniation. Also, in cases of groin injury, adductor magnus muscle tear must be included in the differential diagnosis. Adductor magnus muscle tear was a rare case we came across causing sciatic pain.

Bibliography

1. Adductor magnus.
2. Sciatic nerve, Neurological anatomy of the lower limb.
Adductor Magnus Tear a Rare Cause of Sciatica: A Case Report