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Pain management in Illiotibial band syndrome: Case report

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***Abstract*---**ITB syndrome is mostly caused by repetitive physical injury to the lateral knee and as much as 15-24% of severe injuries on cycling. The overall incidence of the syndrome is an iliotibial band of 5%-10%, and is often bilateral. Adolescents and young adults are commonly involved, especially those who perform extreme hip movements such as runners and soccer players.The ITB syndrome can be diagnosed by the appearance of a high-intensity signal on image-weighted T2 that appears over the deep lateral epicondyle for ITB, and thickening distal to ITB. On sonographic examination, the iliotibial pathway is relatively a hyperechoic linear structure that has a fibrillar pattern. Proximally, the iliotibial pathway can be easily visualized in the axial plane as a line above the greater trochanter. In this article, we report a case of ITB syndrome with conservative management that can reduce pain scale. Injections at Bursa ITB may be performed for patients who continue to experience pain that is unresponsive to rest, analgesics, and physical therapy. In our patient, after being given steroid injections under ultrasound guidance we recommended physiotherapy and limiting physical activity to exercise for 2 weeks, and there was improvement in pain scale.

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Introduction

Syndrome *Illiotibial band* is a common knee injury caused by inflammation of the distal part of the iliotibial band (ITB), resulting in lateral knee pain. The iliotibial distal above the lateral femoral epicondyle, during repeated flexion and extension activity of the knee excessively causes friction and potential irritation resulting in pain.[1] Many studies have demonstrated the involvement of the anterolateral ligament (ALL) in rotational stability of the knee. [2] Musculoskeletal injuries include strains, sprains, and iliotibial band syndrome, which account for 47% of all injuries. Severe lower extremity injuries are of particular concern in the active population, accounting for 50% to 75% of all runner injuries and 35% of all musculoskeletal injuries in military personnel. Recent epidemiological studies in the United States concluded that the incidence of acute knee injury presenting to the emergency department is 2.29 per 1000 population, and evidence suggests that perhaps about half of all patients with acute knee injury will present with an iliotibial pathway (IT) injury at 1 year. *Magnetic Resonance Imaging* (MRI). ITB syndrome is mostly caused by repetitive physical injury to the lateral knee and as much as 15-24% of severe injuries in cycling. [3 4 5]

The overall incidence ofsyndrome is *Illiotibial band* 5%-10%, and is often bilateral. Adolescents and young adults are commonly involved, especially those who perform extreme hip movements such as runners and soccer players. Although a medical history and physical examination are usually sufficient for a diagnosis, imaging modalities can be used to reveal the exact cause.[6 7] Conservative management including rest from activity, modification of equipment, use of NSAID medications, and physical therapy is the mainstay of treatment in the early stages. Several surgical techniques can also be performed including arthroscopic techniques. [8 9] In this article, we report a case of ITB syndrome with conservative management that can reduce the pain scale.

Case

A 22-year-old man came to the neurology department with complaints of right hip pain radiating to the right knee since 3 months ago, accompanied by a burning sensation around the knee. He is a soldier, his daily physical activity is done 4-5 hours, for these 2 years. The patient had no complaints of weakness or instability. The patient reported no other medical problems and did not smoke. Physical examination showed vital signs of blood pressure 110/70 mm Hg, pulse 92 beats / min regular, temperature 36.5˚C, breathing 20 times / min regular, *Numeric Rating Scale* (NRS 7). Neurological examination Glasgow coma scale E4V5M6, pupil isocor 3mm/3mm round, light reflex positive bilateral right eye. Eyeball movement can be in any direction, positive bilateral corneal reflex. Other cranial nerve examinations were normal.

Motor examination showed no lateralization and sensory impression was within normal limits. Tenderness in the area of the lateral femoral condyle and a positive

Ober test. Ely's test and right thigh muscle contracture were negative. There was no edema or bruising at the site of the pain examination. On physical examination, the biceps and triceps reflexes were positive bilaterally, and the patellar and achilles reflexes were positive bilaterally. Babinski, Oppenheim, and bilateral negative Chaddock pathological reflexes. Cerebellar function examination was within normal limits. There is no disturbance of bowel movements, urination or sweating. Onexamination, *Electromyography and Nerve Conduction Velocity* (EMG NCV)dorsal *nerve root irritation was found,* Lumbar 5, Sacral 1 right. Evaluation Plain radiographs of the pelvis did not show any significant pathological abnormalities. Non-operative therapy included *Non-steroidal anti-inflammatory drugs* (NSAIDs) and changing the sole of the shoe but there was no improvement in pain. The patient was diagnosed as having ITB syndrome and was given a single ultrasound guided steroid injection (Figure 1). Post-action steroid injection, the control patient was 7 days, and there was an improvement in the pain scale.

Figure 1. In a patient with iliotibial band syndrome (a), ultrasoundguided injection is performed using a distal-to-proximal in-plane approach. On a longitudinal sonogram.

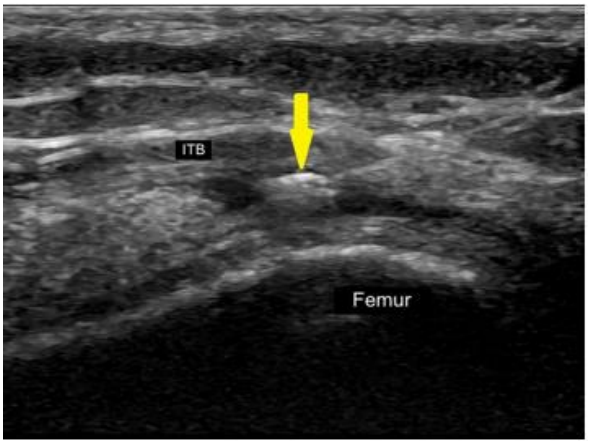

Figure 2. the tip of the needle is placed deep to the iliotibial band (ITB), superfcial to the lateral femoral epicondyle, and the injectant fow (arrow) is noted

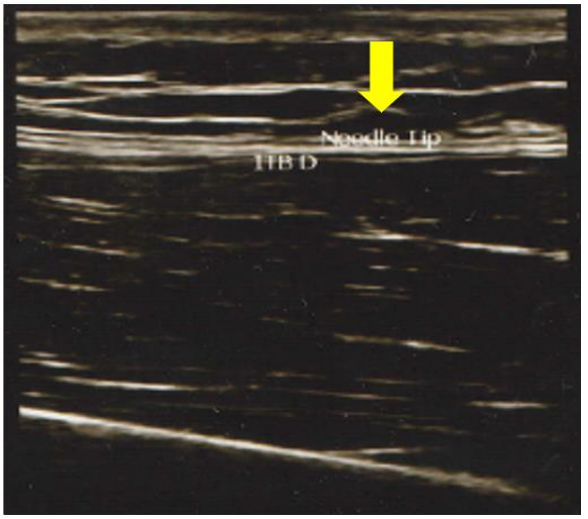

Figure 3. Position of steroid injection against ITB guided by *Ultrasonography* (USG)

Discussion

Patients with ITB syndrome will usually present with pain in the distal area of ITB in various areas, starting from the lateral femoral joint. [10] Initially, the pain will usually be exacerbated by activity, but may progress to rest. Athletes with ITB syndrome usually complain of burning pain of about 2 cm, superior to the superior lateral joint line. Pain that is getting worse can occur in severe cases, pain can quickly subside after cessation of activity. [11,12] If there is an abnormality along the iliotibial pathway from the iliac crest to Gerdy's tubercle on the knee, it can cause pain in the hip or knee. [13] The results of the study of Baker et al, showed that lateral knee pain in the distal iliotibial band increased, associated with adduction of the knee for 30 minutes.[14]

Patients with ITB syndrome complain of pain in the lateral knee, especially in the lateral femoral condyle. It is often assumed that the ITB syndrome results from inflammation secondary to friction of the bundle in the lateral femoral epicondyle during flexion and extension.[15] A complete physical examination of the knee should include the Ober test, Noble test and Thomas test.[16,17] Ober test is the most recommended physical examination technique to establish an ITB syndrome.[18] Thomas' test indicates a contracture on hip flexion. [19] In our patient, pain was noted in the lateral area of the femoral epicondyle following repeated flexion and extension of the knee. Three provocative tests Ober test, Noble test and Thomas test this patient was positive on the right side. Additional diagnostic tests are not required. This can be done in cases of severe and nontraumatic knee pain where rest has not helped. [11 20]

An MRI scan is usually used to detect bone and soft tissue pathology in the hip joint. In the case of musculoskeletal injury, the diagnostic modalities, including magnetic resonance imaging (MRI), computerized tomography (CT), electromyogram (EMG), and nerve conduction velocity (NCV), can be discussed

and ruled out the differential diagnosis.[21 22] On our patient for initial examination we performed an NCV EMG examination which showed *dorsal nerve root irritation* Lumbar 5, Sacral 1 right. In cases of ITB syndrome, MRI could be used as a diagnostic tool. ITB syndrome can be diagnosed by the appearance of a high-intensity signal on image-weighted T2 that appears over the deep lateral epicondyle for ITB, and thickening distal to ITB. Ultrasonography can be used as a diagnostic tool. This indicates a thickening of the ITB in the patient's case. The normal thickness of a healthy volunteer is about 1.1 ± 0.2 mm. Monitoring of ITB thickness may be useful in the diagnosis of ITB syndrome, as well as to evaluate changing conditions.[22 23 25] Our patient did not undergo an MRI, because from the history, physical examination and ultrasound, the possibility other than ITB syndrome could be ruled out.

Ultrasonography is still an excellent imaging modality for superficial soft tissues, including the iliotibial pathway. It can be used as an alternative imaging modality for precise and cost-effective iliotibial imaging than MRI, as well as allowing for dynamic assessment of the iliotibial pathway. MRI findings include increased signal intensity in the *sensitive fluid* superficially and in the iliotibial pathway, suggesting iliotibial edema. [26 27] On sonographic examination, the iliotibial pathway is relatively a hyperechoic linear structure that has a fibrillar pattern. Proximally, the iliotibial pathway can be easily visualized in the axial plane as a line above the greater trochanter (figure. 2). Around the knee, the IT tract can be easily seen in the coronal plane, with its insertion distal to the Gerdy tubercle, and in the axial plane above the lateral formal epicondyle. [3. 28–30]

Nonsurgical management is treatment for symptom improvement oral medication non steroidal anti-inflammatory and corticosteroid injections can be used to reduce the acute inflammatory response. Injection with atechnique was *blind* performed after identifying the area of maximal pain. Therefore the ideal location of the injection site was not established. [23.6,9,16] Our patient was initially treated with various nonoperative NSAID modalities, physical therapy, home stretching program, and activity modification before being considered for pain intervention with corticosteroid injection. Corticosteroid injection versus placebo injection has shown significant pain relief, there are several studies showing ultrasound-guided corticosteroid injections.[23]

In pain patients experienced improvement post-action steroid injection in peritendinitis. Injections at Bursa ITB may be performed for patients who continue to have pain that is unresponsive to rest, analgesics, and physical therapy. It is also important to evaluate the runner's technique or the cyclist's positioning on the bicycle. The injection at ITB "Bursa" has been described based on palpation. With this palpation-guided technique, the needle is inserted until it makes bone contact. Then the needle is slightly withdrawn until the injection can spread without resistance. The clinical results of injection with ultrasound guidance have not been explained. [31] Surgical intervention for ITB syndrome until nonoperative therapy has failed for at least 6 months. [16] In our patient there was improvement in pain scale 7 days after corticosteroid injection (Figure 3.) from NRS 7 to NRS 3. According to the study of Decker et al, patients were able to improve hip adduction and medial rotational movement patterns with physical therapy. These changes may improve biomechanics in the lumbopelvic hip

complex and prevent tension in the proximal ITB. However, rest also plays a role in reducing pain.[32] In another study, according to Brown et al., showed that the hip abductors of runners with ITB syndrome were less resistant to fatigue than the hip abductors of healthy runners. Based on the clinical presentation of ITB syndrome, runners with hip abductor injuries are not "weak" but less resistant to fatigue. [33] In our patient, we recommend physiotherapy and limiting physical activity to sports for 2 weeks.

Reducing hip adduction when runners with a history of ITB syndrome can reduce pain. Overall, it is clear that incidence and recovery time must be considered simultaneously in the priority of injury management. [34] [35] In cases of ITB syndrome, if symptoms persist for more than 6 months and conservative modalities have been used, some patients may require surgical intervention to achieve pain relief and return to preinjury activity levels.[8]

Conclusion

Syndrome *Iliotibial band* is a common cause of lateral knee pain pain in athletes, especially runners and other athletes. Both conservative and surgical approaches are good treatment options, and both need to be considered during treatment planning. The majority of cases resolve with conservative management, resistant cases require surgical intervention. Cases requiring surgical intervention are often chronic and it is important to recognize the duration of symptoms so that surgical treatment can be initiated early. Despite the many options for surgical and conservative treatment, there is no consensus on a single standard of care.

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