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Case Report

THORACOLUMBAR JUNCTION SYNDROME: AN OVERLOOKED DIAGNOSIS IN AN ELDERLY PATIENT

Abstract

Thoracolumbar junction syndrome is defined as a result of a minor intervertebral dysfunction at the thoracolumbar junction and referred pain in the low back and hip region, and can often be confused with other pathologies that may cause these symptoms.

A 65-year-old woman with nearly two years of continuous throbbing pain in the low back, right hip and groin region who was scheduled for spinal surgery with the diagnosis of spinal stenosis in the neurosurgery clinic was referred to our clinic for consultation. Physical examination revealed severe limitation of the passive and active range of motion of the lumbar spine, and pain in all directions. There was tenderness at the T_{12}-L_1, L_5-S_1 and L_4-L_5 intervertebral spaces and at the T_{12}, L_1, L_4 and L_5 spinous processes. On the right side, the maneuver of lateral pressure against the spinous process at the level of T_{12}, the pinch-roll test and the posterior iliac crest point sign were positive. Tenderness over the trochanteric region and the superior aspect of the pubis was detected on the right side. All tests were negative after a right T_{12} periapophyseal joint block using a local anesthetic, with the prediagnosis of thoracolumbar junction syndrome. The patient was diagnosed with thoracolumbar junction syndrome and treated with conservative methods.

Thoracolumbar junction syndrome is a pathology that should be considered in the differential diagnosis in elderly patients with low back, hip and groin pain.

Key Words: Low Back Pain; Iliac, Lumbar; Thoracic; Vertebrae; Aged.

Olgu Sunumu

TORAKOLOMBER GEÇİŞ SENDROMU: YAŞLI BİR OLGUDA GÖZDEN KAÇAN BİR TANI

Öz

Torakolomber geçiş sendromu, torakolomber bileşkenin disfonksiyonu sonucu bel ve kalça ağrısına neden olan ve bu semptomlara neden olabilecek başka patolojilerle sıklıkla karışabilen bir sendromdur.

Yaklaşık iki yıldır sürekli zonklayıcı karakterde bel, sağ kasık ve kalça ağrısı olan 65 yaşında kadın olgu spinal stenoz tanısı ile spinal cerrahi yapılmak üzere beyin cerrahi kliniğinde iken kliniğimizden istenen konsültasyon sonucu değerlendirildi. Fizik muayenesinde tüm yönlere bel hareketleri ileri derecede kısıtlı ve ağrılıydı. T_{12}-L_1, L_5-S_1, L_4-L_5 intervertebral aralık ve T_{12}, L_1, L_4, L_5 spinöz proçesler presyonla ağrılı, sağ taraf T_{12} itme testi, deri yuvarlama testi, iliak krest nokta testi pozitifti. Sağ tarafta torakanterik ve simpizis pubis hassasiyeti mevcuttu. Torakolomber geçiş sendromu düşünülen olguya yapılan T_{12} sağ periapofizyal lokal anestetik enjeksiyonu sonrasında tüm testler negatifleşti. Torakolomber geçiş sendromu tanısı konan olgu konservatif yöntemlerle tedavi edildi.

Torakolomber geçiş sendromu, bel, kalça ve kasık ağrıları olan yaşlı olgularda ayırıcı tanıda mutlaka düşünülmesi gereken bir patolojidir.

Anahtar Sözcükler: Bel Ağrısı; İliak, Lumbar; Torasik; Vertebra; Yaşlı.

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Introduction

The spinal junction area is the transition zone for two different spinal regions with different mobilities and different facet joint orientations (1,2). The thoracolumbar junction (TLJ) comprises the T_{10-11}, T_{11-12} and T_{12}-L_1 motion segments. There is more rotational function in the thoracic spine, mainly due to the way the facet joints are oriented. On the other hand, there is minimal rotation in the lumbar spine. But because of the tethering effect of the ribs, the thoracic spine motions mainly occur in the thoracolumbar region. TLJ is a transition zone across two different regions that have different motion abilities as well as different facet joint characteristics. These characteristics make the TLJ prone to rotational distress. Thoracolumbar junction syndrome (TLJS), sometimes described as Maigne syndrome, is a disorder that affects mostly T_{12}, L_1 and rarely T_{11}, L_2 spinal nerve roots (1-5). Low back pain is certainly the most frequently encountered pain complaint in TLJS, as well as hip and groin pain and also lower abdominal pain, pseudo-hip pain, pubic tenderness, and irritable colon symptoms that may accompany low back pain (1,2). The diagnosis is made with clinical suspicion and clinical evaluations (1-4,6). Especially in the elderly population, TLJS can be confused with lumbosacral spine problems, and may result in misdiagnosis and the application of redundant treatments.

In this report, we present a case that was scheduled for spinal surgery with hip and low back pain, and after the diagnosis of TLJS was treated with conservative treatments.

Case

A 65-year-old woman complained of continuous throbbing pain starting from the low back and spreading through the right groin and hip. Her complaints had started nearly two years before. Lumbar magnetic resonance imaging (MRI), lumbar and hip X-rays, whole body bone scintigraphy, electromyography and biochemical analysis were conducted by the physicians she was referred to. The biochemical analyses were normal, and on the lumbar MRI, a narrowing of the spinal canal at the anterior-posterior diameter due to a broad-based bulging at all levels was found. On the electromyography, mild neurogenic involvement of the muscles innervated by the L_3, L_4, and L_5 nerve roots, and in the whole body bone scintigraphy degenerative changes in the lumbar spine were revealed. On these findings, she had been diagnosed with spinal stenosis. When she did not respond to conservative treatments, surgery for spinal stenosis had been scheduled. When we evaluated the patient as a result of the consultation requested from us, she was taking tramadol 400 mg/day, gabapentin 1800 mg/day and diclofenac sodium 100 mg/day as the medical treatment. Physical examination revealed severe limitation of the passive and active range of motion of the lumbar spine, and motions were painful in all directions. There was tenderness at the T_{12}-L_1, L_5-S_1, and L_4-L_5 intervertebral spaces and at the T_{12}, L_1, L_4, and L_5 spinous processes. On the right side, the maneuver of lateral pressure against the spinous process at the level of T12, the pinch-roll test and tenderness over the posterior iliac crest point test were positive. Tenderness over the trochanteric region and the superior aspect of the pubis was detected on the right side. Her neurologic examination was normal. According to these findings, with the prediagnosis of TLJS, a right T_{12} periapophyseal joint block using a local anesthetic (2 cc of 2% lidocaine) was performed. All of the patient's tests were negative after the block (Figure 1). The patient was hospitalized in our clinic with the diagnosis of TLJS. Physical therapy modalities were applied to the thoracolumbar region. A back and abdominal muscle strengthening exercise program was organized. Her symptoms improved after the treatment. However, three weeks after the hospital admission she experienced pain, especially hip pain, exacerbated by rotational movement. With re-examination of the patient, it was seen that TLJS signs had again become positive. Spinal manipulative therapy to the thoracolumbar segment was applied. After the manipulative treatment, the patient's complaints were completely resolved and the patient was discharged with a regimen of daily activities and an exercise program to strengthen the paravertebral muscles. With a 3-year follow up period, the long-term well-being of the patient has continued.

Figure 1— Pinch-roll test were negative after the right T12 periapophyseal joint block.

Discussion

In elderly patients, low back, leg and hip pain is one of the most common problems encountered in daily practice. Clinical assessment and imaging techniques are often used for diagnosis. However, radiological studies have high false-positive rates (7-10). Therefore, despite developing technology, clinical assessment maintains its importance in terms of diagnosis and differential diagnosis (11). TLJS is one of the reasons for low back and leg pain. Low back pain is certainly the most frequently encountered pain complaint in TLJS; groin pain may accompany low back pain (1). As in our case, due to positive radiological imaging in elderly patients, there are often attempts to treat for other diagnoses such as lumbar spondylosis and coxarthrosis.

The pain pattern coincides with the distribution of the corresponding spinal nerves (T_{12}, L_1). The thoracolumbar nerve roots divide into two rami, ventral and dorsal, after exiting the intervertebral foramen (12). The T_{10} and T_{11} ventral rami are intercostal nerves and end in the abdominal wall. The T_{12} and L_1 ventral rami are subcostal and iliohypogastric nerves, respectively. They supply the lower muscles of the abdominal wall, the skin of the groin area and the lateral surface of the hip. They are responsible for pseudovisceral pain and groin pain. The perforating lateral cutaneous branch, which supplies the skin of the upper lateral part of the thigh, is responsible for pseudotrochanteric pain (2,12,13). The posterior ramus branches into medial and lateral branches. The medial branch is a motor branch and innervates the multifidus and interspinous muscles.

The lateral branch gives cutaneous innervation to the subcutaneous tissues of the lumbar and buttock area, facet joints, and supraspinous and interspinous ligaments. These cutaneous branches pierce the thoracolumbar fascia and pass through the subcutaneous tissues of the lumbar and buttock area as distal as the greater trochanter, in some cases (1,13). This branch is responsible for pain in the lower lumbar and crista iliaca region. Pseudovisceral pain is felt in the lower abdomen, groin and testicles, and symptoms of irritable bowel may be seen (1,14). This syndrome can mimic intestinal, urological, and gynecological problems, and can result in misdiagnosis and improper treatment of the patient. TLJS has been reported as a frequently overlooked cause of testicular, buttock and lower abdominal pain (15-17). Trochanteric pain can mimic hip pathologies such as coxarthrosis and trochanteric bursitis. As well, as in cases with pain radiating to the leg, TLJS can mimic sciatalgia. Pain mainly increases with motion. Hip flexion and adduction is often painful. The trochanteric region is frequently painful with palpation (1). In our case, radiating pain to the hip and leg suggested sciatalgia. With the absence of pathology at the hip joint and MRI findings of spinal stenosis, the patient had a diagnosis of spinal stenosis. Maigne has reported that, of 350 patients seen in a back pain clinic, 40% were found to have pain of thoracolumbar origin (1). Another study conducted by Akgun et al. also found that 39.6% of patients admitted with mechanical low back pain were found to have pain from TLJS (18). TLJS is often seen in the population aged over 50 (1). This may be due to a decrease in paravertebral muscle strength and also a dysfunction due to a degenerative process in that region. Likewise, our case was a 65-year-old woman with degenerative changes in the lumbar region. Rotational strains have an important role in the etiology because the lateral flexion and rotation movements occur mainly at the TLJ. Although TLJS is commonly seen in elderly patients, it is reported to be a potential cause of back pain in athletes, often caused by repetitive extension and rotational movements (19). In our case, due to repetitive rotational movements, the patient's complaints were exacerbated again after the treatment of TLJS with a periapophyseal joint block. After manipulative therapy to the thoracolumbar segment, dysfunction was improved.

The diagnosis is made on purely clinical grounds. Classic signs are: a positive iliac-crest point test, a positive pinch-roll test, localized tenderness over a certain spinous process at the TLJ and tenderness over the involved apophyseal joint. Pain and deep tenderness are located at the level of the iliac crest at a point, which is consistently located seven centimeters from the midline. For the posterior iliac crestal point sign; pressure at this point causes a sharp pain similar to the patient's complaint. This sign requires careful and precise localization. Once the irritated nerve is located, deep pressure and gentle movement produce marked tenderness. The opposite iliac crest is examined in a similar manner and is commonly unaffected. The skin and subcutaneous tissues of the lower lumbar and upper gluteal region are examined with the pinch-roll test. Referred pain is accompanied by hyperalgesia of the skin and subcutaneous tissues in the involved dermatomes. This hyperalgesia or hypersensitivity can be revealed by gently grasping a fold of skin between the thumbs and forefingers, lifting it away from the trunk and rolling the subcutaneous surfaces against one another in a pinch and roll fashion. On the involved side the skin overlying the buttock and iliac crest is found to be tender when compared to the opposite side (1-4,6).

For clinical examination of the TLJ to show the involvement of the particular segment two maneuvers has been defined. The first maneuver is friction pressure over the facet

joints. For this maneuver pressure is applied deeply, and longitudinally approximately 1 cm lateral to the spinous process and is followed by a slow, gentle friction movement by the palpating finger. Tenderness is elicited over one or two joints ipsilateral to the lower back pain. The other maneuver for the examination of the TLJ is lateral pressure on the spinous processes. The pressure is applied with the thumb slowly and tangentially at each level. The test is performed from left to right, and then repeated from right to left. In the case of TLJS, pain will usually be felt in one direction only. This maneuver imparts rotation to the vertebra. Ipsilateral rotation is frequently tender at the involved level (1-4).

The diagnosis is confirmed by a periapophyseal joint block. For the examination of these signs and for the diagnostic block placing the patient in a forward flexed position, across the examining table, in order to open up the spine into flexion and gap the posterior elements is suitable. This is a very convenient and comfortable position to examine the spine from the TLJ to the sacrum, because the lordosis is reversed (1).

In the majority of cases, TLJS is particularly responsive to spinal mobilization and manipulation therapy (1-4). Long-acting corticosteroid injections can sometimes be preferable to manipulation. For those with contraindications for spinal manipulative therapy or corticosteroid injections, electrotherapy is beneficial. Regulation of activities of daily living, and especially the avoidance of the rotational movements, is critical. A targeted exercise program is essential. Radiofrequency electrocoagulation and/or surgical denervation of the involved apophyseal joint can be applied in resistant cases (1-5).

In conclusion, TLJS can often be confused with other pathologies that may cause pain in the locomotor system. The diagnosis is made with clinical suspicion and clinical evaluations. TLJS is a pathology that should be considered in the differential diagnosis, especially in elderly patients with low back, hip and groin pain.

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