

# Thoracolumbar Junction Syndrome Causing Pain around Posterior Iliac Crest: A Case Report

Case  
Report

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Thoracolumbar junction syndrome is characterized by referred pain which may originate at the thoracolumbar junction, which extends from 12th thoracic vertebra to 2nd lumbar vertebra, due to functional abnormalities. Clinical manifestations include back pain, pseudo-visceral pain and pseudo-pain on the posterior iliac crest, as well as irritable bowel symptoms. During clinical examination, pain can be demonstrated by applying pressure on the facet joints or to the sides of the spinous processes. Radiological studies show only mild and insignificant degenerative changes in most cases. We report a 42-year-old female patient with osteogenesis imperfecta who suffered from chronic low back pain. Under the diagnosis of thoracolumbar junction syndrome, she was treated with an epidural block and a sympathetic nerve block, which improved her symptoms.

**Keywords:** Vertebrae; Thoracic; Lumbar; Back Pain; Iliac

## INTRODUCTION

Low back pain is a common disorder affecting 80% of people in their lives and one of the most common reasons to visit primary care physicians.<sup>1-3)</sup> It is often described as localized pain in the iliac crest area in patients with chronic back pain.<sup>4)</sup> It has been reported that 15% to 25% of pain in patients with pain in the posterior iliac crest area results from injury of the posterior ramus of the T12 thoracic nerve due to fracture or degenerative changes and this pain is often confused with back pain originating in the sacral

region.<sup>5)</sup> We describe the case of a patient with low back pain and pain around the right gluteal area, refractory to vertebroplasty and autogenous bone grafting, which was improved via management of thoracolumbar junction syndrome.

## CASE REPORT

A 42-year-old Korean woman with low back pain, general weakness, loss of appetite, and indigestion for 3 months presented to the Department of Family Medicine, Dongsan Medical Center, Daegu, Korea via the outpatient clinic for evaluation and conservative management. The patient has been followed up on for hypertension, dyslipidemia, and osteogenesis imperfecta for 8 years.

The patient had been treated with monthly intravenous administration of pamidronate 15 mg for osteoporosis since the dual-energy X-ray absorptiometry had demonstrated a T score of -2.93 8 years ago, but there was no improvement in bone mass density. The patient has had percutaneous vertebroplasty

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for a T11 compression fracture 6 years ago, but her low back pain has continued. The patient had presented to the orthopedic outpatient clinic with aggravation of low back pain 4 years ago, in which she was diagnosed with osteogenesis imperfecta and had an magnetic resonance imaging (MRI) demonstrating a T11 compression fracture with thoracolumbar kyphotic deformity. One year ago, the patient had kyphosis correction with autogenous bone grafting for continued low back pain and 30 degrees kyphosis. A relief in symptoms was reported for some time thereafter, but her symptoms worsened for the past 3 months, requiring conservative treatment including pain medication and physical therapy.

The patient has been taking angiotensin receptor blockers and statins daily for 4 years for hypertension and hyperlipidemia with intermittent use of zolpidem for insomnia. Her daughter and son were diagnosed with osteogenesis imperfecta as well and have been followed up at pediatrics. Her mother has a history of cerebrovascular disease.

The laboratory data upon admission were within normal limits. Plain radiograph of the pelvis showed no change from previous testing. Thoracic MRI demonstrated no significant changes other than improvement in kyphosis at the T10–11 level from the previous surgery.

The patient's general weakness, depressed mood, insomnia and decreased appetite have been improving with the management of major depressive disorder which includes emotional support and medical management using mirtazapine 15 mg daily. However, the patient was complaining of aggravated pain on the left posterior iliac crest area, rating it as an 8/10 on the visual analogue scale (VAS).

On physical examination, she exhibited local hyperesthesia and tenderness on the skin over the left posterior iliac crest compared to the right side when a fold of the skin and subcutaneous tissue was taken and rolled. Tenderness upon palpation of spinous processes and the facet joint of the thoracolumbar junction was also observed. Based on these typical findings of physical examination of the posterior iliac crest and nonspecific findings of imaging studies, the patient was diagnosed with thoracolumbar junction syndrome.

The patient could not benefit from facet joint injection which was tried in cooperation with the pain clinic at our facility on the 4th day of admission. The continuation and severity of the

symptoms prompted the decision to proceed with epidural nerve block using triamcinolone and 0.5% mepivacaine. The patient reported an improvement in pain, reporting a 4.5/10 on the VAS. On the 8th day of admission, a lumbar sympathetic nerve block was performed with 0.5% mepivacaine upon patient's complaining of increased pain to 5.5/10 on the VAS. The patient reported a reduction in pain, reporting a 2/10 on VAS thereafter. The patient's gastrointestinal symptoms including bloating and lower abdominal pain, also improved after epidural block, suggesting that the symptoms were also functional disabilities accompanied by thoracolumbar junction syndrome. The patient was discharged on the 11th day of admission with improved clinical symptoms and instructed to follow-up via the outpatient clinic.

## DISCUSSION

This case report describes a 42-year-old female who experienced aggravation of pre-existing low back pain without recent changes in imaging studies, and the diagnostic approach and treatment she received. Low back pain is a common musculoskeletal condition with annual prevalence of 15% to 20% which improves without treatment in most cases. However, once it continues, it can affect the activities of daily living and deteriorate quality of life.<sup>6)</sup> Back pain has many causes including lumbar instability, herniated disc, degenerative disc disease, inflammation, tumor, trauma, osteoporosis, etc.<sup>7)</sup> In order to differentiate the various causes of low back pain, imaging studies and tests for metabolic disease may be required. Plain radiographs on the pelvis and thoracolumbar spine should be performed in case of acute trauma or in order to determine the status of the spine. Computed tomography or MRI can be useful for spinal stenosis or disc diseases.<sup>8)</sup> However, we should keep in mind that the symptoms and radiological findings do not always match. Most of the conditions causing low back pain may not demonstrate specific findings on imaging studies and the findings suggestive of degenerative changes can be seen even in asymptomatic patients.<sup>9)</sup> Physical examination is more important than other tests,<sup>10)</sup> and this case is a good example showing that clinical examination may be very important when evaluating patients with chronic low back pain.

Maigne<sup>11,12)</sup> described thoracolumbar junction syndrome as

a condition with typical pain on the iliac crest and tenderness on palpation of the thoracolumbar junction, and it is accompanied by lesions in the spine in about 60% of patients. In most cases, symptoms generally appear when there are lesions in T12–L1, which is the thoracolumbar junction. In addition, it may appear when there are functional abnormalities or lesions in T11–12 or L1–2. Clinical signs correlate with spinal nerve root innervations. The posterior ramus supplies subcutaneous tissue of the upper buttocks and lower waste, the anterior ramus supplies the lower abdomen and groin, and the lateral cutaneous branch supplies the trochanter. Therefore, patients may complain of pseudo-visceral pain in the lower abdomen, pseudo-sciatica, pubic tenderness, and irritable bowel symptoms besides low back pain, which can lead to misdiagnosis.<sup>11)</sup> When examining the thoracolumbar junction, one must always look carefully for tender points upon palpation of spinous processes and facet joints. Looking for the presence of a posterior iliac crestal point tenderness and performing a positive pinch-roll test can also be beneficial.<sup>13)</sup>

Thoracolumbar junction syndrome is particularly responsive to spinal manipulative therapy,<sup>13)</sup> and no further treatment is required in most cases as long as it is performed adequately. However, indications and contraindications should be considered based on proper assessment of the spine. Spinal manipulative therapy is contraindicated when the condition is combined with severe osteoporosis and osteogenesis imperfecta as in the patient of this case report.

For those with contraindications for spinal manipulative therapy, steroid injection directly to the involved facet joint is beneficial.<sup>14,15)</sup> Iliac crest pain usually responds to facet joint steroid injection, but in the case of refractory pain, local anesthesia and steroid injection directly to the iliac crest can be used as an alternative strategy.<sup>16)</sup> According to the reports of Hwang et al.,<sup>17)</sup> marked relief in acute symptoms and a decrease in severity of chronic symptoms can be achieved by epidural nerve block. However, there was only little relief in the iliac crest with epidural block in our case, which corresponds to Choe's study;<sup>18)</sup> and marked relief of symptoms was achieved with lumbar sympathetic ganglion block. Lumbar sympathetic nerve block has been widely used to diagnose and manage patients with sympathetically maintained pain, such as complex regional pain syndrome, failed back surgery syndrome, peripheral vascular diseases, and Raynaud's disease.<sup>19,20)</sup> To accomplish successful lumbar

sympathetic ganglion block and achieve maximum effect with minimum side effects, it is important to inject the local anesthetic into the ganglion as close as possible. Lumbar sympathetic ganglion encompasses a wide variety of anatomical structures, mostly in L2–3 and L4–5 intervertebral discs.<sup>21-23)</sup> Mizuno et al.<sup>24)</sup> reported on their rat model of lumbar nerve root ligation that the group with sympathetic ganglion block maintained a significant decrease in allodynia and hyperalgia thereafter.

We conclude that thorough history taking and physical examination accompanied by different therapeutic approaches are important in treating patients with low back pain in which there is no typical radiologic findings.

## CONFLICT OF INTEREST

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No potential conflict of interest relevant to this article was reported.

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