



## Case Report

# A Case of Dural Ectasia with Low Back Pain and Sciatica Treated with Integrative Korean Medical Treatment



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## ABSTRACT

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Dural ectasia is defined as ballooning or expansion of the dural sac surrounding the spinal cord. This report describes a rare case of low back pain and sciatica, suspected as being dural ectasia. The patient was hospitalized for 45 days, and underwent integrative Korean medical treatment, including pharmacopuncture, acupuncture, herbal medicine, Chuna therapy, cupping therapy, and physiotherapy. The effect of the treatment was evaluated using the numerical rating scale, Oswestry disability index, European quality of life 5 dimensions, and subjective symptoms. After inpatient treatment, the pain the patient experienced was significantly reduced and the evaluation indices improved. This case report suggested that integrative Korean medical treatment could be an effective therapeutic choice for low back pain and sciatica, with dural ectasia. Further clinical studies are needed to support this observation.

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## Introduction

Dural ectasia or dural dysplasia is defined as widening or ballooning of the spinal canal, scalloping of the posterior vertebral body, increased thinning of the cortex of the pedicles and lamina, widening of the neural foramina, or the presence of a meningocele [1].

The etiology of dural ectasia is not well known, but it is usually observed in patients with connective tissue disorders such as Marfan syndrome, Ehlers-Danlos syndrome, neurofibromatosis 1, and ankylosing spondylitis [1–4]. In contrast, some studies suggest that dural ectasia can originate from vertebral fractures, spine surgeries, scoliosis, and traumas [5,6].

Some studies report that patients with dural ectasia suffer from low back pain and sciatica symptoms, but some patients do not [7].

Many cases of low back pain and sciatica with lumbar disc herniation or spinal stenosis, has been treated with integrative

Korean medical treatment, which has not been the case for dural ectasia. This study presents the outcome of a patient with suspected dural ectasia, low back pain, and sciatica that was treated with integrative Korean medical treatment.

## Case Report

### Patient

OOO (F/59)

### Chief complaint (onset)

Low back pain and right leg sciatica (June 2017).

### Past medical history/-social history

Total laminectomy of the spine (1977), hyperlipidemia (2011), an ovarian cyst (2014), hypertension (2015). Height :163 cm, weight:

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70 kg, smoker: (-ve), drinker: (-ve), occupation: housekeeper.

### Present illness

In June 2017, there was onset of low back pain and right leg sciatica. In June 2018, a “posterior epidural meningeal cyst in the spine” was diagnosed following lumbar magnetic resonance imaging at Pusan National University Hospital. Surgical treatment was suggested, but the patient refused. Subsequently the patient was treated with painkillers and acupuncture therapy. However, the pain did not subside and so the patient visited the Haeundae Jaseng Hospital of Korean Medicine on March 4, 2019, and was admitted on March 11, 2019.

### Duration of treatment

March 11, 2019 to April 24, 2019 (45 days of hospitalization).

### Radiology

Below are the observations from the lumbar magnetic resonance imaging on March 11, 2019 (Figs. 1 and 2).

- ① Partial lumbarization state of S1.
- ② Suggestive of total laminectomy state, T12~L3.
- ③ Dural Ectasia, T11~L3.  
R/O Posterior epidural meningeal cyst, T11, L4, 5 level.  
- distended dural sac with posterior vertebral body scalloping.  
- both neural foraminal widening.
- ④ L1/2, 2/3, 3/4  
- Central disc extrusion with disc degeneration.
- ⑤ L4/5  
- Bulging disc with disc degeneration.  
- Both facet arthrosis.  
- Severe stenosis of central spinal canal and left neural foramen.

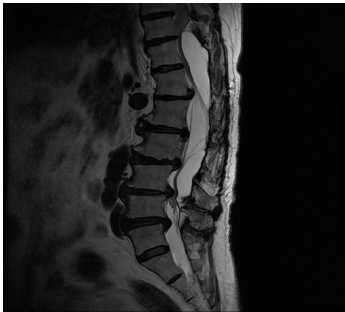


Fig. 1. T2 weighted sagittal plane of lumbar MRI at central view. The scan shows distended dural sac with posterior vertebral body scalloping. MRI, magnetic resonance imaging.

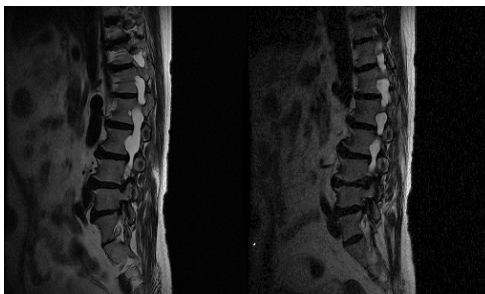


Fig. 2. T2 weighted sagittal plane of lumbar MRI at right and left foraminial view. The scan shows both neural foraminal widening. MRI, magnetic resonance imaging.

### ⑥ L5/S1

- Right central-subarticular disc extrusion, bulging disc with disc degeneration.
- Severe stenosis of both neural foramens.

### Patient protection policy on patient information use

To protect the patient's personal information, medical records were obtained after approval from the Institutional Review Board of the Jaseng Hospital of Korean Medicine (IRB File No.: 2019-07-004).

### Treatment

#### Pharmacopuncture therapy

Shinbaro pharmacopuncture (Jaseng Wonoe Tangjunwon, Namyangju, Korea) was injected at EX-B2 (right facet joint between the 4th and 5th lumbar discs). Pharmacopuncture was administered up to 2 mL per session, using a disposable 26 gauge × 11/2” (38 mm) needle, with a 3-mL syringe (Sinchangmedical, Gumi, Korea), and performed twice a day. The needle depth was about 3.5-4 cm.

#### Acupuncture therapy

The needles were 0.30\*40 mm in size, and made of stainless steel, (The Eastern acupuncture equipment manufacturer, Boryung, Korea), standardized, and disposable. The acupuncture was administered at GV3, GV4, BL24, BL25, BL26, BL54, SP6, GB39 and Ashi points for 15 minutes. It was performed twice a day with electroacupuncture (3 Hz).

#### Cupping therapy

Wet or dry cupping therapy was performed at BL22, GB30 points, twice a day, for 15 minutes. To prevent infection, only sterilized disposable cupping (The Eastern acupuncture equipment manufacturer, Boryung, Korea) was used.

#### Herbal medicine

Chungpajun-H decoction (120 mL/package) and Chungshinbaro-Hwan (tablet) were prescribed. Table 1 describes the composition of herbal medicines. The patient took these medicines 3 times a day during hospitalization (Table 1).

#### Chuna therapy

The patient was treated with Chuna therapy once a day. Joint mobilization, joint distraction, and spine and joint manipulation, for the lumbar spine and pelvis, were mainly used.

Table 1. The Composition of Herbal Medicines.

Herbal medicines	Herbal components
Chungpajun-H (decoction)	<i>Acanthopanax Cortex</i> 5g, <i>Eucommiae Cortex</i> 5g, <i>Saposhnikovia Radix</i> 5g, <i>Achyranthes bidentata Bl.</i> 5g, <i>Cibotii Rhizoma</i> 5g, <i>Atractylodis Rhizoma Alba</i> 2.5g, <i>Amomi Fructus</i> 2.5g, <i>Geranii Herba</i> 2.5g, <i>Zingiberis Rhizoma</i> 1.25g, <i>Scolopendra morsitans L</i> 0.25g, <i>Lycyrrhizae Radix</i> 1.6g, <i>Lasiosphaera Seu Calvatia</i> 7.5g.
Chungshinbaro-Hwan (tablet)	<i>Poria(Hoelen)</i> 0.15g, <i>Ginseng Radix</i> 0.07g, <i>Achyranthes bidentata Bl.</i> 0.04g, <i>Asini Gelatinum</i> 0.02g, <i>Rehmanniae Radix</i> 0.62g, <i>Cervi Cornus Colla</i> 0.06g, <i>Mel</i> 0.31g, <i>Cibotii Rhizoma</i> 0.02g, <i>Eucommiae Cortex</i> 0.02g, <i>Saposhnikovia Radix</i> 0.01g, <i>Acanthopanax Cortex</i> 0.01g, <i>Scolopendra Corpus</i> 0.01g, <i>Atractylodis Rhizoma Alba</i> 0.05g, <i>Atractylodis Rhizoma Alba</i> 0.02g.

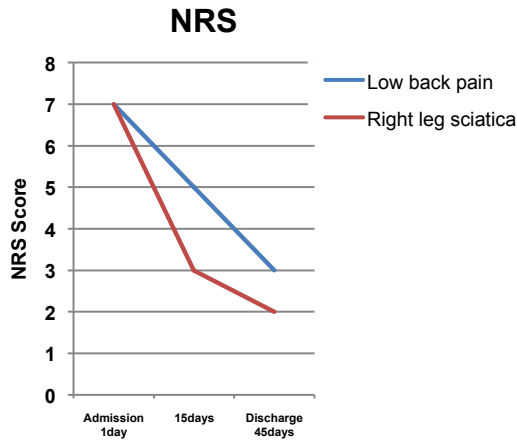


Fig. 3. Changes in NRS for low back pain and right leg sciatica. NRS, numerical rating scale.

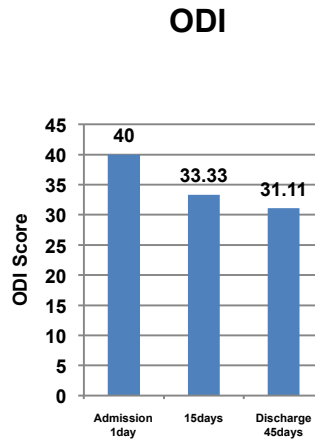


Fig. 4. Changes in ODI. ODI, Oswestry disability index.

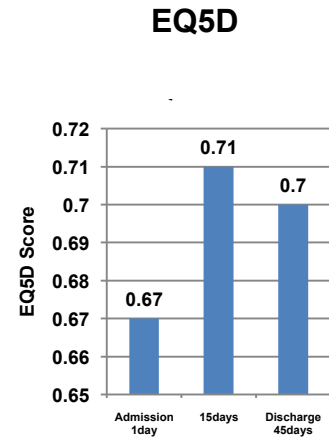


Fig. 5. Changes in EQ5D index. EQ5D, European quality of life 5 dimensions.

### Physiotherapy

The patient underwent traction and medicinal steaming therapies in the lumbar spine, once a day.

### Evaluation

#### Numerical rating scale

The numerical rating scale (NRS) was used to measure the severity of the patient's subjective pain, expressed from 1 to 10, where 10 is the worst imaginable pain, and 1 is the absence of pain [8]. The patient was evaluated on the day of admission, 15th day of hospitalization, and the day of discharge.

#### European quality of life 5 dimensions

The European quality of life 5 dimensions (EQ-5D) is a survey designed to measure the quality of life. The maximum point is 1, which signifies perfect quality of life [9]. The patient was evaluated on the day of admission, 15th day of hospitalization, and the day of discharge.

#### Oswestry disability index

The Oswestry disability index (ODI) evaluates disability in patients with lower back pain. It is measured from 0 to 100, where the higher the score, the higher the degree of pain and disability [10]. The patient was evaluated on the day of admission, 15th day of hospitalization, and the day of discharge.

### Progress note

Before admission, the patient's pain was so severe that she could not walk for more than 5 minutes, or sleep without painkillers. After starting the inpatient treatment, the painkillers were stopped to accurately evaluate the condition of pain. On the day of admission, the NRS, ODI, EQ-5D scores for low back pain and right leg sciatica were 7, 40, and 0.67, respectively. Right lower leg numbness slowly decreased after the 3rd hospitalization day. However, low back pain was still severe for a week after admission (she had not taken any painkillers).

After the 15th day of hospitalization, the low back pain gradually

decreased, and she could sleep at night, and walk for over 10 minutes without taking breaks. The NRS scores for low back pain and right leg sciatica were 5 and 3, respectively. The ODI score decreased to 33.33, and the EQ-5D score increased to 0.71.

On the day of discharge, she reported a reduced low back pain with right lower leg numbness, and could walk for more than 60 minutes without taking breaks. The NRS scores for low back pain and right leg sciatica were 3 and 2, respectively. The ODI score decreased to 31.11 and the EQ-5D score decreased to 0.70. (Figs. 3–5)

### Discussion

The patient had low back pain and right leg sciatica that was caused by a suspected dural ectasia. The patient's symptoms improved considerably with integrative Korean medical treatment that included pharmacopuncture, acupuncture, herbal medicine, Chuna therapy, cupping therapy and physiotherapy. The patient was hospitalized for 45 days. After inpatient treatment, the NRS scores for low back pain and right leg sciatica decreased from 7 to 3 and 7 to 2, respectively. The ODI score decreased from 40 to 31.11. The EQ-5D score increased from 0.67 to 0.70. As a result, the patient's pain relieved, and she could sleep without nyctalgia. The patient's symptoms markedly improved, allowing her to increase the period she could walk without any breaks.

The etiology of dural ectasia has not been clearly identified and connective tissue disorders and ankylosing spondylitis are typically thought to be the most likely cause of low back pain and leg sciatica. It has been suggested that the defective fibrillin leading to abnormally weak connective tissues cause weakness and dilatation of the dural sac [11]. On the one hand, it has also been proposed that chronic peridural inflammation due to ankylosing spondylitis, could weaken the dural sac and result in dural ectasia [3]. Studies have reported that dural ectasia could occur after spinal surgery (if patients had no medical history of connective tissue disorders or ankylosing spondylitis) [5,12]. It was suggested that prolonged and repetitive peridural inflammation due to spinal surgery, could be the cause of dural ectasia, which is similar to the condition of ankylosing spondylitis. Considering the patient's past medical

history, the cause of dural ectasia, although unclear, could be spinal surgery.

It is uncertain whether the pathology of dural ectasia is symptomatic or asymptomatic. It may cause postural headaches, low back pain, sciatica, and rectal pain [7]. If meningeal cysts are present, compression of the lumbosacral nerve roots can lead to neurological deficits such as the cauda equina syndrome [11,13]. The patient's magnetic resonance imaging showed lumbar disc herniation and spinal stenosis, in addition to dural ectasia. Therefore, the cause of the patient's symptoms are multiple.

Since conservative treatment of low back pain or sciatica with dural ectasia has not been previously reported, integrative Korean medical treatment, similar to the lumbar disc herniation and spinal stenosis treatment from previous studies, was used, focusing on the patient's symptoms [14,15].

The main treatment for relieving the patient's symptoms was injection of GCSB-5 contained in Shinbaro pharmacopuncture at EX-B2. It has been reported to have an anti-inflammatory activity correlated with the inhibition of inducible nitric oxide synthetase and cyclooxygenase-2 expression [16], and alleviates neuropathic pain by downregulating neuroglial activity in the spinal dorsal horn, and the dorsal root ganglion, through expression of calcitonin gene-related peptide and transient receptor potential cation channel subfamily V member 1 [17]. Besides, it could advance the nerve regeneration and stimulate the motor functional recovery by reducing oxidative stress [18]. It is thought that these chemical mechanisms had an effect on suppressing the inflammatory response, which occurred around the dura or nerve roots, due to expansion of the dural sac, reducing low back pain or sciatica, and promoting the recovery of muscular activities.

Since this study describes only 1 case, more patients are needed to substantiate the observations in this study. Moreover, the cause of low back pain and sciatica cannot be described as only being attributable to dural ectasia. Despite these limitations, this study is meaningful in that there have been no reports in Korea that have improved the symptoms of dural ectasia with conservative treatment relieving severe low back pain and sciatica using integrative Korean medical treatment. Thus, this case supports that integrative Korean medical treatment may be considered to relieve low back pain or sciatica, even when the cause of the pain is uncertain. Further studies are needed to investigate the pathology of dural ectasia, and substantiate the findings reported in this study.

### Conflicts of Interest

The authors have no conflicts of interest to declare.

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