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CLINICAL CASE REPORT

Clinical Effect of Acupotomy Combined with Korean Medicine: A Case Series of a Herniated Intervertebral Disc

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Abstract
The aim of this study is to evaluate the effect of acupotomy for treating patients with a herniated intervertebral disc (HIVD). This case series includes five HIVD patients who were treated at the Department of Acupuncture and Moxibustion, Daejeon University Dunsan Korean Hospital, Daejeon, Korea, from January 2015 to April 2015. Acupotomy was performed three times over a 2-week period, along with Korean medical treatment. The outcomes were evaluated by using a numeric rating scale (NRS), physical examination, the Oswestry Low Back Pain Disability Index (ODI), the Short-Form 36-Item Health Survey (SF-36), and the Surgical Safety Checklist. The NRS and physical examination results, as well as the ODI scores, were improved in all cases. No significant differences were noted on the SF-36. No patients had any adverse effects. This study, with its findings of encouraging responses in reducing low back pain and radiating pain and in recovering the kinetic state of soft tissue, supports the potential use of acupotomy for the treatment of patients suffering from HIVD.

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1. Introduction

Acupotomy is a combined simple therapy of Korean Medicine and modern surgical principles that is used as the main tool for treating chronic soft tissue injury and bone hyperplasia with a bladed needle that has a thick flat-head and a cylindrical body [1—3]. The aim of acupotomy is to recover the kinetic state of soft tissue from peeling adhesion, remove attached tissues, and reduce pressure on the nerve [4]. Acupotomy has many benefits because it converts open surgery to closed surgery, thus reducing risk, time, and cost [2]. This method leaves only a small scar that will fade with time.

Though started in China, acupotomy has recently been investigated in Korea. In a review of trends for acupotomy, from January 1999 to May 2014, 28 acupotomy clinical research papers were reported in Korea while 11 papers were reported in China [5]. Many practitioners in Korea use acupotomy in their clinics and still more case reports are being presented [6]. Furthermore, Korean researchers have obtained a patent for an acupotomy needle [7].

Based on this information, a hypothesis can be put forth that acupotomy may be beneficial in regulating musculoskeletal disorders, especially those due to chronic accumulated injury [8] such as a herniated intervertebral disc (HIVD) of the lumbar spine [9]. Although HIVD is one of the most common spinal degenerative disorders, its surgical treatment has many limitations [10]. To date, few reports have addressed the therapeutic effect of acupotomy on patients with HIVD. This case series describes the results for five consecutive patients with HIVD who were treated with acupotomy.

2. Case Presentation

2.1. Characteristics of the participants in the study

Five consecutive patients who had been diagnosed with HIVD by using magnetic resonance imaging (MRI) or computed tomography (CT), and who were treated in our department from January 2015 to April 2015 were included in this case series. Ages ranged from 29 years to 58 years. All patients had received conservative treatments (exercise, acupuncture treatment, physical therapy, nerve block, and epidural neuroplasty) from other hospitals, and all prior attempts at management had failed. The duration of symptoms ranged from 10 months to 24 months (median, 14 months). Low back pain (LBP), radiating pain, gait disturbance, and sleep disorder due to pain were the chief complaints in all patients (Table 1). This case series was in compliance with the ethical standards of the Declaration of Helsinki. Patients who had coagulopathy, abnormal findings on their ECG or blood test, muscle atrophy, abnormal tendon reflexes, or medical conditions that could affect radicular pain were excluded.

2.2. Intervention

Before performing acupotomy, we explained the procedure and possible adverse effects. The patients provided written informed consent (Appendix 1).

Three treatment sessions were given over 2 weeks by a single practitioner. A doctor of Korean medicine with 22 years of clinical experience and 3 years of acupotomy experience, who was not involved in evaluating the effects of treatment, led all procedures. We followed the guidelines of Standards for Reporting Interventions in Controlled Trials of Acupuncture (STRICTA; Table 2) [11]. We used a flat-head-screw-driver-shaped stainless-steel disposable acupotomy needle (1.2-mm diameter and 75-mm long; Hansung Precision Manufacture, Seoul, South Korea).

After the MRI or CT findings had been evaluated, the participant's skin over the corresponding disc level was marked while the patient was in the prone position. The participant's lower back was sterilized and anesthetized with lidocaine in advance. The needles were inserted at three points; acupotomy target points were 20—30 mm apart on the spinous process at the level of the herniated disc, and on both sides of the surrounding inner core muscles where tenderness appeared. They were inserted to depths of 50—60 mm. The practitioner stimulated the soft tissue until the tenderness disappeared. During the treatment, the practitioner checked whether any patients experienced pain and numbness due to nerve damage (Fig. 1).

After acupotomy, we applied a disposable sterilized wet-cupping [12] and sterilized the acupotomy site (Fig. 2). Then, sterilized gauze was applied to the site. We warned the patients to beware of infection at the site. Every patient took admission treatment from 1 day to 1 week after the last acupotomy in order to control pain and prevent adverse effects.

Other acupuncture treatments were performed to support the effect of acupotomy twice a day by a single Korean doctor who had received postgraduate training in acupuncture and had $>$ 2 years of clinical experience. Stainless-steel disposable sterilized acupuncture needles

Table 1 Demographic information.

Patients	Age (y)	Duration (mo)	Stage
1	55	24	L5-S1, central to left paracentral, extruded disc
2	38	10	L3-4, central to left protruded disc
3	58	12	L3-4, left protruded disc
4	56	12	L2-3, 3-4, 4-5, 5-S1, degenerative diffuse bulging disc with annular tear, with mild thecal sac compression
5	29	12	L4-5, central protruded disc

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