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Effectiveness of Acupuncture with NSAID Medication in the Management of Acut Discogenic Radicular Pain: A Randomised, Controlled Trial

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Abstract

Aim: To evaluate potential benefit of acupuncture in the treatment of acute discogenic radicular pain and compare it with nonsteroidal anti-inflammatory drug (NSAID) therapy.

Method: Eighty patients, referring with acute radicular pain with no or with minimal neurologic deficits and without any indications for surgery were informed about the study with treatment choices. Patients willing to participate, were also randomly assigned into two treatment subgroups as NSAID and acupuncture. Tenoxicam was used as analgesic drug in each NSAID sub-group. Acupuncture groups received classical filiform needle and ear needle applications. Pain intensities of cases who were well-informed about the procedure were assessed before and after treatment - and also on third and twelfth months - on a 100 mm visual analogue scale. All patients were informed about daily activity modifications relevant to their illness.

Result: It was determined that short and long term pain relieving effects of acupuncture in the management of radiculopathy secondary to lumbar disc herniations were similar to NSAID therapy ($p>0.05$). The pain relieving effects of acupuncture in cases with cervical discopathy were rather similar to NSAID administrations in the long term but in short period it was significantly more effective ($p<0.01$).

Conclusion: Acupuncture is a promising therapeutic option in the management of the radiculopathy of discogenic origin.

Keywords: Acupuncture; Discogenic pain; Lumbar radiculopathy; Cervical radiculopathy

Introduction

Acupuncture, as one of the complementary and alternative medical (CAM) therapies, has been used for over 2000 years for a wide variety of complaints including painful syndromes of the locomotor system with minimal side effects and is widely accepted and practised in Western medicine as well [1-3]. The World Health Organization (WHO) reported that acupuncture treatment can be used in over 40 disease situations. In a consensus building panel organized by National Institutes of Health, it was concluded that in situations such as stroke rehabilitation, headache, menstrual cramps, tennis elbow, fibromyalgia, myofascial pain, osteoarthritis, low back pain, carpal tunnel syndrome and other painful lesions, acupuncture may be useful as an adjunct treatment or an acceptable alternative or be included in a comprehensive management program [4]. Although there were many studies of its usefulness in the management of chronic neck or low back pain and in intractable pain after removal of nucleus pulposus, its long and short term effectiveness on acute radicular painful syndromes has not been evaluated adequately [5-9]. The aim of this study was to describe the pain relieving effects of acupuncture in the treatment of patients with acute radicular pain of discogenic origin in cervical and lumbar regions and compare it with non-steroidal anti-inflammatory drug (NSAID) administration.

Method

Patients who were suffering from acute pain from discogenic origin either lumbar or cervical were informed of the study and invited to participate. Eighty cases (43 women and 37 men), without any spinal anomalies, previous spinal surgery and aged at least 18 years, accepted the invitation.

They gave their informed consent and were included in the study in Kahramanmaras Sutcu Imam University, School of Medicine, Acupuncture, Algology and Neurosurgery clinics. All the patients included in the study had been referred with a new onset of acute radicular pain (40 with lumbar disc herniations and the remaining 40 with cervical disc herniations) diagnosed by the same radiologist with magnetic resonance imaging or computed tomography examinations.

The patients had either no neurological deficits or minor ones, with no surgical indications, and were randomised to either acupuncture or

	Lumbar Discopathy Patients		Cervical Discopathy Patients	
	Acupuncture Sub-group	NSAID Sub-group	Acupuncture Sub-group	NSAID Sub-group
Included in the study	20	20	20	20
Exclusions	1	1	1	1
Drop-outs	0	2	0	4
Included in the analysis	19	17	19	15

Table 1: Background data for lumbar and cervical discopathy patients.

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medical therapy with the written approval of the ethics committee. The current conservative medical treatment of radicular painful syndromes or consist of acetaminophen or NSAIDs for the initial treatment [5]. Stronger analgesics (mostly opioids) may be required for severe radicular pain which was not the case in our paitents.

Each lumbar or cervical discopathy group was also divided into two subgroups using a computer-generated sequence of random numbers and a sealed envelope technique. Patients were randomly consisting of 20 cases, as NSAID and acupuncture groups (Table 1). Discopathy levels of the subgroups were revealed in Table 2.

Local pain intensities of the cases that were well-informed about the procedure were assessed before and after treatment and also on the third and twelfth months on a 100 mm visual analogue scale (VAS). Patients were invited to the out-patient clinic of Neurosurgery Department with phone calls and/or letters for the obtaining of the VAS scores after 3 and 12 months. The patients whom it was not possible to gain long term VAS scores were dropped-out from the study. Also patients who needed another treatment modality including surgery, physiotherapy or facet blocks during the follow-up period of the study were also excluded from the analysis (Table 1).

Tenoxicam was used as analgesic drug in each NSAID sub-groups. Patients were given pills for the defined two-week treatment period. Therefore we decided to use a NSAID (Tenoxicam) for the comparison and also patients were treated with H2-receptor blocker for gastric mucosa protection.

Acupuncture sub-groups received traditional Chinese acupuncture by a licensed acupuncturist with a certificate of achievement on advanced level of acupuncture education in Shanghai University of TCM. The acupuncturist had a clinical experience of 3 years on the treatment of painful situations by acupuncture. Disposable stainless steel acupuncture needles were inserted to certain anatomical locations and then auricular acupuncture was also applied. In these patients, session times were standardized by 20 minutes appointments for all visits in order to eliminate potential placebo effect originating from different exposure times to the acupuncturist.

In patients with cervical discopathy, sterile filiform acupuncture needles (0.30 x 40mm, Suzhou Kangnian Medical Devices Ltd. Suzhou. Jiangsu, PRC) were inserted to bilateral points BL10, GB20, Ashi points 0.5 cun lateral to midline at the levels of C4-6 or C5-7 alternately and retained for 20 minutes (Figure 1a and 1b). After removal of these needles, ear pressing needles (0.22 x 1.55 mm Cloud and Dragon) were embedded to ear points Shenmen and cervical vertebra.

In patients with lumbar discogenic pain, similar acupuncture needles (0.25 x 25mm, Suzhou Kangnian Medical Devices Ltd. Suzhou. Jiangsu, PRC) were inserted to points BL23, BL25, BL32, BL40, BL52 and GB34 bilaterally (Figure 2a and 2b). The needles were retained for 20 minutes and then removed. Ear pressing needles (0.22 x 1.55 mm Cloud and Dragon) were embedded to ear points Shenmen and lumbosacral vertebra.

Lumbar Discopathy Level	Acupuncture Sub-group	NSAID Sub-group	Cervical Discopathy Level	Acupuncture Sub-group	NSAID Sub-group
L_{2-3}	1	-	C_{4-5}	2	2
L_{3-4}	5	3	C_{5-6}	8	4
L_{4-5}	6	8	C_{6-7}	7	7
L_5-S_1	7	6	C_7-T_1	2	2

Table 2: Discopathy leveles of the subgroups.

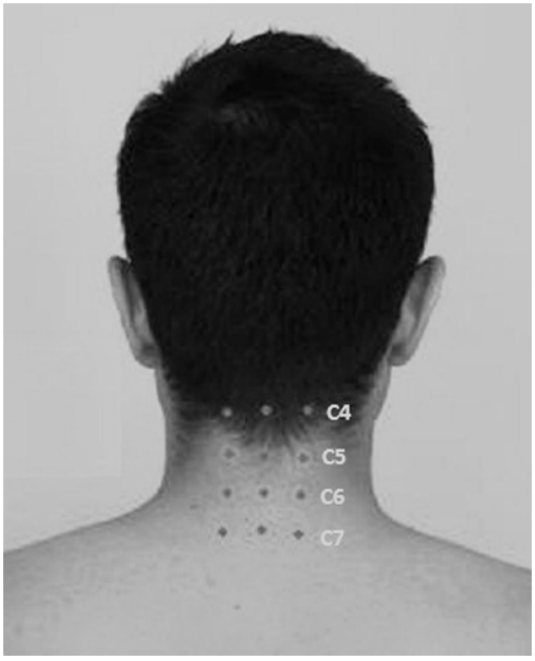

Figure 1a: Needle insertion points for cervical discogenic lesions (*Jiaji points*).

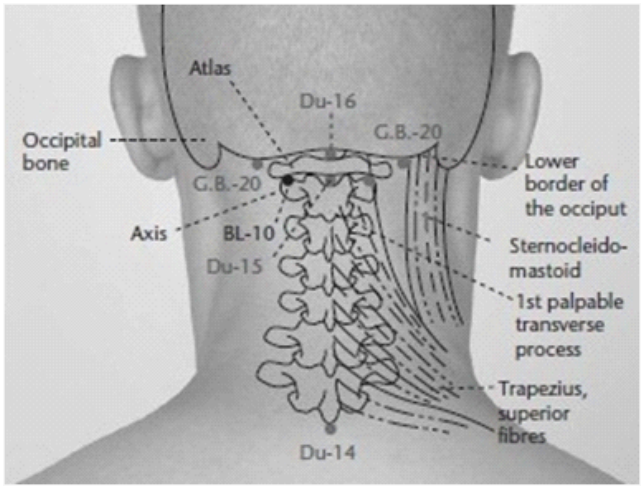

Figure 1b: Needle insertion points for cervical discogenic lesions (*BL-10 and GB-20*).

During acupuncture sessions, after inserting the needles deep enough to reach the muscle tissue, the needles were stimulated manually by lifting-thrusting and rotating so as to achieve the needling sensation or De qi. The stimulation was repeated with 5 minute intervals. At the end of 20 minute treatment period, the needles were taken out. Each acupuncture treatment was performed twice a week for five weeks constituting a total of 10 treatment sessions.

In the acupuncture group all 40 patients completed the study (although two were excluded from the analysis because of the lack of the long term results), whereas there were eight drop-outs in the NSAID group; three with gastric symptoms and five for non-compliance with the study.

All of the patients in each sub-group were recommended for bed

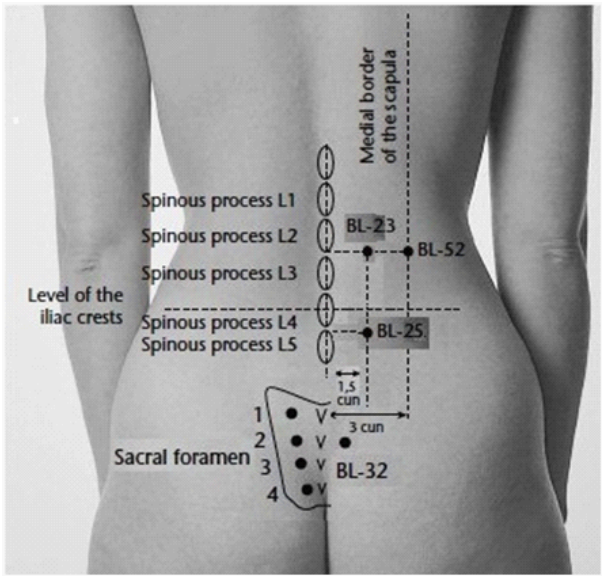

Figure 2a: Needle insertion points for lumbar discogenic lesions (*BL-23, BL-25, BL-52, and BL-32*).

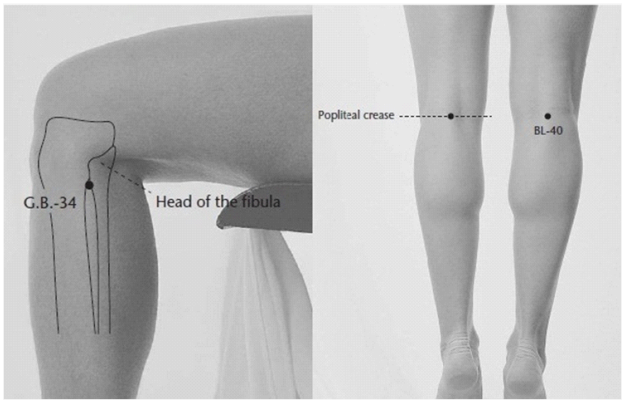

Figure 2b: Needle insertion points for lumbar discogenic lesions (*GB-34 and BL-40*).

rest for 2-4 days and informed about activity modifications such as limiting heavy lifting, prolonged sitting, bending or twisting of the back during the treatment period.

Data were analysed with the statistical software package SPSS 13.0. Pre-intervention and post-intervention changes were tested by the paired Wilcoxon signed rank test within the treatment groups. Categorical variables between the groups were assessed with $\chi 2$ test. For all tests a p value less than 0.05 was regarded as statistically significant.

Results

There was no demographic difference among the cases (p>0.05) (Table 3).

Prior to the treatment all study groups were rather similar with respect to pain and disability. It was determined that short and long term pain relieving effects of acupuncture in the management of radiculopathy secondary to lumbar disc herniations were similar to NSAID therapy (p>0.05). On the other hand, in cases with cervical discopathy, the pain relieving effects of acupuncture were rather similar to NSAID administrations in the long term, however especially in the short term acupuncture was statistically significantly more effective than NSAID therapy (p<0.01) (Table 4).

Conclusion

Acupuncture has been a component of the health care system in China for more than 2500 years and classical acupuncture theory its effectdepends on some kind of energy flow (Qi) through the body in some meridians [10]. In more scientific studies, it is revealed that acupuncture can cause multiple biological effects locally or far from the application side. Some endogenous opioids may take part in the analgesic effects of acupuncture and the fact that opioid antogonists such as naloxone reverse the analgesic effects of acupuncture can strenghthens this [4]. These scientific clues regarding the effectiveness of acupuncture as an analgesic therapy method formed the main starting point of our study.

There were some studies revealing the effectiveness of acupuncture in chronic low back and cervical pain but reports investigating the pain relieving effects of acupuncture in acute discogenic radiculopathy were very rare [8,11,12]. Therefore we focused our study on acute painful radicular diseases.

We also thought that besides studying the effectiveness of acupuncture in some disease situations, it is also important to compare it with more frequently used conventional drugs in order to make decisions about treatment opportunities in some patients, especially where there are some contraindications to NSAID medication, as in those with gastric diseases. It is reported that using sham acupuncture as a control group may lead to some degrees of confusion and interpretation faults because insertion of needles in places other than known acupuncture points may also give rise to some degrees of biological effects [4]. Therefore we did not use sham acupuncture as a control group. We did not include a group of untreated patients either, because it is unethical not to treat patients who are in pain; thus acupuncture and medication groups acted as a control for the other. This method was also implicated in the literature [13-15].

The main finding of this study was that acupuncture may relieve acute pain from discogenic origin. In most cases several acupuncture treatments were needed to diminish the pain. Although there is no certain agreement about the application periods of acupuncture and low concordance among acupuncturists in locomotor system diseases, it is generally accepted among the practitioners that 10-20 sessions are gen-

Group	Age (year)*	Sex (M/F)*	Length (cm)*	Weight (kg)*
Lumbar Discopathy	38.16 ± 12.39	13/27	169.97 ± 9.48	69.94 ± 14.32
Cervical Discopathy	43.62 ± 9.85	17/23	162.45 ± 11.23	74.17 ± 10.58
*= p>0.05				

Table 3: Demographic values of the patients.

Group / VAS Values		Before Therapy	After Therapy	3rd Month	12th Month
Lumbar	Acupuncture	8.89 ± 0.76	3.61 ± 1.82	4.83 ± 1.54	5.61 ± 2.52*
	Tenoxicam	8.94 ± 1.06	3.31 ± 1.40	4.62 ± 1.82	5.50 ± 2.07*
Cervical	Acupuncture	9.11 ± 0.90	2.28 ± 1.74	3.50 ± 1.25	4.61 ± 2.85#
	Tenoxicam	9.29 ± 0.73	3.29 ± 1.33	4.29 ± 1.82	5.07 ± 2.70#
*= p>0.05, #= p<0.01					

Table 4: VAS (Visual Analog Scores) values of the patients.

erally necessary and that initial improvement can be expected to occur by the tenth treatment [2]. In our study, improvement was detected by the sixth treatment session in lumbar cases and fourth in cervical cases. Pain relieving effects of this treatment were experienced earlier in our cases when compared with the literature. We think that most of the previous reports concerned the improvement in chronic painful syndromes of the spine. In acute symptomatology, acupuncture treatment may affect the cases earlier. Conventional drug therapy, as a well studied and worldwide accepted treatment method with tenoxicam supplied with famotidine for gastric mucosa protection also relieved the pain to the same extent and earlier improvement periods were observed as compared with acupuncture; third treatment day in lumbar and seventh in cervical cases.

As reported by Kalauokalani et al, it is also important to keep in mind that patient expectations may influence the outcome, independent of the treatment itself [16]. We think that acupuncture was felt to be an easy and interesting treatment whereas usage of drugs for a long period was not acceptable for some patients. Also most patients accepted the acupuncture as a 'new' and 'alternative' treatment, whereas drug treatment was considered 'old' and 'established'. Finally, the patients may have been more inclined to complete their treatment with acupuncture than drug therapy because acupuncture was felt to be more effective than the other method. These findings may implicate the low rate of non-compliance with the study in the acupuncture group and the high success rate of acupuncture especially in cervical pain. We think that our results for the pain relieving effect of the acupuncture in acute symptomatology may be higher than its actual rate because of the patients' expectations for this new and alternative treatment modality. In our opinion in further clinical trial designs about CAM therapies for acute discogenic painful syndromes, patients' expectations for benefit from a specific treatment should also be taken into account.

The short and long term effectiveness of acupuncture and NSAID usage was rather similar. Moreover acupuncture was better in cervical discopathies in short term, and there was more compliance of the patients in the acupuncture group. The improvements in pain level in both treatment groups may be to some extent due to the natural course and self-limiting properties of back and cervical pain with radiculopathy as a result of minimal discopathy without major neurological deficits and also because of activity modifications of the patients.

In conclusion, acupuncture as a noninvasive treatment with minimal side effects is a promising therapeutic option in the management of acute radiculopathy of discogenic origin. It is as effective as NSAIDs in the short and long term in lumbar radiculopathy and seems to be more effective especially in cervical radicular pain in the short period.

Consent

Written informed consent was obtained from the patient's for the publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

BZ presented the case histories, performed case pain-management & assessment, and drafted the manuscript. KZY participated in the patient's management. YG carried out the acupuncture management of the all cases. All authors read and approved the final manuscript.

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