

A Comparative Study of Diazepam and Acupuncture in Patients with Osteoarthritis Pain: A Placebo Controlled Study

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Abstract: Forty-four patients with chronic cervical osteoarthritis took part in this study. Patients were treated with acupuncture, sham-acupuncture, diazepam or placebo-diazepam in randomized order. Pain was rated on visual analogue scales before, during, and after treatment. Two scales were separately used to rate the intensity (sensory component) and the unpleasantness (affective component) of pain. The results analyzed from these trials show that diazepam, placebo-diazepam, acupuncture and sham-acupuncture have a more pronounced effect on the affective than on the sensory component of pain. Acupuncture was significantly more effective than placebo-diazepam ($p < 0.05$), but not significantly more effective than diazepam or sham-acupuncture.

Osteoarthritis is the most common of all the rheumatic diseases, and causes symptoms and disability in a large proportion of the elderly population (1). In the absence of more specific therapies capable of preventing or reversing the pathological changes of osteoarthritis, current treatment is symptomatic and directed primarily toward relief of pain and unpleasantness. Different treatments have been recommended for the relief of osteoarthritic pain (1-9). However, there is no obvious treatment of choice. It is not uncommon that patients suffering from pain take benzodiazepines or try acupuncture. Experimental studies have indicated that these treatments may exert their effect through similar mechanism. Therefore it appeared of interest to compare the pain alleviating effect of diazepam, placebo-diazepam, acupuncture and sham-acupuncture in patients suffering from chronic cervical osteoarthritis pain.

Material and Methods

Subjects

Forty-four patients, 42-77 years old, with osteoarthritis of the cervical spine, were involved in the study. Diagnoses were based on clinical features supported by the radiological criteria of Kellgren and Lawrence (10). All patients had pain for 6 months or more and complained of ache even at rest. A diurnal pattern of pain was evident in all patients, symptoms being worse at the end of the day. Pain was more severe when joints were in movement than at rest. Out of the 44 patients, 27 complained of morning stiffness.

No pain alleviating drugs were allowed 24 hours before the trials. Patients were told they might experience pain relief, aggravation, or no change after treatment. Every effort was made to avoid specific suggestions.

Approval for the study was obtained from the local Ethics Committee and informed consent was obtained from each patient. All patients were told that they could withdraw from the trial if they wished at any time.

Pain assessment

Patients were asked to rate their level of pain before, and two hours after the treatment. Separate visual analogue scales (VAS) were used to measure pain intensity (VAS sensory) and pain unpleasantness (VAS affective) (11,12). The pain VAS consisted of a 10 cm line whose endpoints were designated as 'no pain sensation' and 'the most intense pain sensation imaginable,' and as 'not bad at all,' and 'the most unpleasant feeling possible for me' for the pain sensation intensity and pain affective scales respectively.

Treatment procedure

Before the start of the trials the patients were randomized to the order of the different treatments. There were 3-5 days between the different trials.

Diazepam and placebo-diazepam

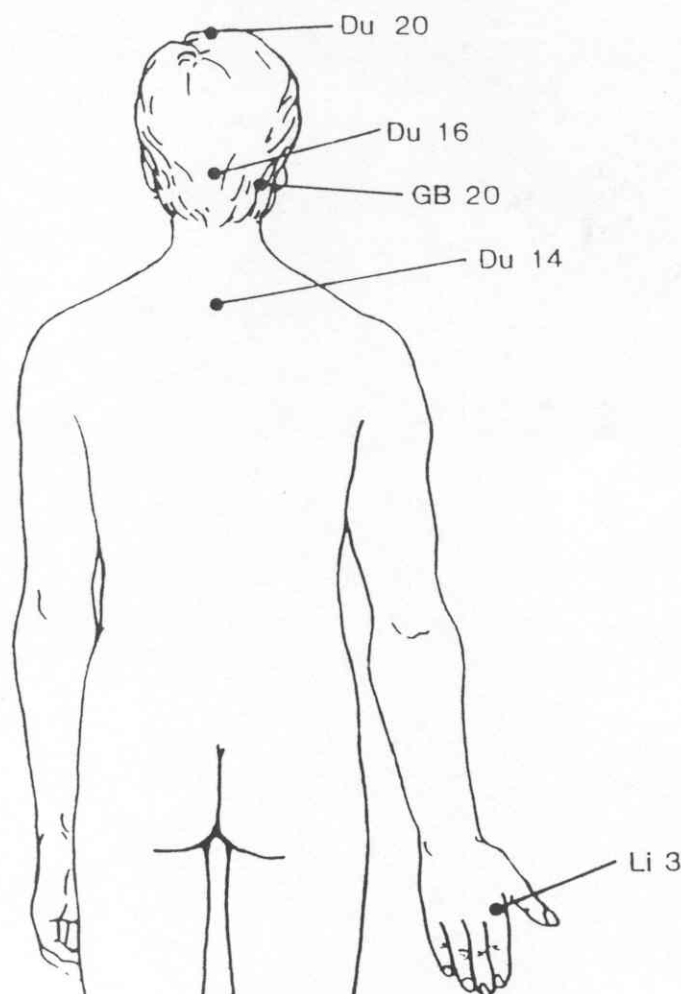
During the diazepam and placebo-diazepam trial, the patients were administered 5 mgm diazepam or placebo-diazepam orally. The effect was rated two hours later. No communication about the expected effects took place.

Acupuncture and sham-acupuncture

Acupuncture was performed by an experienced acupuncturist for a period of 40 min. Points chosen were Li 3 (bilateral), Du 14, Du 16, Du 20, and GB 20 (bilateral) (Fig. 1). The needles were 2.5 cm long, of stainless steel and autoclaved before use. Insertions were made to depths between 0.6 and 1.3 cm after the usual skin sterilizing procedure. Stimulation was brought about by manual rotations of the needles which then evoked a tingling, non-painful sensation (de Qi). The procedure was then repeated for 10 seconds every 5 min by further rotations. During sham-acupuncture the needles were inserted superficially (intradermally) and left without eliciting any further sensation.

DIAZEPAM AND ACUPUNCTURE IN PAIN

Figure 1. Anatomical location of the acupuncture points used. Li 3 = Large Intestine 3. On the radial side of the base of the index finger, in the depression proximal to the head of the 2nd metacarpal bone. Bilateral. Du 14. Between the spinous process of the 7th cervical vertebra and the 1st thoracic vertebra, approximately at the level of the shoulder. Du 16. Directly below the external occipital protuberance. In the depression between both mm. trapezii. Du 20. About 20 mm above the posterior hairline, on the midpoint of the line connecting the apexes of the two auricles. GB 20 = Gall Bladder 20. In the posterior aspect of the neck, below the occipital bone, in the depression between the upper portion of m. sternocleidomastoideus and m. trapezius. Bilateral.



Statistical analysis

Group data are presented as mean \pm SD. Wilcoxon's matched paired test was used to compare the baseline prior to each treatment with the values after treatment. To compare treatment effect between the different groups, Mann-Whitneys U-test was used. Test results were considered significant if $p < 0.05$.

Results

Diazepam treatment resulted in a reduction of the affective ($p < 0.01$) and sensory component ($p < 0.05$) of pain. Placebo-diazepam treatment resulted in a significant alleviation of the affective component of pain ($p < 0.05$) but had no significant effect on the sensory component. As shown in Table I, acupuncture induced a significant reduction of pain of cervical osteoarthritis. This alleviation was more significant on the affective scales ($p < 0.0001$) than on the sensory scales ($p < 0.005$). Sham-acupuncture resulted in a significant reduction of the affective ($p < 0.05$) and sensory component ($p < 0.05$) of pain.

The reduction of pain and unpleasantness in those treated with acupuncture was not statistically significant different from those who had diazepam or sham-acupuncture, but statistically different from those who had placebo-diazepam ($p < 0.05$).

The risk for a type II error is high due to the limited number of patients. To detect a significant difference with 80% power one would need a minimum of 70 patients.

TABLE I. Pain score before and after treatment with diazepam, placebo-diazepam, acupuncture or sham-acupuncture

	Affective score		Sensory score	
	before	after	before	after
<u>Total group</u>				
Diazepam (44)	3.0±0.8	2.2±1.0**	1.9±0.7	1.6±0.7*
Placebo-diazepam (44)	2.7±1.0	2.2±1.3	1.9±0.8	1.7±1.0
Acupuncture (44)	3.5±1.2	2.3±1.5****	2.5±0.8	1.8±1.2***
Sham-acupuncture (44)	3.1±1.1	2.4±1.2*	2.0±0.9	1.6±1.1*

* $p < 0.05$ **, $p < 0.01$, *** $p < 0.005$, **** $p < 0.001$ comparing within group difference before and after treatment. Number of patients (44).

Discussion

The results of this study indicate that diazepam, placebo-acupuncture and acupuncture induced pain relief is more significant on the unpleasantness of pain than on the intensity of pain.

Many alternative (1-9) treatments have been recommended for osteoarthritic pain. However, there are relatively few controlled studies in the literature, and it has been shown that osteoarthritic pain responds well to placebo (6,8). Sidel and Abrahams (6) reported symptomatic improvement in 86% of 64 osteoarthritic patients receiving weekly subcutaneous

injections of saline. Trant and Passarelli (8) reported that 59% of 182 patients suffering from osteoarthritis pain obtained some relief from lactose tablets and 57% of those who did not, or who relapsed, improved following saline injections. As placebo medication may significantly reduce osteoarthritis pain, controlled trials are considered a necessity (13).

It has recently been shown in a controlled trial that transcutaneous electrical nerve stimulation was marginally superior to placebo in 10 patients with osteoarthritis of the knee (7). In a double-blind trial of acupuncture in 40 patients with osteoarthritic pain (4), both placebo and treated patients improved, but the difference between groups was not significant. Other alternative therapies have been recommended, but most of the reports are not from placebo controlled trials. The average improvement in both components of pain in those treated with acupuncture was not statistically different from those who had sham-acupuncture. The same nonsignificant difference was seen between diazepam and placebo-diazepam.

However, when comparing the different modes of treatment acupuncture induced the most significant alleviation of pain and unpleasantness. This indicates that benzodiazepines may be replaced by acupuncture in the treatment of pain and other conditions associated with unpleasantness. Furthermore, patients treated with acupuncture don't stand the risk of becoming intoxicated.

Acknowledgments

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铁冬青 (冬青科)

Ilex rotunda Thunb.

1. 果枝; 2. 切片。