Effectiveness of Traditional Bone Setting in Chronic Neck Pain: Randomized Clinical Trial

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Abstract

Objective: This study evaluates the effectiveness of traditional bone setting (TBS) in chronic neck pain (cNP) compared with conventional physiotherapy (PT) and massage (M).

Methods: This was a randomized clinical trial. Working-aged employed subjects with cNP (n = 105; 37 men and 68 women; mean age, 41.5 years) were randomized into TBS, PT, and M groups. Follow-up times were 1, 6, and 12 months after the treatments. Neck pain intensity (visual analog scale), perceived disability (Neck Disability Index [NDI]), and neck spine mobility measurements were used as outcomes. Global assessment was evaluated by the subjects (scale from −1 to +10). Data were analyzed using time (pre and post) by group (TBS, PT and M), 2- way analysis of variance for repeated measures.

Results: Neck pain decreased and NDI scores improved in all groups 1 month after the treatment ($P < .001$). The improvement of NDI and persons' satisfaction were significantly better after TBS. Neck spine mobility in rotation movements tended to improve significantly better and the frons-knee distance improved more after TBS. One year later, both NDI and neck pain were significantly better after TBS than in reference groups. A significant improvement was reported by 40% to 45.5% of subjects in the PT and M groups and by 68.6% in the TBS group. Bone setters' ability to communicate and to interact with patients was evaluated significantly higher. In the TBS group, the number of sick days was minimal as was the use of painkillers during 1-year follow-up compared to that in the reference groups.

Conclusions: Traditional bone setting, which is a soft manual mobilization technique focusing on the muscles, joints, and ligaments, appears to be effective in cNP. Two thirds of subjects experienced it as beneficial, and it seems to be able to improve disability and pain in patients with cNP. Subjective and partially objective benefits of TBS were found in those patients more than after other interventions, and the effects lasted at least for 1 year. (J Manipulative Physiol Ther 2007;30:432-437)

Key Indexing Terms: *Medicine; Traditional; Neck Pain; Musculoskeletal Manipulations; Complementary Therapies*

Musculoskeletal disorders, including chronic neck pain (cNP), are common and produce increasing problems for patients and national economies. In Finland, those disorders, especially low back and neck and shoulder problems, are one of the main reasons for sick leaves.[1] Chronic neck and shoulder pains are widespread in the working population and an increasing cause of disability. Daily use of computer increases the risk of neck pain (NP) among adolescents.[2]

The usual treatments are drugs, conventional physiotherapy (PT), and massage (M). Neck muscle strength training has been found beneficial in cNP.[3] Different manual techniques have also been reported to be effective,[4-6] but the use of manipulation in neck problems is connected with a risk of complications.[7] Because pain causes biopsychosocial difficulties in patients with cNP, different rehabilitation programs are widely used.[8]

Chronic back or neck problems are associated with frequent use of complementary and alternative medicine (CAM) providers.[9] The US Institute of Medicine reports that more than one third of American adults routinely use CAM, and annual spending is in excess of $27 billion.[10] Complementary and alternative medicine therapies are widely used in musculoskeletal problems. In Finland, despite the high level and good availability of medical services, traditional treatments are also very popular. According to interviews, 20 years ago, about 18% of the Finnish population annually consulted folk healers.[11] Two decades ago, traditional bone setting (TBS) was used in the treatment of neck, shoulder, back pain, and different pains in the arms and feet.[12] Interest in traditional healing and especially TBS has even grown in recent years. Hemmilä[13]

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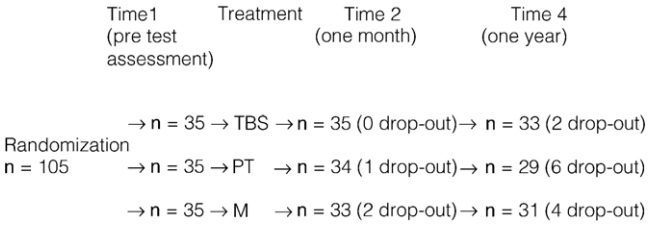

Fig 1. *Patient flow in the study.*

Fig 2. *Method of the frons-knee distance calculation.*

has reported that TBS helps in NP, and it was better compared to untreated controls.

Traditional bone setting is a soft and painless manual mobilization of the extremities and spine. The treatment begins from the toes and feet of the lying person and continues in the seated subject, vertebra by vertebra and muscle by muscle, up to the neck and shoulders, arms, hands, and head. One session takes about 90 minutes. The aim of TBS treatment is to relax the muscles and to correct body asymmetry. A similar technique has been described earlier.[12-14]

The aim of our study was to investigate the primary and long-term effectiveness of TBS treatment of cNP and clarify the subjective and objective benefits of this method in comparison with standard PT and M.

Methods

Study Subjects

Advertisement in the local newspaper was used for recruiting voluntary study subjects (n = 105) with chronic nonspecific NP (clinical diagnosis of "tension neck," without radicular arm symptoms) and with minimal pain intensity of 30, measured using a 100-mm visual analog scale (VAS).[15] Subjects were included if they were between 28 and 50 years of age. The exclusion criteria were previous neck surgery; current nerve root entrapment; spinal cord compression; severe neurologic, metabolic, psychiatric, or cardiovascular diseases; or any therapy or sick leave during the previous month. The minimal size of the study groups was estimated to be 35 patients per group, depending on 20% impending improvement of pain and disability with the possibility of 15% dropouts. The influence of a seasonal variation in NP was inhibited by studying the patients in 2 subgroups (spring and autumn).[16] The study plan was approved by the local ethics committee of the Kuopio University Hospital (Kuopio, Finland). All subjects provided written consent before the study.

Table 1. *Characteristics of subjects with chronic NP in randomly divided TBS, PT, and M subgroups (means [SD]), baseline data*

Variable	TBS (n = 35)	PT (n = 34)	M (n = 33)
Age (y)	41.2 (5.7)	40.9 (5.9)	42.4 (5.9)
Sex (F/M)	24 / 11	21 / 13	22 / 11
Body mass index	23.4 (4.7)	23.1 (3.7)	23.7 (4.4)
NP (VAS 100 mm)	49.5 (21.3)	46.8 (19.8)	46.5 (22.2)
NDI (0-100)	24.11 (8.2)	27.41 (8.8)	26.0 (10.9)
Depression score (0-21)	2.7 (2.6)	3.7 (3.3)	4.7 (3.5)
NP duration (y)	11.7 (6.2)	10.6 (6.5)	11.2 (7.3)
FKD (cm)	23.0 (5.9)	23.5 (5.2)	21.1 (6.6)
Amplitudes of neck spine mobility (deg)			
Sagittal plane	95.7 (21.9)	96.7 (20.8)	96.3 (19.9)
Frontal plane	65.5 (12.7)	64.5 (16.6)	66.2 (12.2)
Horizontal plane	115.9 (21.7)	121.8 (20.5)	116.3 (21.4)

FKD, Frons-knee distance.

Randomization

The researcher evaluated the subjects' status before the intervention. Then, subjects were randomized into the 3 groups. Each subject chose a letter that included instructions and the name of the treatment provider. Thus, both researcher and subjects were blinded in the selection intervention group. The same researcher did the questioning and measurements 1 month after the treatment without knowledge of the patients' group. Six and 12 months later, study subjects answered follow-up questionnaires by mail (Fig 1).

Interventions

Subjects were randomly divided into PT, TBS, and M groups. All therapies were given by experienced specialists, 5 sessions per subject. The timetable of sessions was adjusted to each patient. Physiotherapy included M, therapeutic stretching, and exercise therapy, one session