

Immediate Effects of Upper Cervical Translatory Mobilization on Cervical Mobility and Pressure Pain Threshold in Patients With Cervicogenic Headache: A Randomized Controlled Trial

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ABSTRACT

Objective: The purpose of this study was to evaluate the immediate effects of upper cervical translatory spinal mobilization (UC-TSM) on cervical mobility and pressure pain threshold in subjects with cervicogenic headache (CEH).

Methods: Eighty-two volunteers (41.54 ± 15.29 years, 20 male and 62 female) with CEH participated in the study and were randomly divided into the control and treatment groups. The treatment group received UC-TSM and the control group remained in the same position for the same time as the UC-TSM group, but received no treatment. Cervical mobility (active cervical mobility and flexion-rotation test), pressure pain thresholds over upper trapezius muscles, C2-3 zygapophyseal joints and suboccipital muscles, and current headache intensity (visual analog scale) were measured before and immediately after the intervention by 2 blinded investigators.

Results: After the intervention, UC-TSM group exhibited significant increases in total cervical mobility ($P = .002$, $d = 0.16$) and the flexion-rotation test ($P < .001$, $d = 0.81-0.85$). No significant difference in cervical pressure pain thresholds were observed between groups ($P > .05$). Nevertheless, there was a significantly lower intensity of headache in the UC-TSM group ($P = .039$, $d = 0.57$).

Conclusions: Upper cervical translatory spinal mobilization intervention increased upper, and exhibited a tendency to improve general, cervical range of motion and induce immediate headache relief in subjects with CEH. (*J Manipulative Physiol Ther* 2017;40:649-658)

Key Indexing Terms: *Spine; Cervicogenic Headache; Manual Therapy; Neck; Randomized Controlled Trial*

INTRODUCTION

Cervicogenic headache (CEH), a secondary headache arising from cervical disorders, is today internationally recognized as a distinct clinical entity.¹ However, for many years, there has been international disagreement on the acceptance of this condition.² In 1860, Hilton was the first to describe the concept of a headache that originates in the cervical region, but it was not until 1983 when Sjaastad coined the term “cervicogenic headache.”³

Cervicogenic headache is characterized by unilateral headache with symptoms and signs of neck involvement,

including impairment in cervical range of motion (CROM) and pain on palpation of the neck, especially on the upper cervical spine.⁴ Restoration of the upper cervical mobility is usually considered 1 of the main objectives for the treatment of CEH. Manual therapy interventions seek to restore upper cervical mobility through a wide range of therapeutic procedures including mobilization and manipulation techniques. Previous systematic reviews reported preliminary evidence for the application of upper cervical manual therapy techniques for the management of CEH.⁵⁻⁷ Although severe harm to the patient after cervical manual therapy procedures is extremely rare,⁸⁻¹² there is international discussion regarding the adoption of safety measures for manual techniques on the cervical spine.

To guide the assessment and treatment of the cervical spine region focusing on techniques occurring in end-range positions, notably during passive joint mobilization and manipulation, international frameworks have been developed.¹³ Upper cervical translatory spinal mobilization (UC-TSM) techniques have been suggested as a safe alternative that meets international criteria. Translatory

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CONSORT Flow Diagram

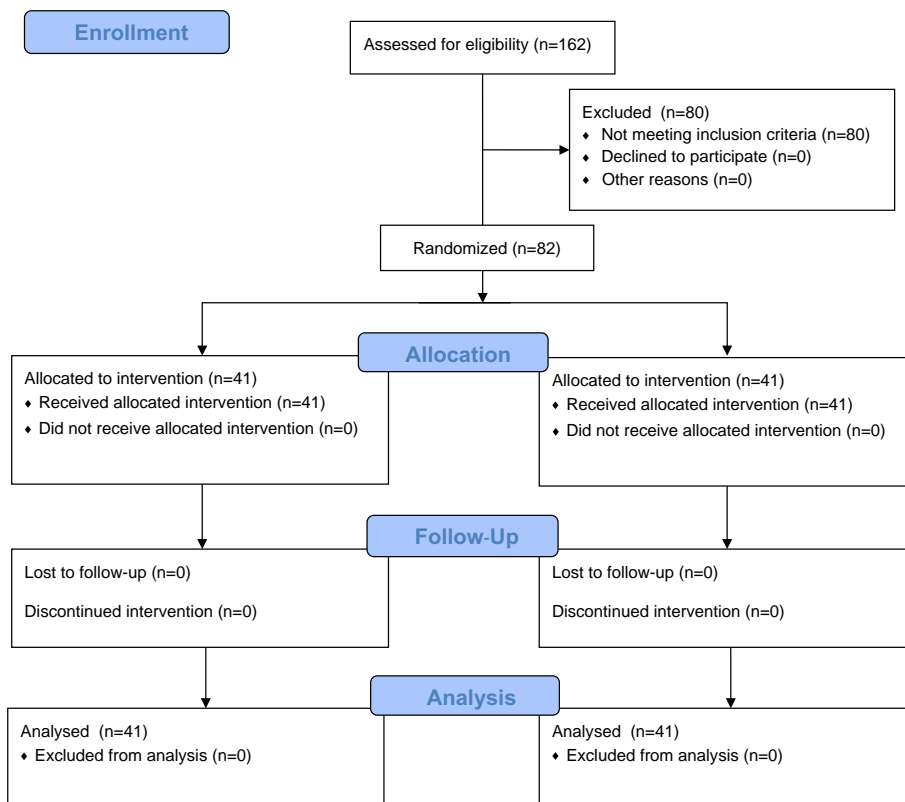


Fig 1. CONSORT (Consolidated Standards of Reporting Trial) flow diagram.

spinal mobilization (TSM) is defined as a system of manual techniques using straight-line forces delivered in a parallel or perpendicular direction to an individual vertebral joint or motion segment.¹⁴ The body of evidence supporting the clinical effectiveness¹⁵⁻¹⁸ and safety^{19,20} of TSM in the management of patients with cervical impairments has been increasing recent years. Nevertheless, to the best of the authors' knowledge, no study to date has investigated the immediate effects of UC-TSM in patients with CEH. Therefore, the purpose of this randomized controlled trial was to evaluate immediate effects of UC-TSM on cervical mobility and cervical pressure pain thresholds (PPTs) in patients with CEH. The hypothesis was that UC-TSM produces an increase in cervical mobility and PPT in CEH patients.

METHODS

The study design was a 2-group (parallel) randomized controlled trial with pre- and post-intervention measurements. The allocation ratio was 1:1. The study was conducted in accordance with the Declaration of Helsinki and approved by the local ethics committee (Comité Ético de Investigación Clínica de

Aragón). All participants provided informed consent before their enrollment in the study. This clinical trial was carried out in the facilities of the Faculty of Health Sciences, University of Zaragoza, Spain (clinicaltrials.gov number: NCT02422862).

Participants

A convenience sample of 82 volunteers (20 male, 62 female), aged 18-80 years, participated in the clinical trial (Fig 1). The inclusion criteria were age >18 years of age and present a diagnosis of CEH according to Sjaastad et al: subjects had to fulfill both parts I and III of the major criteria (pain aggravated by neck movement, sustained position or external pressure, restricted cervical range of motion, and unilateral pain starting in the neck and radiating to the frontotemporal region).²¹ These criteria have moderate to good reliability.²² Anesthetic blockades were not used as a criterion for CEH, as the procedure was considered too invasive and is not readily accessible to most clinicians. Participants were excluded if they had received cervical treatment in the previous month, presented red flags for headache or any contraindications to manual therapy, or were currently involved in compensations.

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