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Treatment For Cervicobrachial Pain Syndrome; A Comparison Of Direct And Indirect Manual Therapies

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Critically Appraised Topic (CAT)

Title: Treatment for Cervicobrachial Pain Syndrome; a Comparison of Direct and Indirect Manual Therapies

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Clinical Scenario: Patient presented with lateral epicondyle pain with neurologic symptoms. After being treated for lateral epicondylitis by another PT, the patient was treated for cervical radiculopathy using cervicothoracic and glenohumeral joint mobilizations. Suggestions were also made to improve her forward head posture. After a few days of treatment the patient's symptoms had decreased a bit but were not gone. Neural mobilizations of the ulnar and median nerve were initiated and the patient quickly started to improve. The patient ultimately regained full function but it was not clear if that was due to cervical, thoracic or glenohumeral joint mobilizations, to the neural mobilizations, or to a combination of the treatments.

Clinical Question: Are neural glides and other direct forms of neural mobilization better at decreasing pain in adult patients with cervicobrachial pain syndromes than indirect approaches

> **Patient/Problem –** Adults with cervicobrachial pain syndrome
> **Intervention –** Direct neural mobilization (Referred to as the "Neural Treatment" (NT) group)
> **Comparison –** Indirect mobilization of neural tissue: Joint mobilizations of glenohumeral (GH) joint and thoracic spine (Referred to as the "Articular Treatment" (AT) group)
> **Outcome –** Decreased pain as measured by the VAS &/or McGill Pain Questionnaire

Clinical Bottom Line: This study compared mobilizations of the cervical spine and neural structures (passively), similar to what I have done in clinical practice, to indirect manual therapy that focuses on joint mobilizations of the thoracic spine and glenohumeral joint. The results supported both of these methods in being effective at decreasing functional limitations and pain, however the group that received direct neural mobilizations had significantly lower pain levels post treatment. Based on these findings, I would continue to use cervical and neural mobilizations, especially if my patient had high pain levels. I have not done as much work with thoracic or glenohumeral joint mobilizations on this patient population, though I would consider increasing this in my practice when treating patients for upper quadrant dysfunction. I also would consider initiating my treatment with these more indirect, articular techniques if my patient presented with significant functional limitations but relatively low pain scores.

I do not think that this study will greatly change my treatment approach, as I have already been focusing on passive neural mobilizations. It does however give me a greater sense of security that I am following evidence-based practice. Despite less support for indirect articular techniques, I think I will actually utilize such techniques more since reading this article, as I was not sure that they were at all effective beforehand. I will now have greater confidence that such mobilizations may be beneficial for patients with upper quadrant dysfunction, and it will be advantageous to have two different methods in the case that a patient isn't responding to one.

Considering the findings of this article, I would hypothesize that the improvements in my patient's symptoms were due to a combination of the different techniques we used. Because she started to improve more rapidly after the addition of the neural glides, I believe they played a crucial role in her recovery, most likely in decreasing pain and allowing for progression of strengthening exercises.

Search History:

Databases/Sites Searched	Search Terms	Limits Used
PubMed - Medline	MESH terms: "Musculoskeletal Manipulations" AND "Brachial Plexus Neuritis" AND "cervical" AND "pain"	- Clinical Trial or Meta-Analysis or Randomized Controlled Trial or Systematic Reviews - Humans - Adult: 19+ years - English

Citations:

Allison GT, Nagy BM, Hall T. A randomized clinical trial of manual therapy for cervico-brachial pain syndrome -- a pilot study. Man Ther. 2002; May;7(2):95-102.

Elvey RL. Physical evaluation of the peripheral nervous system in disorders of pain and dysfunction. Journal of Hand Therapy 1997; 10: 122−129

Elvey RL, Hall TM. Neural tissue evaluation and treatment. Physical Therapy of the Shoulder. Churchill Livingstone, New York 1997

Summary of Study:

Study Design: Single-blind randomized, three-armed controlled clinical trial with two active treatments and one cross over group

Setting: The Centre for Musculoskeletal Studies at the University of Western Australia; Private Practice in Toronto, Canada; Manual Concepts, Subiaco, Western Australia

Participants: Two hundred and twenty people responded to print and radio advertisements for this study. From this, 160 participants had a phone interview to determine eligibility, resulting in 120 remaining people who were then asked to come to a physical exam. Participants were then chosen if they were aged 18-75, had had cervicobrachial pain for >3months, had adequate knowledge of the English language and were capable of answering questionnaires, had evidence of upper quarter neural tissue mechanosensitivity (as described by Elvey), had provided consent, and were able to attend all appointments. Subjects were excluded however, if they had contraindications to manual therapy, had shoulder/arm/hand pathology due to trauma, had cervical myelopathy, had cervical spine surgery within the past 6months, had received manual/manipulative therapy in the past 3months, had been involved in compensation/ litigation associated with their neck/upper limb pain, or if they had planned imminent treatment. In total, 30 subjects were recruited: 20women and 10men.

Intervention: The study was 8 weeks long with assessments made at 0, 4 and 8 weeks. Pre-treatment assessments consisted of nerve provocation, ROM, and neurological screens. Patients also filled out three questionnaires at these times: the Short-form McGill Pain Questionnaire (SF-MGP), the Northwick Park Questionnaire (NPQ) and a Visual Analog Scale (VAS) for pain. The examiner who performed baseline and outcome measurements was blinded to group allocation. Measurements were also taken at the midway point (4weeks). Control group participants had two additional assessments before the interventions started.

The therapists treating the NT group were allowed to use cervical lateral glides, shoulder girdle cephalad oscillations, muscle re-education for the shoulder (contract-relax into shoulder abduction and external rotation (ER)), and at home self-mobilizations consisting of contralateral cervical side flexion w/ or w/o active shoulder abduction and ER. The therapists treating the AT group were allowed to used GH mobilizations, thoracic mobilizations and at home self-mobilizations consisting of Codman pendulums, active assist ER using cane, shoulder stretches and resisted abduction and ER with theraband. The control did not receive PT but were allowed to seek non-PT care if wanted. At the end of the 8-week trial the control group participants were then crossed over to an 8-week NT trial.

Outcome Measures: For the NT group, the SF-MPQ decreased in median from 9.5 to 3.2 and in inter-quartile range (IQR) from 10.0 to 6.0. In the AT group the SF-MPQ median decreased from 11.5 to 7.0 and the IQR decreased from 16.0 to 6.0. In the control group, the SF-MPQ changed in median from 10.0 to 7.5, and in IQR from 9.0 to 4.0.

In the NT group regarding the NPQ, the median decreased from 12.0 to 9.5 and the IQR increased from 5.0 to 8.5. In the AT group the NPQ median decreased from 12.5 to 11.0 and the IQR increased from 6.0 to 7.0. In the control group, the NPQ changed in median from 12.5 to 11.5, and in IQR from 4.0 to 6.0.

With the VAS, the NT group median decreased from 4.6 to 2.1 and the IQR decreased from 3.1 to 2.5. In the AT group median decreased from 5.1 to 3.4 and the IQR increased from 2.0 to 2.9. In the control group, the median increased from 3.3 to 3.8, and in IQR from 3.35 to 3.9.

Data Analysis: For each test (the SF-MPQ, the NPQ and the VAS) data was recorded as an absolute score with a percent change from the previous score. Medians and IQRs were also calculated, and depicted with boxplots. Friedman's tests were performed to determine if there were significant changes between 4-week checkpoints, and if so, a Wilcoxon rank test was then performed. Finally, Mann-Whitney rank tests were performed to measure if there were differences between the NT, AT and control groups at each checkpoint.

Summary of Evidence: For the SF-MPQ, the NT group had an absolute change of 6.3 and a relative change of 66%, the AT group had an absolute change of 4.5 and a relative change of 39%, and the control group had a non-significant absolute change of 2.5 and a relative change of 25%. Between pre- and post- assessments there was a significant level of change for both the NT and AT groups at a 0.001 and a 0.05 level respectively. There was no significant change between the NT and AT groups at any stage however.

For the NPQ, the NT group had an absolute change of 2.5 and a relative change of 21%, the AT group had an absolute change of 1.5 and a relative change of 12%, and the control group had a non-significant absolute change of 1.0 and a relative change of 8%. Between pre- and post- assessments there was a significant level of change for both the NT and AT groups at 0.05 level. There was no significant change between the NT and AT groups at any stage however.

For the VAS, the NT group had an absolute change of 2.5 and a relative change of 54%, the AT group had an absolute change of 1.7 and a relative change of 33%, and the control group had an absolute change of -0.5and a relative change of negative 15%. Between pre- and post- assessments there was a significant level of change for both the NT and AT groups at a 0.001 and a 0.05 level respectively. Furthermore, there was a significant change between the NT and AT groups at the final assessment period (post-treatment).

Additional Comments:

- This study has a relatively small sample size so results may not be as meaningful as they would have been with a larger sample, especially since the data analysis was targeted at determining a treatment effect.
- The NT group had short duration of symptoms prior to the study, though post hoc analyses demonstrated that there was no significant correlation between duration of symptoms and the test scores (at any assessment stage).
- Previous research has suggested that those with greater pain & disability will show greater/faster gains than those with milder symptoms; however in this study the group with the best outcome measures to start (the NT group) ended up with the greatest overall results (most significant decreases in pain scores).
- This study's level of evidence is a 1b according to the Centre for Evidence Based Medicine, as it is an individual RCT that is prospective and validates the study with good reference standards.
- This article is cited in the Clinical Practice Guidelines (CPG) for cervical pathologies.
- The strengths of this article are: thorough data analysis, a crossover group, confirmation of randomization via post hoc analysis, clear descriptions and definitions.
- The weaknesses of this article are: no statistics on the internal, external, or statistical validity, and no reliability analysis.
- This CAT was completed as part of Scientific Inquiry II under the instruction of Sally McCormack Tutt PT, DPT, MPH