

Original Article

EFFECT OF MAITLAND Vs MULLIGAN MOBILISATION TECHNIQUE ON UPPER THORACIC SPINE IN PATIENTS WITH NON-SPECIFIC NECK PAIN - A COMPARATIVE STUDY

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ABSTRACT

Background and introduction: Neck pain is a frequent and disabling complaint in general population. One of the most common causes of neck pain is mechanical dysfunction of cervical spine. Although diverse methods have been proposed for increasing cervical range of motion, joint mobilisation has been confirmed as effective in several studies. The current study will compare the effect of three different treatment protocols i.e. Maitland mobilisation, Mulligan mobilisation and conventional treatment on upper thoracic spine on female patients with neck pain. This study tries to find out new effective method for reducing the problem of pain.

Method: 30 subjects were selected according to the inclusion and exclusion criteria were randomly divided into three groups: Maitland, Mulligan mobilization along with conventional treatment. Pre and post reading at 0 day, 14th day and 21th day were recorded for NDI and NPRS scale.

Results: After three week protocol it was found that all the three groups showed significant improvement in NDI and NPRS score within the group. The present finding shows that Group B (Maitland) shows significant improvements in the NDI score and Group C (Mulligan) would shows significant improvements in the NPRS scores in the patients with nonspecific neck pain.

Conclusion: The present study shows that Maitland mobilisation along with the conventional treatment prove to be more effective in improving NDI and NPRS scores in patients with nonspecific neck pain than Mulligan mobilisation along with the conventional treatment.

KEYWORDS: Maitland; Mulligan; Neck pain; Thoracic spine.

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INTRODUCTION

Neck pain is a frequent and disabling complaint in general population.¹ One of the most common causes of neck pain is mechanical dysfunction of cervical spine.² In the general population, up to 30% to 50% of adults will experience neck pain in any given year.³ Adolescents with neck pain are at high risk of having such symptoms in adulthood.^{4,5}

Neck pain can originate from disorders in the neck, such as neural tissue, uncovertebral or intervertebral joints, discs, bones, periosteum, muscles, and ligaments. Symptoms of neck pain may often be self-limiting within a few weeks of onset, although the natural course of neck pain remains unclear. Most often, however, no specific cause can be identified, and the symptoms are labelled Nonspecific.⁶ It is found that abnormal muscle strength, endurance, and

joint mobility may lead to abnormal biomechanics of body movement, causing abnormal physical load to various tissues including muscles, ligaments, and bone. Thus individuals with abnormal muscle strength, endurance, and joint mobility may be susceptible to musculoskeletal injury.⁷

MATERIAL AND METHODS

The study was performed on 30 subjects within age group 18-25 years taken from the MGH, Balawala, Dehradun, India. Study was performed in accordance with ethical considerations of the institute and their consent was taken prior to study. The subjects were selected on the basis of convenient sampling according to inclusion and exclusion criteria and divided into three groups- Maitland mobilisation, Mulligan mobilisation and conventional treatment on upper thoracic spine on female patients with neck pain.

RESULTS AND TABLES

The inclusion criteria⁸ was patients who were diagnosed with primary complaint of neck pain with radiating pain upto upper fibres of trapezius, baseline NDI score of 10% or greater. Exclusion criteria⁸ was patients with pain radiating down to the hand, any known case of cervical spine canal stenosis, previous history of malignancy, history of whiplash injury, within 6 weeks of examination, any past history of cervico-thoracic surgery, patients with history of fractures of cervical and thoracic spine, patients diagnosed of TOS, Cervical rib, cervicogenic headache and vertigo.

The subjects were explained about the whole procedure in detail prior to starting the procedure and the pre-treatment readings were noted. Subjects in the maitland group given P.A. mobilisation at grade 1 or 2. Subjects in mulligans group given 3 sets with 10 repetitions.

Table 1. Mean and SD of NPRS score at different day intervals of Group A.

NPRS	Mean ± SD of pre reading	Mean ± SD of post reading	Z-value	p-value
Day 1	5.20 ± 1.87	3.60 ± 1.89	-2.87	0.004
Day 3	4.00 ± 1.24	2.30 ± 1.56	-2.85	0.004
Day 5	4.20 ± 1.39	2.90 ± 1.10	-2.58	0.01
Day 7	4.20 ± 0.91	2.70 ± 1.05	-2.55	0.011
Day 9	3.70 ± 0.94	2.30 ± 1.05	-2.72	0.006
Day 11	2.90 ± 0.87	1.70 ± 0.94	-2.97	0.003
Day 13	2.50 ± 0.84	1.00 ± 0.81	-2.87	0.004

The comparison of mean for NPRS at different day intervals for subjects of Group A. The test was done to compare the pre and post reading of NPRS within Group A and results were found to be significant.

Table 2. Mean and SD of NPRS score at different day intervals of Group B.

NPRS	Mean ± SD of pre reading	Mean ± SD of post reading	Z-value	p-value
Day 1	4.70 ± 2.00	2.90 ± 2.23	-2.69	0.007
Day 3	4.20 ± 1.03	2.00 ± 0.94	-2.97	0.003
Day 5	3.70 ± 0.82	2.00 ± 1.05	-2.85	0.004
Day 7	4.10 ± 1.59	1.80 ± 1.13	-2.83	0.005
Day 9	3.90 ± 1.44	1.70 ± 1.15	-2.82	0.005
Day 11	3.40 ± 0.51	1.60 ± 0.51	-2.97	0.003
Day 13	2.40 ± 0.51	0.80 ± 0.63	-2.88	0.004

The comparison of mean for NPRS at different day intervals for subjects of Group B. The test was done to compare the pre and post reading of NPRS within Group B and results were found to be significant.

Table 3. Mean and SD of NPRS score at different day intervals of Group C.

NPRS	Mean ± SD of	Mean ± SD of	Z-value	p-value
	pre reading	post reading		
Day 1	5.20 ± 1.61	2.90 ± 1.79	-2.75	0.006
Day 3	4.60 ± 1.07	2.60 ± 0.96	-2.83	0.005
Day 5	4.00 ± 0.66	2.30 ± 0.67	-2.85	0.004
Day 7	3.60 ± 1.07	2.40 ± 1.07	-2.76	0.006
Day 9	3.40 ± 0.84	1.90 ± 0.87	-2.87	0.004
Day 11	3.30 ± 1.25	1.70 ± 1.15	-2.7	0.007
Day 13	2.50 ± 0.97	0.90 ± 0.99	-2.88	0.004

The comparison of mean for NPRS at different day intervals for subjects of Group C. The test was done to compare the pre and post reading of NPRS within Group C and results were found to be significant.

Table 4. Mean and SD of NPRS score at different day intervals of Group A.

NPRS	Mean ± SD	Mean ± SD	Mean ± SD	Chi-Square	p-value
	on day 0	on day 14	on day 21		
Group A	5.10 ± 1.52	1.70 ± 1.15	1.90 ± 1.96	16.27	< 0.001
Group B	5.20 ± 2.14	2.30 ± 2.16	2.00 ± 1.94	14.11	0.001
Group C	5.50 ± 1.77	1.70 ± 1.41	2.00 ± 1.63	12.84	0.002

The comparison of mean for NPRS for subjects of Group A, B & C at 0, 14th and 21st day. The test was done to compare the pre and post reading of NPRS within Group A, B & C and results were found to be significant.

Table 5. Mean and SD of NPRS score between Group A, B & C.

NPRS	Mean ± SD of Group A	Mean ± SD of Group B	Mean ± SD of Group C	F-value	p-value
Day 0	5.10 ± 1.52	5.20 ± 2.14	5.50 ± 1.77	0.12	0.88
Day 14	1.70 ± 1.15	2.30 ± 2.16	1.70 ± 1.41	0.44	0.64
Day 21	1.90 ± 1.96	2.00 ± 1.94	2.00 ± 1.63	0.01	0.99

The comparison of mean for NPRS at 0, 14th and 21st day for subjects of Group A, B & C. The test was done to compare the pre and post reading of NPRS between Group A, B & C and results were found to be non significant.

Table 6. Mean and SD of NDI score at different day intervals of Group A, B & C.

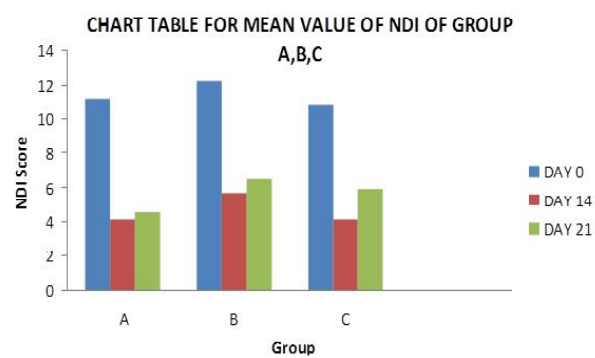
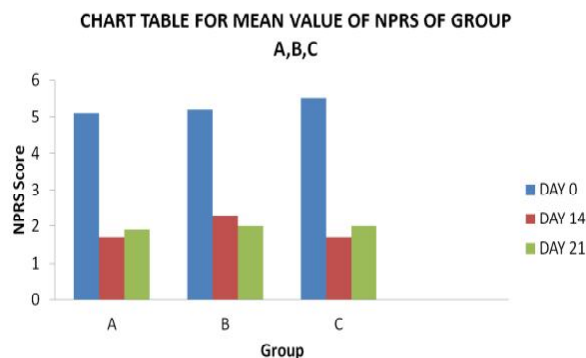
NDI	Mean ± SD	Mean ± SD	Mean ± SD	Chi-Square	p-value
	on day 0	on day 14	on day 21		
Group A	11.10 ± 4.53	4.10 ± 4.88	4.50 ± 6.29	10.3	0.006
Group B	12.20 ± 6.40	5.70 ± 4.85	6.50 ± 4.74	14	0.001
Group C	10.80 ± 3.82	4.10 ± 2.60	5.90 ± 6.52	9.8	0.007

The comparison of mean for NDI for subjects of Group A, B & C at 0, 14th and 21st day. The test was done to compare the pre and post reading of NDI within Group A, B & C and results were found to be significant.

Table 7. Mean and SD of NDI score between Group A, B & C.

NDI	Mean ± SD of Group A	Mean ± SD of Group B	Mean ± SD of Group C	F-value	p-value
Day 0	11.10 ± 4.53	12.20 ± 6.40	10.80 ± 3.82	0.21	0.8
Day 14	4.10 ± 4.88	5.70 ± 4.85	4.10 ± 2.60	0.47	0.62
Day 21	4.50 ± 6.29	6.50 ± 4.74	5.90 ± 6.52	0.3	0.74

The comparison of mean for NDI at 0, 14th and 21st day for subjects of Group A, B & C. The test was done to compare the pre and post reading of NDI between Group A, B & C and results were found to be non significant.



DISCUSSION

The study was an experimental study, to check the efficacy of the Maitland central P.A.glide, Mulligan (SMWAMS) along with the conventional treatment in patients with nonspecific neck pain. The data analysis revealed that all the three groups showed significant improvement in NDI and NPRS score within the group. Moreover the analysis between the groups showed no significant improvement in NDI and NPRS score. The present finding shows that Group B (Maitland) shows significant improvements in the NDI score and Group C (Mulligan) would shows significant improvements in the NPRS scores in the patients with nonspecific neck pain.

Maitland mobilisation shows a significant reduction in NDI scores in support of present result, resistance due to spasm melts under mobilisation⁹ or manipulation. This may be due to the stimulation of Type I and Type II mechanoreceptors (Wyke,1980). They have dynamic and static responses to changes of pressure, and like the cutaneous mechanoreceptors, project polysynaptically to fusimotor (not alpha) neurone pools within the central nervous system, thus contributing to the continuous modulation of activity flowing around all the fusimotor muscle spindle loop systems. They exert reflexogenic influences on muscle tone. Fisk (1978) attributed the immediate decrease in pain after manipulation to a reflex decrease of muscle spasm.

Mulligan mobilisation shows a significant reduction in NPRS scores, the results related to McNair et al that SNAGS applied to patients with acute neck pain in the upright sitting position and reported a considerable decrease in pain, less difficulty in movement and reduces stiffness.¹⁰

It may well be that the thoracic spine⁷ is ideally suited to SNAGS and therefore may be the treatment of choice in acute presentations of thoracic pain when the zygapophyseal joints are implicated. Rather than just using SNAGS to improve end range of motion, they may also have a role in correcting acute postural deformity.

CONCLUSION

The present study shows that Maitland mobilisation along with the conventional treatment prove to be more effective in improving NDI and NPRS scores in patients with nonspecific neck pain than Mulligan mobilisation along with the conventional treatment.

Conflicts of Interest: None

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