

A Comparative Study on the Effects of Conventional Therapeutic Exercises and Maitland Mobilisation in the Management of Cervical Spondylosis

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ABSTRACT

Aim: The aim of this study was to observe the effects of conventional therapeutic exercises versus Maitland mobilization in the management of cervical spondylosis.

Methods: A total 60 patients were divided into two groups: Group-A (N=30) and group-B (N=30). Group-A patients were received Maitland mobilization and group-B patients were received conventional physiotherapeutic exercises. All patients were given treatment six times per week for 15 days. Pain was measured using Visual Analog Scale (VAS); disabilities were measured by Neck Disability Index (NDI) and range of motion by using Goniometer.

Results: The result of present study shows that the conventional physiotherapeutic exercises (group B) are significantly effective in reducing pain, improving NDI, muscle power and functional activities than Maitland mobilization alone (group B).

Conclusion: Therapeutic exercises are more clinically effective in terms of reducing pain, disabilities and improving range of motion in the patients with cervical spondylosis than application of Maitland mobilization alone.

INTRODUCTION

Cervical Spondylosis (CS) is a common progressive degenerative disorder of the cervical spine often caused by the natural aging process. It is defined as "vertebral osteophytosis secondary to degenerative disc disease" due to the osteophytic formation that occur with progressive spinal segment degeneration^[1]. Once the disc starts to degenerate and a loss in disc height occurs, the soft tissue becomes lax, resulting in ventral and/or dorsal margin

disc bulge accompanied by a reduction in the structural and mechanical integrity of the supportive soft tissue across a cervical segment. Eventually these structures will also be excessively loaded, resulting in a cascade of events for further degeneration. Overloading the soft tissue and bone eventually causes osteophytes to form in response to excessive loading in order to compensate for greater stresses to the surrounding bone and soft tissue [2]. CS presents itself in three symptomatic forms as neck pain, Cervical Radiculopathy (CR) and cervical myelopathy. Neck pain and CR (nerve root involvement) can be acute, subacute or chronic conditions resulting from various stages along the degenerative cascade. Cervical myelopathy is less frequent in the patient with spondylosis and occurs in older patients with symptoms such as neck, subscapular or shoulder pain accompanied by tingling sensations and numbness in the extremities. In spastic weakness and numbness of the extremities, loss of dexterity, spastic gait, dorsal column function loss and painful parenthesis. These chronic symptoms can eventually become permanent with poor prognosis [3]. Neck and upper extremity pain is such a ubiquitous ailment of ageing that "Pain in the neck" has entered in our language as a figure of speech. It was not until 1952, however, that it was recognised that the myelopathy and radiculopathy from CS constituted clinical disorders. Degenerative disease of the cervical spine and its cartilaginous and ligamentous structures is known to be the most common cause of cervical cord and root dysfunction in patients older than 55 years [4]. In different age stages, CS will have a different clinical feature. Studies suggest that surgery is not the treatment of first choice in elderly patients with CS. If it is not an acute case of nerve and spinal cord compression, non-operative therapeutic interventions should be designed for the elderly CS patients. Manual therapy techniques included (Muscle Energy Technique) MET, non-thrust/thrust manipulation/mobilization of the cervical and/or thoracic spine, soft-tissue mobilization, and neural mobilization. In each study, manual therapy was either a stand-alone intervention or part of a multimodal approach which included therapeutic exercise and often some form of cervical traction. Although no clear cause and effect relationship can be established between improvement in radicular symptoms and manual therapy, results are generally promising [5]. In the treatment of patients with long-lasting cervical radicular pain, it appears that a cervical collar, physiotherapy, or surgeries are equally effective in the long term.

MATERIALS AND METHODS

Sample

A total 60 patients suffering from CS took part in this study. All the subjects were selected from physiotherapy outpatient department of School of Health Sciences CSJM University Kanpur as per inclusion and exclusion criteria. All the patients were diagnosed with CS based on clinical assessment and X-rays findings by orthopedician. All the processes and purposes of the study were fully explained to the patients. Voluntary agreement was obtained by all the patients for participation before study [6].

Inclusion criteria

Both male and female patients with age group between 30-50 years and specifically suffering from neck pain (CS) were included in this study.

Exclusion criteria

Patients with radiculopathy of the upper limb or currently suffering from spondylitis and any history of trauma in the cervical region or any surgical procedure performed in the neck region were excluded from the study [7].

The intervention program

The subjects were divided into two groups: Group A (N=30) and Group B (N=30).

Group-A: There were 30 subjects in this group. Both male and female subjects were included and they were given Maitland mobilization for 15 days. The treatment was given for 6 days per week. Mobilization was given for duration of 1 min with break for 30 seconds between each mobilization with total session given for 5 mins. Maitland mobilization of Grade 3 was given [8].

Group-B: There were 30 subjects in this group. Both male and female subjects were included and they were given the conventional physiotherapeutic exercises for 15 days. In conventional physiotherapy they were given active exercises, a total of 8 repetitions in all directions in a pain free ROM. Isometrics were given for 5 sec-10 sec for flexors, extensors, side flexors and rotators. A total for 1 set was done with 10 repetitions and relaxation of 5 seconds was given between each repetition. Continuous Ultrasound therapy was applied for a total of 8 minutes at

the intensity of 1.5 W/cm² with 1 MHZ of frequency. Gentle stretching for flexors, extensors, side flexors and rotators was administered with 20 seconds hold [9].

Pre-test measurement of the patients

All the clinical measurements were taken before the tests using tools like Visual Analogue Scale (VAS) for pain, Neck Disability Index (NDI) for disabilities and Goniometer for range of motion of the cervical. The readings were kept safe for further evaluation once the test was done and the data were compared to find out the results.

Post-test measurement

Post-test readings were taken after the completion of the treatment that was of duration 15 days on each subject and same tools were used for the measurements. The readings were then compared with the pre-test readings in order to derive the results.

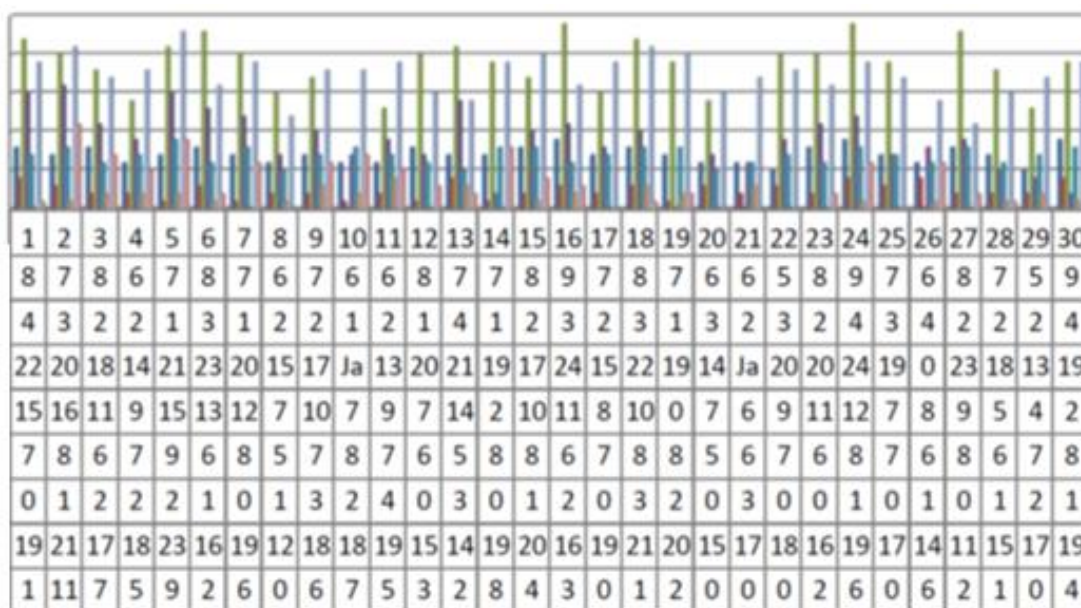
Data analysis

Data once collected from both the groups were compared and interpretation was done using appropriate statistical tools. The statistical tool used was t-test. Following the data interpretation, results from the study conducted was derived. Statistical analysis was conducted by using the SPSS version. Microsoft word, excel were used to make graphs, tables etc. [10].

RESULTS

In our study it was observed that application of conventional therapeutic exercises are more effective in terms of relieving pain, improving range of motion and enhancement in the ADLs than the application of Maitland mobilization alone [11]. The result of present study shows that the conventional physiotherapeutic exercises (Group B) are significantly effective in reducing pain, improving NDI, muscle power and functional activities than Maitland mobilization alone (Group A). On comparing the both groups, Group B showed better results in terms of improving ROM and showed better results regarding NDI than Group A (Figure 1) [12].

Figure 1. The study shows that the conventional physiotherapeutic exercises (Group B) are significantly effective than maitland mobilization (Group A). **Note:** ■: VAS PRE; ■: VAS POST; ■: NDI PRE; ■: NDI POST; ■: VAS PRE; ■: VAS POST; ■: NDI PRE; ■: NDI POST.



DISCUSSION

The aim of this study was to compare the clinical efficacy of conventional therapeutic exercises and Maitland mobilization given by physical therapist in patients with cervical spondylosis. Pain, stiffness and difficulties in performing office works are the main symptoms in the patients who have cervical spondylosis. A research on finding out the effects of three different conservative treatments on pain, disability, quality of life and mood in patients with cervical spondylosis. A total of 60 patients diagnosed with cervical arthritis were included in the study [13]. The patients were randomized into three groups by the numbered envelopes method. Group I received active and passive physical therapy methods together. Group II patients received an active therapy program only. Group III received drug treatment from a physician. The study concluded that pain recovery, disability improvement, Quality of life improvement was statistically significant after treatment and long term follow up for all three groups. There was more improvement in the two groups receiving exercise treatment than the group receiving medical treatment. A comparative study on finding the relative therapeutic efficacy of some vertebral mobilization techniques in the management of unilateral cervical spondylosis. The study examined the relative efficacy of four techniques of vertebral mobilization, Posterior Anterior Unilateral Pressure (PAUP), Anterior Posterior Unilateral Pressure (APUP), Cervical Oscillatory Rotation (COR) and Transverse Oscillatory Pressure (TOP) in the management of unilateral CS [14]. Significantly less time was spent in the use of pressure techniques (APUP and PAUP), but significantly more patient were pain free with the use of these techniques when compared to COR and TOP. Going by these results one would be led to believe that for the sign and symptoms described, the choice of technique should be APUP and PAUP techniques [15].

CONCLUSION

In conclusion we could report that both conventional therapeutic exercise and Maitland mobilization have effects in case of CS but conventional therapeutic exercises are more effective than Maitland mobilization. On comparing the both Group we concluded that Group B showed better results in terms of reducing pain, improving ROM and showed better results regarding NDI than Group A. VAS ($p=0.613>0.05$), Active ROM flexion ($p=0.165>0.05$), passive ROM flexion ($p=0.938>0.05$), NDI ($p=0.452>0.05$), this is may be due to less repetition of exercise and also may be due to short duration of study. Although Group B initially showed better results but not for longer duration.

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