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Efficacy of Myofascial Release and Conventional Physiotherapy in the Treatment of Myofascial Trigger Points in Patients with Cervical Radiculopathy: A Randomized Clinical Trial Protocol

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Abstract

Background: Neck pain with cervical radiculopathy (CR), nowadays, is usually confronted in physiotherapy clinics and hospitals. The prevalence of trigger points is more in patients with CR. So many studies have been done on the treatment of CR as well as myofascial trigger points (MTrPs) so far, but none focuses on the treatment of trigger points in CR. Myofascial release (MFR) is considered to be effective in resolution of MTrPs. *Objective:* To compare the effect of MFR along with conventional physiotherapy and conventional physiotherapy alone in patients with myofascial trigger points in cervical radiculopathy. *Methods:* 30 patients will be randomized into two groups according to the inclusion criteria. Group A (experimental, n=15) will be given MFR along with conventional physiotherapy; Group B (control group, n = 15) will be given conventional physiotherapy alone. Intervention will be given for 3 weeks and then reassessment will be done for the efficacy of MFR on Neck disability index (NDI), pain intensity, pressure pain threshold (PPT) on upper trapezius and upper limb neurodynamic test for median nerve (ULNT 1). *Data analysis and Result:* Shapiro–wilk test will be used for normality distribution of data and accordingly wilcoxon test or paired t-test will be used within the group and independent t-test or Mann whitney U-test will be used in between the groups for data analysis. Results will be expressed as mean±standard deviation. *Conclusion:* This study will contribute towards evidence based practice and help in determining if MFR and conventional physiotherapy will be better than conventional physiotherapy alone in treatment of MTrps in patients with CR.

Keywords: Cervical Radiculopathy; Myofascial Trigger Points and Manual Therapy.

Introduction

The average annual occurrence of cervical radiculopathy is 83.2 per 100,000 population.[1,2] Clinically, cervical radiculopathy presents as the neck and shoulder pain extending with a tingling, numbness and paraesthesia along the dermatomal pattern of one or both upper extremities [3, 4, 5]. The other symptoms include diminished reflexes and myotomal weakness [3].

All the existing treatments of cervical radiculopathy focus only on relieving pain and centralizing the radicular symptoms rather than on muscle dysfunction. But in cervical radiculopathy about 90 percent of patients complained of pain in neck and rhomboid region. In one fifth of the patients anterior chest pain was present [6].

Also, in patients with spinal neck pain and cervical radiculopathy myofascial trigger points are the frequently encountered entity[7,8]. The prevalence of trigger points are seen in certain muscles due to cervical disc lesions at specific levels [9]. In cervical radiculopathy increased number of trigger points (tender points) are seen on the involved side with predisposition towards muscles innervated by that nerve root [10]. Also as postulated by Gunn, myofascial pain is caused by spondylotic radiculopathies [11].

The various complementary physiotherapy treatments for trigger points or myofascial pain include dry needling,[12,13,14] acupuncture,[15] ultrasound,[15] biofeedback,[15] laser,[15,16] spray and stretch,[12,17,18] trigger point injection,[12,17]

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cold and heat therapy,[18] transcutaneous electrical nerve stimulation,[12,18] interferential therapy[18] and manual therapy[14,18] including compression,[18] stretching,[15] transverse friction massage,[15] muscle energy technique,[12,19] positional release technique[12] and myofascial release therapy [12,18,19].

Three studies have been found which concluded that trigger points are predominantly present on the side of radiculopathy[8,9,10]. MFR is considered to be effective in treating the MTrPs [12,18,19]. A study has been done to know the effect of gross MFR of upper limb and neck on pain and function in subjects with mechanical neck pain with upper limb radiculopathy which concluded that gross MFR is effective in reducing mechanical neck pain and in improving functional abilities [20] .

The patients of cervical radiculopathy have multiple trigger points with predominance to the side of radiculopathy[7,9,10]. Although many interventions are accepted for cervical radiculopathy,[2, 4, 21-24] substantial evidence regarding effect of MFR on treating trigger points in patients with cervical radiculopathy is lacking.

Aim of study is to determine the efficacy of MFR in patients with MTrPs in CR and to compare the effect of MFR along with conventional physiotherapy and conventional physiotherapy alone in decreasing neck disability, pain intensity, pressure pain threshold on upper trapezius and ULNT 1 in patients with myofascial trigger points in cervical radiculopathy.

Methodology

Study Design

A Randomized Clinical Trial

Ethical Clearance

The study was ethically approved by the institutional research ethics committee at Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation (MMIPR), Mullana (Ambala) Haryana; India

Study Setting

The study will be conducted at inpatient department of MM Hospital, Mullana (Ambala), Haryana; India.

Study Location

The source of data for this study will be Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Mullana (Ambala) Haryana; India.

Sampling

Criteria based purposive sampling

Sample Size

Sample size is estimated by the following formula[25]

$$N = \frac{2(Z\alpha+Z\beta)^2 (\sigma)^2}{(\mu_s - \mu_t - \delta)^2}$$

N = the sample size required in each group

α = Standard deviation of the primary outcome variable = 3

β = MCID value of outcome measure = 7.5

$Z\alpha = 1.96$

$Z\beta = 0.84$

$(\mu_s - \mu_t)$ = assumed effect = 10

$$N = \frac{2(1.96+0.84)^2 (3)^2}{(10 - 7.5)^2}$$

N = 22.579 or 23

This gives the number required in the two groups. Considering the dropout rate, the sample size is increased to 30.

Group A (Experimental group): 15 patients will be randomly allocated for MFR in cervical radiculopathy.

Group B (Control group): 15 patients will be randomly allocated for conventional physiotherapy treatment in cervical radiculopathy.

Selection Criteria

Inclusion Criteria

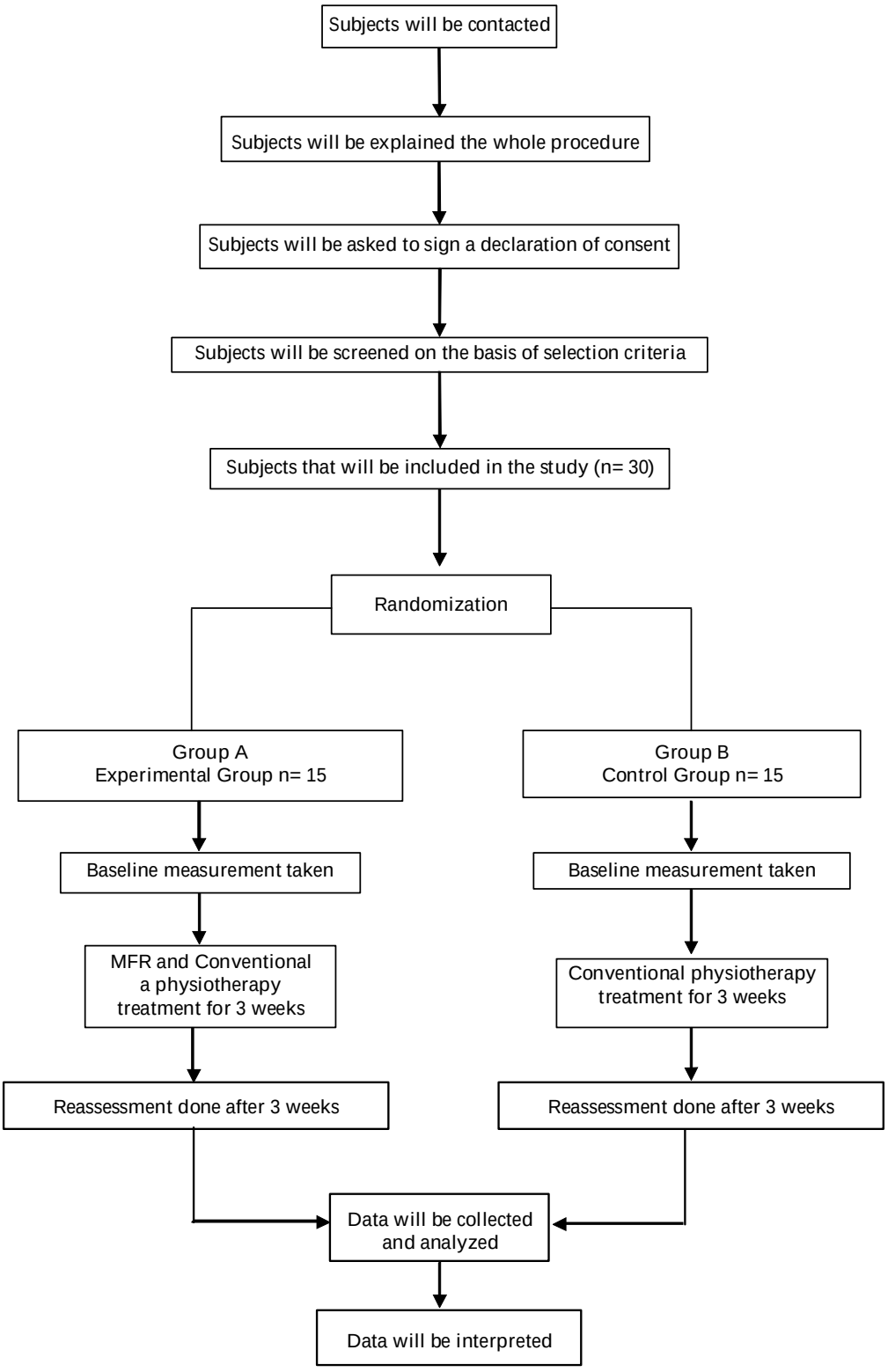
i. Age between 25-45 years
ii. Either males or females
iii. Symptoms positive to cervical radiculopathy
iv. Patients showing positive cervical foraminal compression test (spurling test), manual cervical distraction test, and ULNT 1
v. Trigger points in upper trapezius
vi. Arm pain on Numeric Pain Rating Scale (NPRS) [4-8]

Exclusion Criteria

i. Cervical instability
ii. Vertebral artery insufficiency
iii. Cord compression
iv. Spinal infections
v. Previous spinal injury

Protocol and Procedure

Protocol



vi. Recent motor vehicle accident involving cervical spine

vii. Systemic disease

viii. Severe osteoporosis

ix. History of psychological or physical illness

Variables

Independent variable

MFR

Conventional physiotherapy

Dependent variable

Conceptual

Functional disability

Pain intensity

Operational

Neck disability index

Numeric pain rating scale

Outcome Measures

Primary outcome measure

Neck disability

Secondary outcome measure

- Subjective

  NPRS

- Objective

  ULNT 1

Materials Used for Data Collection

For intervention

Intermittent cervical traction (ICT) {Bio Med Digital Traction; New Delhi}

Moist hot pack (MHP)

Chair

Couch

Pillow

Procedure

Before starting the study process all participants will be familiarized with the study in general and the study aims and objectives. Consent forms will be given to them prior to the study. The patients will be asked to fill the questionnaire. Then the case history will be documented and after doing the first examination treatment will be given.

30 subjects either male or female will be randomly allocated according to the inclusion criteria. They will be divided into two groups, experimental group and control group. The participants will be blind to which group they are enrolled to. Experimental group will receive MFR and conventional physiotherapy treatment for four consecutive days a week and control group will receive conventional physiotherapy treatment for four consecutive days a week. Extended home program will be given for one week followed by modified home program for another one week to both the groups. Reassessment will be done within group and in between both groups after four days, two weeks and three weeks.

Treatment Session

Group A: MFR of upper trapezius in the form of gross stretch followed by focused stretch is given.

Group B: Control group will be given MHP for 10 minutes followed by ICT and strengthening exercises of neck.

Data Analysis

Shapiro–wilk test will be used for normality distribution of data and accordingly wilcoxon test or paired t-test will be used within the group and independent t-test or Mann whitney U-test will be used in between the groups for data analysis.

Statistical analysis will be done by using Statistical package for social sciences (SPSS), version 16 (SPSS Inc. Chicago, IL, USA).

Level of significance will be set as 5 percent ($p<0.05$).

Discussion

Significance and Implication

This study will help to establish MFR as one of the treatment technique in combination with existing treatment techniques for treating MTrPs in patients with CR. This study is in progress and results will be declared in March 2016.

Acknowledgement

The study participants will be acknowledged at the end of the study.

Conflict of Interest

None declared.

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