"A Comparative study to evaluate the Effectiveness of Conventional Therapy Alone and Combined with Neural Mobilization in Patients with CervicoBrachial Pain"

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ABSTRACT

OBJECTIVE

The purpose of the study was to determine the effectiveness of conventional therapy alone and combined with neural mobilization in patients with cervico brachial pain. 30 patients according to the inclusion and exclusion criteria were selected.

METHODOLOGY

30 patients were assigned into 2 groups by random allocation .Group-A (CONVENTIONAL THERAPY) consists of 15 patients. Group-B (NEURAL MOBILISATION ALONG WITH CONVENTIONAL PHYSIOTHERAPY) consists of 15 patients. Prior to the starting of the intervention program pre assessment was done by using outcome measures of VAS, NDI and ELBOW RANGE OF MOTION for both the groups.

PROCEDURE

Intervention program for 2 weeks in which Group-A received Conventional therapy and Group-B received Neural mobilization along with Conventional physiotherapy. After the 2 weeks intervention post test assessment was taken by using outcome measures of VAS, NDI and EROM.

RESULTS

Statistical analysis of the data showed Both the groups A and B showed significant difference from pre to post intervention. But on comparing mean values of Group A & B, Group B (Neural mobilization along with conventional therapy) showed more improvement than Group A(Conventional physiotherapy).

CONCLUSION

These findings suggest that neural mobilization technique combined with conventional therapy is more effective in reducing pain and improving range in patients with cervico brachial pain.

ABBREVIATIONS USED

VAS	VISUAL ANALOGUE SCALE
NDI	NECK DISABILITY INDEX
CBPS	CERVICO BRACHIL PAIN SYNDROME
NMT	NEURAL MOBILISATION TECHNIQUE
EROM	ELBOW RANGE OF MOTION

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Introduction

Neck pain associated with arm pain is called cervical brachialgia or cervicobrachial pain. It is a common complaint in patients seeking physiotherapy treatment. Neck pain along with tingling, numbness or discomfort in the arm, upper back and upper chest with or without an associated

head ache is considered as cervico brachial pain syndrome (CBPS). This neck and arm pain with features of neural tissue mechano sensitivity is termed as neurogenic cervico brachial pain syndrome.[1,2]

Cervicobrachial pain syndrome is often tagged as cervical radiculopathy. However, cervical radiculopathy was described as a neurologic condition resulting from compressive pathology characterized by objective signs presenting with a combination of sensory loss, motor loss and or impaired reflexes in a segmental distribution. The possible sources for cervicobrachial pain are: referred or radiating pain from dysfunctional tissue structures (non-somatic or somatic) such as visceral organs, cervical discs, facet joints, upper quarter muscular imbalances with associated trigger or tender points and inflamed neural tissues. When inflamed neural tissues are identified as the predominant source of symptoms, it is known as neurogenic cervicobrachial pain syndrome source of symptoms in cervico brachial pain syndrome can be multiple. Through the process of history and physical examination and necessary diagnostic investigations, emphasis needs to be given to differentiate and diagnose the existence of possible visceral disorders (red flags), neuro musculoskeletal sources, psychosocial and occupational sources. It is important to rule out the red flags (possibility of cardiovascular disorders, pulmonary and gastro intestinal sources) prior to initiation[3.]

Conventional Therapy

Various strategies have been documented in literature utilizing surgical and non-surgical options for managing cervical brachialgia. This condition is reported to be relatively self-limiting in most of the observed sufferers. Hence first line of management includes adequate active rest, orthotics, cervical traction, physiotherapeutic interventions and pain relieving medications as non-operative or conservative therapy Conventionally, physiotherapeutic interventions comprise of cervical traction (Mechanical / manual and Intermittent / continuous), thermal agents (heat or cold applications), electrical stimulation, Transcutaneous Electrical Nerve Stimulation (TENS) and Interferential Therapy (IFT), Ultrasound (US), Short wave diathermy (SWD) and Isometric neck exercises, shoulder exercises mobilization and manipulations, posture reeducation and ergonomic advices.

NEURAL MOBILIZATION

Neural mobilization plays a key role in decreasing pain and improving range of motion of the cervical spine in patients with cervical brachial pain. Neural mobilization of the nervous system, described by Maitland in 1985, Elvey in 1986 and refined by Butler in 1991, is an adjunct to assessment and treatment of neural pain syndromes including cervical radiculopathy. Neural mobilization is a gentle movement technique used by the physiotherapist to move the nerves. Robert J Nee and David Butler (2006) proposed that neurodynamic mobilization technique can be effective in addressing peripheral neuropathic pain where nerve roots may have been injured.

Aim and Objectives of the Study

Aim of the study is to compare the effectiveness of the conventional therapy alone and conventional therapy along with neural mobilization in patients with cervicobrachial pain in terms of pain and neck disability.

- To evaluate changes in pain and function in patients with cervicobrachial pain following a 2 – week conventional therapy only.
- To evaluate changes in pain and function in patients with cervicobrachial pain following a 2 – week conventional therapy along with neural mobilization programme.

Materials & Methodology

Study design - Experimental study with pre and post intervention comparison design

Sample size – 30 subjects fulfilling inclusion and exclusion criteria

Sampling method – Convenience sampling

Intervention period – 2 weeks

Study period – one year duration

Study setting – Physiotherapy out Patient Department (OPD) Hospital, Vaagdevi College of Physiotherapy, N.N.Reddy Manipulative Care & Rehabilitation, Jaipur College of Physiotherapy

Inclusion Criteria

Patients of 30 – 60 years of age,Male and female patients

Neck pain radiating to any one upper limb since more than 3 weeks

Positive ULTT 1 with structural differentiation positive for neural involvement,

Willing to participate in the study

Exclusion Criteria

History of trauma,Prolapsed intervertebral disc(grade III & IV) ,Under treatment of steroid injections/Spinal surgeries ,Severe osteoporosis,Spinal conditions like myopathy/tumors/Infection,Cervical instability,Previous spinal injury, Patients with bilateral upper limb radiculopathy

Method of collection of data

The study proposal was reviewed and approved by concerned authorities and Ethics Committee. The subjects were screened for inclusion and exclusion criteria and those who fulfilled the criteria were included for the study.

An informed consent was taken from each participant. Patients were randomly assigned into two groups by block randomization. The samples equally into two groups: - in which 15 subjects were allocated to Group-A and 15 subjects were allocated to Group-B

Materials Utilized and Outcome Measures

1) Goniometer 2) IFT 3) Hydrocollator packs 4) Treatment couch

- The outcome measures were measured by an independent assessor who remains blinded to the treatment allocation.
- VAS, Elbow range of motion(EROM), Neck Disability Index(NDI) were measured at the baseline and at the end of treatment of 2 weeks

Outcome measures were checked prior to the starting of the intervention program and after the end of the intervention program i.e., after the 2 weeks.

The outcome measures used for this study were:

1. The visual analogue scale (VAS)
2. The Neck disability index (NDI)
3. Range of motion: Elbow range of motion is measured at the end of ULTT1 test.

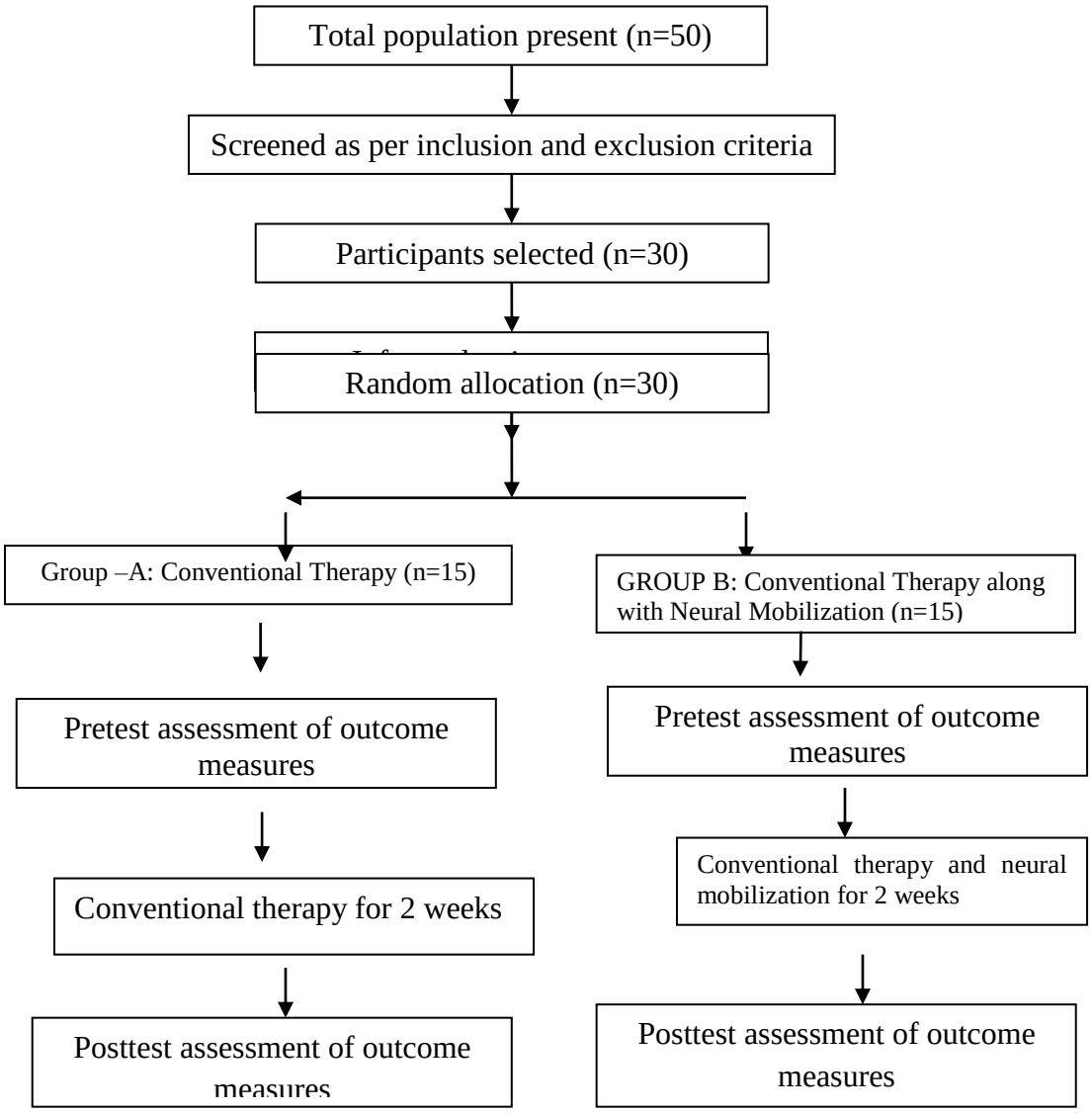
Procedure

GROUP A: Conventional Therapy

Conventional therapy includes application of moist heat, IFT and exercise therapy.

GROUP B: Conventional Therapy along with Neural Mobilization

In this group conventional therapy were provided as described above and neural mobilization with Upper Limb Tissue Tension Test 1 (ULTT1) for median nerve is performed according to the irritability of patient's condition.


Total population present (n=50)
Screened as per inclusion and exclusion criteria
Participants selected (n=30)
Random allocation (n=30)
Group –A: Conventional Therapy (n=15)
GROUP B: Conventional Therapy along with Neural Mobilization (n=15)
Pretest assessment of outcome measures
Pretest assessment of outcome measures
Conventional therapy for 2 weeks
Conventional therapy and neural mobilization for 2 weeks
Posttest assessment of outcome measures
Posttest assessment of outcome measures

Stastical data Analysis

All statistical analysis in this study was done using SPSS ver16.0. The general characteristics of the participants were expressed in terms of mean and standard deviation by using descriptive analysis. For comparison within the groups between pre and post intervention, paired t-tests were performed. And independent t-test was used for comparing differences between the groups. The statistical significance level was set at equal to or less than 0.05 for all tests.

Group A Versus B

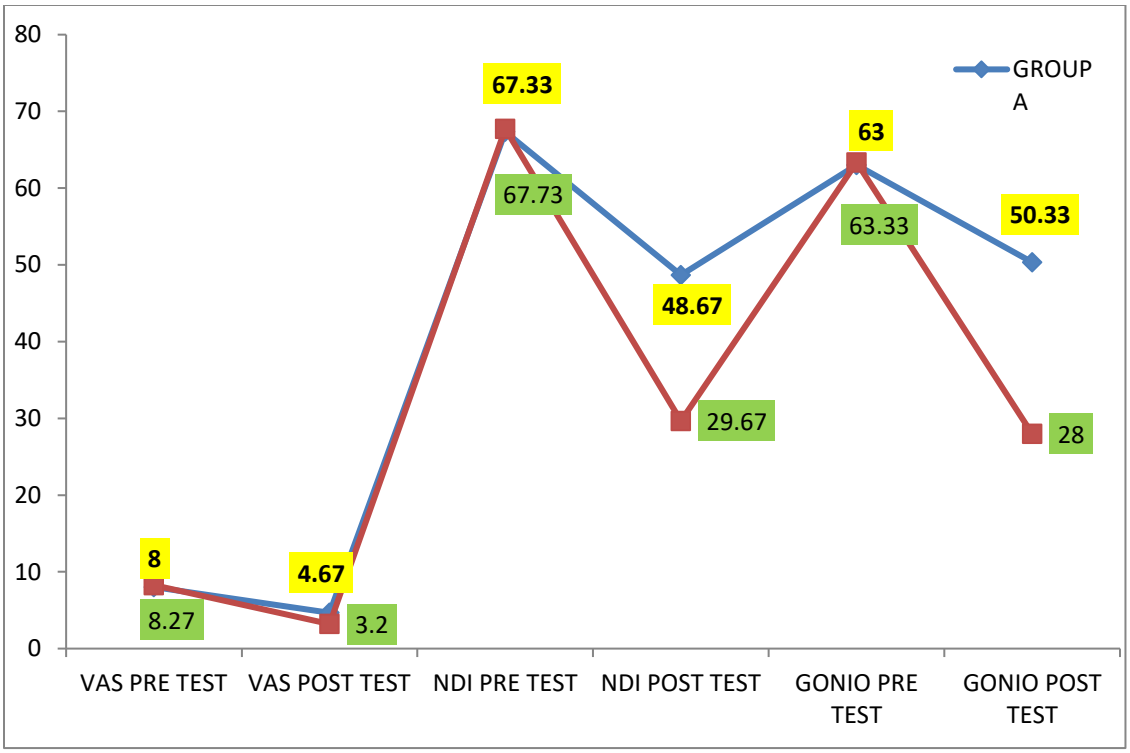
Group Statistics

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
VAS PRE TEST	GROUP A	15	8.0000	.65465	.16903
	GROUP B	15	8.2667	.70373	.18170
VAS POST TEST	GROUP A	15	4.6667	.72375	.18687
	GROUP B	15	3.2000	.77460	.20000
NDI PRE TEST	GROUP A	15	67.3333	4.33699	1.11981
	GROUP B	15	67.7333	4.14844	1.07112
NDI POST TEST	GROUP A	15	48.6667	6.30948	1.62910
	GROUP B	15	29.6667	5.05211	1.30445
EROM PRE TEST	GROUP A	15	63.0000	7.02038	1.81265
	GROUP B	15	63.3333	7.23747	1.86871
EROM POST TEST	GROUP A	15	50.3333	4.80575	1.24084
	GROUP B	15	28.0000	4.92805	1.27242

	t-test for Equality of Means						
	t	df	Sig. 2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
VAS PRE TEST	-1.075	28	.292	-.26667	.24817	-.77502	.24168
VAS POST TEST	5.358	28	**.000**	1.46667	.27372	.90598	2.02735
NDI PRE TEST	-.258	28	.798	-.40000	1.54960	-3.57422	2.77422
NDI POST TEST	9.104	28	**.000**	19.00000	2.08700	14.72498	23.27502
EROM PRE TEST	-.128	28	.899	-.33333	2.60342	-5.66619	4.99952
EROM POST TEST	12.566	28	**.000**	22.33333	1.77728	18.69274	25.97393

As seen from the output, there is no significant difference exist between pre intervention values of GROUP A & B of VAS, NDI and EROM.

As seen from the output, there is a significant difference exist between post intervention values of GROUP A & B of VAS, NDI and EROM.



LINE GRAPH SHOWING MEAN VALUES BETWEEN GROUP A AND B OF VAS, NDI AND EROM

Statistical analysis of the data showed that is no significant difference of age exists between group A and B (p value >0.05). There is homogeneity maintained between the groups regarding the age. Data indicate that there is no significant difference exists between group A and B of VAS, NDI and EROM pre.

There is significant difference exists between the pre and post of VAS,NDI and EROM of group A. There is significant difference exists between the pre VAS,NDI and EROM of group B. There is significant difference exists between the pre and post of VAS, NDI and EROM of group A & B..

Mean values of outcome measures of group A and B:

Mean values	GROUP-A	GROUP-B
VAS PRE	8	8.27
VAS POST	4.67	3.2
NDI PRE	67.33	67.33
NDI POST	48.67	29.67
EROM PRE	63	63.33
EROM POST	50.33	28

Both the groups A and B showed significant difference from pre to post intervention. But on comparing mean values of Group A & B, Group B (Neural mobilization along with conventional therapy) showed more improvement than Group A(Conventional physiotherapy

Conclusion

The study concluded that, when analyzed within groups before and after the treatment, both groups i.e. conventional therapy and conventional therapy along with Neural Mobilization techniques have shown statistically significant effects on improvement of pain, elbow ROM(EROM) in ULTT1 test and functional disability in subjects with cervico brachial pain.

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