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EFFECTIVENESS OF CUPPING THERAPY ON NERVE CONDUCTION VELOCITY IN SCIATICA-A RANDOMIZED CONTROL TRIAL.

Physiotherapy

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ABSTRACT

BACKGROUND: Sciatica is a radiating pain that is caused due to the impingement in bony structures. Cupping is a simple application of quick, vigorous, rhythmical strokes to stimulate muscles and it's also helpful in the treatment of aches and pains associated with various disorders.

AIM AND OBJECTIVES:

AIM: To find out the effectiveness of cupping therapy on nerve conduction velocity in sciatica.

OBJECTIVES: To find out the effect of cupping therapy on NCV in sciatica.

To compare the experimental group to the control group.

METHOD: Thirty patients were selected based on inclusion and exclusion criteria. The details of the treatment were explained to the subjects and written consent was taken from the patients. They were treated with cupping therapy for three alternative days/week, the patient was reassessed with NPRS and NCV after 4 weeks.

RESULTS: The data was analyzed using SPSS version 22.0. A parametric test was used within the group analysis. A significant improvement in pain and functional status of the nerve was found after 4 weeks. Greater statistically significant improvement was seen in Group-A (p-value is 0.00) as compared to Group-B

CONCLUSIONS: Cupping therapy is effective to reduce pain and improvement in functional status of nerves in Sciatica patients.

KEYWORDS

Sciatica, NCV, cupping therapy, Pain.

1. INTRODUCTION

The ancient Greeks were well-known for sciatic neuralgia and used the term 'sciatica', which is the largest nerve in the body and largest branch in the brachial plexus it describes the pain felt around the hip or thigh.[1]

Sciatica neuralgia is defined as 'pain in the distribution of the sciatic nerve due to pathology of the nerve itself'.[2]

Sciatica is the most commonly occurring condition with a lifespan variance varying from 13% to 40%. The corresponding annual variance of an episode of sciatica varies from 1% to 5%.[3,4]

There is no conclusive evidence to prove the co-relation between sciatica and any masculinity or physical fitness. The risk factors for acute sciatica are divided according to Personal factors which include Age (peak 45-64 years) Increasing risk with height, Smoking and Mental stress, and Occupational factors which includes Strenuous physical activity—for example, frequent lifting, especially while bending and twisting.[5,6]

Cupping is a simple application of quick, vigorous, rhythmical strokes to stimulate muscles and it's also helpful in the treatment of aches and pains associated with various disorders. Thus, cupping carries the potential to enhance the quality of life. [8] There are many types of cupping therapy; however, dry and wet cupping are the two main types.[9]

Dry cupping pulls the skin into the cup without scarification, while in wet cupping the skin is lacerated so that the blood is drawn into the cup.[9]

Cupping therapy is beneficial for pain conditions [11, 12] and recent trials have indicated significant effects in pain relief after cupping for patients with chronic non-specific neck [12,13] and back pain[14,15].

Nerve conduction study is an important aspect used to test the functioning of nerves, especially the ability to conduction of electrical stimuli. NCV studies can acknowledge the degree of demyelination and axonal loss in the segments of the nerve examined. Demyelination of nerve results in prolongation of conduction time, whereas axonal loss generally leads to the loss of nerve fiber.[16]

The factors on which nerve conduction velocity depends, Includes - age, temperature, and parameters like nerve diameter and myelination.[18]

In the peripheral nervous system, the nerve fibers of various diameters and functions (motor and sensory) are bundled together by the connective tissue to form nerves [19]

Various diseases that damage the myelin, destroy neurons or constrict the whole nerve will decrease the nerve's conduction velocity. The nerve conduction velocity may remain normal until late in a disease process. In addition, the nerve conduction velocity reflects the conduction of the fastest nerve fibers, usually the motor neurons. A nerve conduction velocity test measures how quickly the electrical impulses move along a nerve.[18]

It is a diagnostic tool for various neuropathies. The motor nerve conduction velocity is performed by the electrical stimulation of a peripheral nerve and by using the recording from a muscle that is supplied by this nerve. The time it takes for the electrical impulse to move from the stimulation site to the recording site is measured. This value is called the latency and it's measured in milliseconds (ms). The size of the response is called the amplitude and it is also measured. The motor amplitude is measured in millivolts (mv).[19]

The conduction velocity of that nerve was determined in m/sec by dividing the distance between the two stimulation points by the latency difference of the related response.[20]

Need Of Study

According to previous research, there is no study done on cupping therapy on nerve conduction velocity in sciatica patients. So, the need of the study is to assess the effectiveness of dry cupping therapy on NCV in sciatica.

2. AIM AND OBJECTIVES

AIM:

To find out the effectiveness of Cupping therapy on nerve conduction velocity in sciatica.

OBJECTIVES:

- To find out the effect of cupping therapy on NCV in sciatica
- To compare the experimental group to the control group

3. Hypothesis

Null Hypothesis

- There is no significant effect of cupping therapy on nerve conduction velocity in sciatica.

Experimental Hypothesis

- There is a significant effect of cupping therapy on nerve

conduction velocity in sciatica.

4. METHODOLOGY

4.1 METHOD

Study Design- Randomized control trial

Study Setting- OPD- 5, Sports Department, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar.

Study Technique- Simple Random sampling

Intervention Duration- 4 weeks

4.2 Criteria for Selection

Inclusion Criteria:

Subjects with sciatica pain with age 45- 64 both included male and female.

Exclusion Criteria:

Subjects with any previous and recent spinal injuries, systemic disorders, Fracture in the pelvis and blooding disorders, psychological disorders, open wound or ulcer

4.3 Procedure Of Data Collection

- After taking Ethical consideration, we applied for the registration number and the number in this study is CTRI/2021/11/03828. Then first we performed SLR, and if SLR is positive then we select the 30 patients based on inclusion criteria for the study. All the patients were educated about the study. The patient who fulfills the inclusion criteria underwent the evaluation process and was requested to sign a written consent form. The pre-assessment of outcome measure was NPRS for checking pain intensity and NCV for checking demyelination of sciatic nerve. All the patients were divided into two groups i.e., Group A (n =15) and Group B (n =15) by using simple random sampling (chit method). Group A will be the Experimental group, and Group B will be the Control group. In the Experimental group, dry cupping therapy will be given and, in the control group not be given treatment by us. The treatment protocol will consist of 3 sessions of cupping therapy/week for 4 weeks after that we reassessed the patient with NPRS for checking pain intensity and NCV for checking demyelination of sciatic nerve.

4.4 Treatment Protocol

Group- A

Group A was treated with dry cupping therapy (Movable cupping therapy is given) the duration of Each point cup was left on the skin for 3-5 minutes. Total duration 25-30 minutes 3 sessions/week for 4 weeks.

Group- B

No treatment was given in this group

Figure 4.4: Applying cupping therapy and NCV

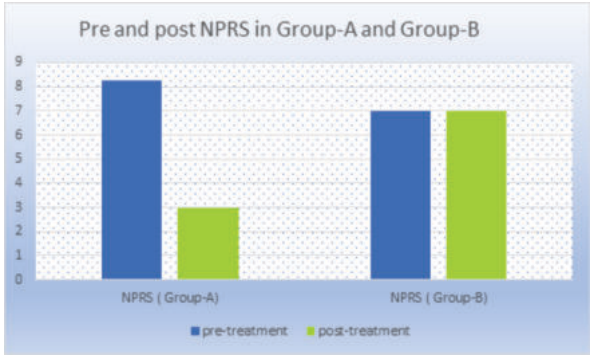
5. RESULT

table 5.1: mean age of patients in group-a and group-b

Demographic Details		Group A	Group B
Age	Mean	49.66	51.6
	SD	± 4.46	± 3.92

Table 5.2: Intergroup Comparison Of Pre And Post-treatment Of Nprs Score For Group-a And Group-b

	Pre-Treatment		Post-Treatment		t value	p-value
Outcome	Mean	SD	Mean	SD		
NPRS Score (Group-A)	8.26	± 1.22	3	± 0.84	21.53	0.00
NPRS Score (Group-B)	7	± 0.845	7	± 0.845	-1.871	0.082

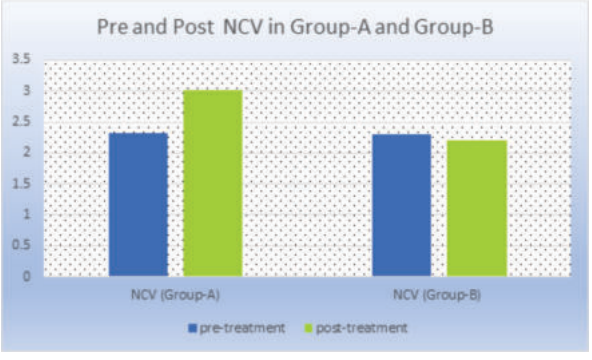


Graph 5.1: Intergroup Comparison Of Pre And Post-treatment Of Nprs Score For Group-A And Group-B

Table 2 and Graph 1 show an Intergroup comparison of pre and post NPRS in Group-A and Group-B. where the p-value of Group-A is 0.00 and in Group-B the p-value is 0.082. A statistically significant difference was found between the pre and post-treatment NPRS score in Group-A.

Table 5.3: Intergroup Comparison Of Pre And Post-treatment Of Ncv Score For Group-A And Group-B

	Pre-Treatment		Post-Treatment		t value	p-value
Outcome	Mean	SD	Mean	SD		
NCV Score (Group-A)	2.320	± 1.78	3.020	± 013	-11.07	0.00
NCV Score (Group-B)	2.3	± 0.23	2.20	± 0.21	1.41	0.161



Graph 5.2: Intergroup Comparison Of Pre And Post-treatment Of Ncv Score For Group-a And Group-b

Table 3 and Graph 2 show an Intergroup comparison of pre and post NCV (Latency) in Group-A and Group-B. where the p-value of Group-A is 0.00 and in Group-B the p-value is 0.161. A statistically significant difference was found between the pre and post-treatment of NCV (latency) score in Group-A.

The result was analyzed in SPSS version 22.0. The Independent two-sample test was used for Intergroup comparison and Paired-T Test was used for Intragroup comparison. A significant improvement was seen in the Experimental Group.

6. DISCUSSION

The purpose of the study was to find out the effectiveness of cupping therapy on nerve conduction velocity in sciatica. This study was conducted on 30 patients. The patients were divided into two groups that are Group-A (experimental group) and Group-B (control group). The result found in this study after a 4-week treatment program, Group A (the experimental group) received the treatment with cupping therapy for 4 weeks, 3 alternate days/week and Group B (the control group) didn't receive any treatment from us. A significant improvement in the functional status of the nerve and reduced pain in Group-A. So, the experimental hypothesis is failed to reject.

This study is unique and gives the introduction of cupping therapy as many researchers have conducted research in cupping therapy but very few researches are in evidence of dry cupping therapy is effective in sciatica patients.

According to this author Duane T Lowe. Besides the mechanical effect

of cupping increasing the local blood flow and stretching underlying tissue, activation of the HO-1 system could account for many of cupping therapy's claimed local and systemic health benefits.

Other authors concluded that study on non-specific low back pain. That is mentioned in the literature. Sarah Wood et al. gave dry cupping was found to be effective for reducing pain in patients with chronic neck pain and non-specific low back pain. Although definitive conclusions regarding the effectiveness and safety of dry cupping for musculoskeletal pain and range of motion were unable to be made due to low-moderate quality of evidence. Further high-quality trials with larger sample sizes, long-term follow-up, and reporting of an adverse event are warranted.

According to Milind A. Nisargandha et al., The early detection of demyelination may be also helpful for the detection of nerve injuries in patients with sciatica.

Cupping is a simple application of quick, vigorous, rhythmical strokes to stimulate muscles, and is it's also helpful in the treatment of aches and pains associated with various disorders. Thus, cupping carries the potential to enhance the quality of life.[7] There are many types of cupping therapy; however, dry and wet cupping are the two main types.[8] Dry cupping pulls the skin into the cup without scarification, while in wet cupping the skin is lacerated so that the blood is drawn into the cup.[9]

We get improvement in pain reduction due to cupping therapy working directly on pain gate theory.

Nerve conduction study is an important aspect used to test the functioning of nerves, especially the ability to conduction of electrical stimuli. Demyelination of nerve results in prolongation of conduction time, whereas axonal loss generally leads to the loss of nerve fiber.[16]

The reason behind the reduced pain, numbness, or tingling and recovery functional status of the nerve is the appliance of the cupping therapy that remove the waste materials, loosens the connective tissue and stimulates the peripheral nervous system and autonomic nervous system to improve the blood flow toward the affected part and strength of muscle.

7. CONCLUSION

Cupping therapy is effective to reduce pain and improvement in functional status of nerves in Sciatica Patients.

Limitations of the study:

- Small sample size
- An only Selected sample in Visnagar

Future recommendations of the study:

- Carry out the study with a large sample size
- Same protocol uses for other radiculopathies
- Also, investigate other characteristics of NCV

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List of Abbreviations

NPRS - Numerical Rating Scale
NCV – Nerve conduction velocity
SPSS - Statistical package of social sciences.
SD - Standard deviation

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