

Original Research

A study on short term effect of interferential therapy (IFT) on localised pain and disability in patients with cervical brachialgia

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Abstract

Objective: The purpose of this study is to find out the effect of IFT on pain and disability in patients with cervical brachialgia. **Materials and methods:** The total number of subjects were 20. The participants were selected on the basis of inclusion and exclusion criteria. Before including the patients in this research, consent was taken from each patient. The patients were evaluated at 1st day and 14th day respectively in terms to analyse the effectiveness of the protocol that was delivered to the patients. **Statistical analysis:** All data analysis was obtained using SPSS version 20.0. Base line data of the patients including pain and disability were summarized. The dependent variables for the statistical analysis were VAS and NDI score for pain and disability. Paired t-test was used in this study to obtain the difference between the pre and post score of VAS and NDI. A level of significance 5% was used to determine the p-value. **Result:** There was significant difference found between pre and post score of VAS and NDI from 1st to 14th day. On the basis of findings of baseline data and t-test analysis, there was significant improvement noticed in terms of reducing pain and disability at 1st and 14th day. **Conclusion:** After analysing the data which was taken as pre test and post test of the treatment protocol (i.e. day 1 and day 14), this study concludes that the patients who received IFT along with Cryotherapy and neck isometric exercises reported reduced neck pain and disability.

Keywords: Brachialgia, VAS, NDI, IFT, Cryotherapy

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Introduction

Cervical brachialgia is referred neurogenic pain in the distribution of a cervical nerve root or roots, with or without associated numbness, weakness, or loss of reflexes. The usual cause in young adults is herniation of a cervical disk that entraps the root as it enters the foramen. Cervical brachialgia or upper limb referred pain can be due to pathologies of the joint and soft tissue in nerve compression. The primary care physician has to entertain a wide differential when a patient's chief complaint is of pain that is referred in upper limb⁽¹⁾.

A careful and proper history and examination is required to differentiate causes of pain as possible. Although appropriate special investigation may be required, they often cause confusion due to degenerative conditions it may be asymptomatic. The patients feel pain over the shoulder region among in whole upper limb in brachialgia. The purpose of this article is to find out the efficacy of IFT on pain and disability among the patient with cervical brachialgia. Cervical brachialgia has been estimated to be more prevalent than neck pain with radiculopathy arm pain which is isolated. The chief complaint is commonly among the patient seeking physiotherapy intervention for cervical and upper limb pain. The occupation of most of the patients was manual work with continuous desk top work, writing, manipulating or moving objects and overhead weight lifting⁽²⁾.

A clear understanding of the onset and nature of pain is required. A cervical radiculopathy may be acute or chronic. The axial neck pain with radiating arm pain may reduce cervical range of motion. The causes of pain in neck extension and lateral bending to the side of the pain, is due to foraminal compression of cervical pain; the higher cervical roots cause radiating pain into the occiput and posterior neck and shoulder. The cause by distal nerve roots are compression radiating pain down the arm. The nerve roots involving C5 typically radiates into the shoulder, with C6 radiating to lateral elbow to the thumb. The cause of C7 roots compression posterior arm pain and into the middle finger, with C8 involving the little finger. The pain radiate in scapula might be a feature that often confuses the situation and can be due to C7 root irritation⁽³⁾.

The patient of shoulder pathology may be occupation related and performs overhead work activity, or patient has recently performed unusual activity⁽⁴⁾. The local muscle spasm with the pain radiate down the arm and into the base of the neck. The patient's complaints are usually loss of range of motion and function. The pain be relieved by the arm elevation, cervical radiculopathy is more likely. In the severe case in neck pain the patient may hold the arm elevated with the unaffected arm in an effort to control the pain⁽⁵⁾.

The conventional method involves the use of electrical stimulation method for relieving pain. The most widely used of the frequency, low frequency stimulations, which mainly recruits method is

undoubtedly Transcutaneous electrical nerve afferent fibres⁽⁶⁾. Stimulation which consists of stimulating the afferent vibratory stimulation (VS), which has been known for a long fibres in the painful part of the body by means of electrode placement on the time to have analgesic effects and commonly use by the physiotherapist the effect of vibration on experimentally induced pain also be tested. The results of the vibration can be a highly efficient means of alleviating pain involving the activation of large diameter afferent fibres⁽⁷⁾. The purpose of this study was to find out the effect of IFT on pain and disability in patients with cervical brachialgia.

Objective

To find out the effect of IFT on pain and disability in patients with cervical brachialgia

Hypothesis

Alternate Hypothesis (H₁)

There will be significant effect of IFT on pain and disability in patients with cervical brachialgia

Null Hypothesis (H₀)

There will be no significant effect of IFT on pain and disability in patients with cervical brachialgia

Materials and methods

This is a quasi-experimental study. This study was conducted at Physiotherapy OPD, Jyoti rao Phule Subharti College of Physiotherapy, Meerut. The total number of patients was 20. The participants were selected on the basis of inclusion and exclusion criteria. Before including the patients in this research, consent form was taken from each patient. The patients were evaluated at 1st day and 14th day respectively in terms of the finding the efficacy of the protocol that was delivered to the patients.

Inclusion criteria

Both male and female of age between 30-40 year, Duration of neck pain less than 1 month(Sub-acute), VAS score of more than or equal to 5, NDI score of more than or equal to 16 score

Exclusion criteria

Any Congenital anomalies like cervical rib etc., past history of cervical trauma, history of trauma or fracture in upper limb neck, patient suffering from Diabetes Mellitus, any Patient with history of recent surgery to neck or upper back., any patient with neurological complication and any patient with psychological complication were excluded.

Outcome measures

VAS (Visual analogue scale)⁽⁸⁾

The visual analog scale was utilized to measure the intensity of neck pain of patients with cervical brachialgia. It consists of a 10 cm line. The therapist can measure the place on the line and convert into it a score between 0 to 10 where 0 is no pain and 10 is bad as it could be.

NDI (Neck disability index)⁽⁹⁾

Neck disability index was used to determine the disability associated with the neck pain. The NDI is scored from 0–50 points (0–100%) in which higher scores correspond to greater levels of disability. Using this system, a score of 5–14 points (10–28%) was considered to constitute mild disability, 15–24points (30–48%) was considered to constitute moderate disability, 25–38points (50–68%)was considered to constitute severe disability, and scores above 34points (68%) indicate complete disability.

Procedure

Initially, all patients were applied ice pack for 10 minutes. Neck area was monitored during application of ice pack in terms of temperature of ice pack, skin texture of targeted area and comfort level of patients. After application of ice pack patients received exercises. Such as isometric exercises of cervical spine with 5 repetitions each movement (flexion, extension, lateral flexion and rotations) were given to the patients.

IFT was given to the patients for 15 minutes, electrodes were placed over the neck posteriorly and affected upper limb either right or left side (anterior, posterior, medial and lateral) till the level of symptoms. The procedure was explained to the patients before implementation of IFT. The current to be applied at a pulse repetition frequency of 100Hz and duty cycle of 250s, the intensity were set at a level that each subject should feel but will not be strong enough to produce muscle contraction. The procedure was given in form of 6 sessions in a week for 2 weeks.

Data Analysis

All data analysis was obtained using SPSS version 20.0. Base line data of the patients including pain and disability were summarized. The dependent variables for the statistical analysis were VAS and NDI score for pain and disability. Paired t-test was used in this study. A level of significance 5%(*) was used to determine the statistical significant.

Result

Table-1, Showing the pre (on 1st day) and (14th day) and post VAS score

Outcome Measure	Time Period	Mean	S.D	S.E.M
VAS	1 st Day (Pre-VAS)	6.08	1.67	0.673
	14 th Day (Post-VAS)	2.67	1.73	0.714

Graph-1, showing the difference between pre and post VAS score

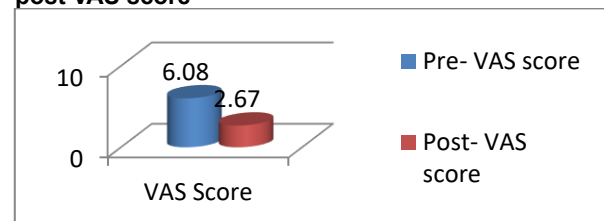
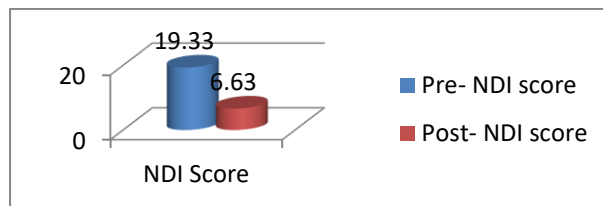


Table-1, showing mean, S.D and S.E.M at the pre (on 1st day) and post (14th day) NDI score

Outcome Measure	Time Period	Mean	S.D	S.E.M
NDI	1 st Day (Pre-NDI)	19.33	2.17	0.413
	14 th Day (Post-NDI)	6.63	1.69	0.437

Graph-2, showing the difference between pre (on 1st day) and post (on 14th day) NDI score**Table-3, showing t-test value and p-value of pre (1st Day) to post (14th Day) score of VAS and NDI**

Outcome Measure	Time Period	t-value	p-value	Significance (Level of 5%)
VAS	Pre-Post VAS	13.74	0.002	Significant
NDI	Pre-Post NDI	11.67	0.001	Significant

Discussion

The purpose of this study was to find out the effect of IFT on pain and disability in patients with cervical brachialgia. This study provides data for pain and disability of individuals who had complain of neck pain which was radiating in nature. The data is sparse in between 30-40 year age group since it was convenient to find people in this age group who could fit the inclusion criteria in this study. In this study, data shows that there was significant difference in pre and post VAS score and NDI score in patients with cervical brachialgia. On the basis of findings, IFT is an effective protocol in reducing pain and disability in patients with cervical brachialgia. Data of VAS and NDI of pre and post experimental study are expressed in terms of mean, S.D and S.E.M is shown in table-1 and 2 respectively. Further application of paired t-test implemented (table-3) to find the significant difference between pre and post score of VAS and NDI which revealed significance difference at 5% level of significance. The 2 weeks protocol of IFT along with icepack and isotonic exercises was effective in order to decrease the pain and disability. A study was conducted by Olawale O.A et. al. to determine the efficacy of interferential therapy and exercise therapy in the treatment of LBP¹⁰. 65 subjects diagnosed with low back pain participated in the study. The subjects (29 males and 36 females) were aged between 20-66 years (mean age 46.45 ± 11.90 years). Each subject was treated with interferential therapy (IFT) and some specific spinal-based therapeutic exercises thrice weekly. Assessment of pain intensity and spinal range of movements were carried out with Visual Analogue Scale (VAS) and Modified Schober Technique (MST) respectively. Measurements were carried out before and after eight weeks of treatment. There was a statistically significant decrease in pain from 6.29 ± 2.16 before treatment to 2.54 ± 1.86 after treatment ($P < 0.001$). Spinal flexion increased from 3.44 ± 1.7

cm pretreatment to 5.22 ± 1.59 cm after 8 weeks of treatment ($P < 0.01$). Also, spinal extension increased from 1.2 ± 0.62 cm pretreatment to 2.29 ± 0.63 cm after 8 weeks of treatment ($P < 0.001$). Subjects with pain localized to the lower back and those with pain radiating to lower limbs had significant improvements from the treatment. The results of this study showed that interferential therapy combined with exercise therapy could help to reduce pain intensity and increase spinal range of motion in patients with low back pain.

A study was conducted by Albornoz-Cabello M et al. To evaluate the effect of adding interferential current stimulation to exercise on pain, disability, psychological status and range of motion in patients with neck pain¹¹. A total of 84 patients diagnosed with non-specific mechanical neck pain. This sample was divided into two groups randomly: experimental ($n=42$) versus control group ($n=42$). The main measures used were intensity of neck pain according to the Visual Analogue Scale; the degree of disability according to the Neck Disability Index and the CORE Outcome Measure; anxiety and depression levels according to the Goldberg scale; apprehension as measured by the Personal Psychological Apprehension scale; and the range of motion of the cervical spine. The sample was evaluated at baseline and posttreatment (10 sessions/two weeks). Statistically significant differences between groups at posttreatment were observed for Visual Analogue Scale (2.73 ± 1.24 vs 4.99 ± 1.56), Neck Disability Index scores (10.60 ± 4.77 vs 18.45 ± 9.04), CORE Outcome Measure scores (19.18 ± 9.99 vs 35.12 ± 13.36), Goldberg total score (6.17 ± 4.27 vs 7.90 ± 4.87), Goldberg Anxiety subscale, Personal Psychological Apprehension Scale scores (28.17 ± 9.61 vs 26.29 ± 11.14) and active and passive right rotation. The study proved Adding interferential current stimulation to exercise resulted in better immediate outcome across a range of measures.

Conclusion

This study revealed that there was significant difference from pre (1st day) to post (14th day) VAS and NDI scores in patients with cervical brachialgia. After analysing the data at two different visits i.e. 1st day and 14th day, this study concludes that the patients who received IFT along with ice pack and isometric exercises of neck had less pain and disability as at 14th day. On the basis of findings of this study, this study states that there was significant difference noticed from pre (1st day) to post (14th day) score of outcome measures utilized to find out the result of the study. This study supports the experimental hypothesis.

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Conflict of interest: Nil

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