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A Comparative Study on the Effect of Mulligan's Technique (SNAG's) Versus Deep Transverse Friction Massage on Patient with Mechanical Neck Pain

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Abstract

Objective: The study was done to find out the difference between the effect of two manual therapies i.e., SNAG's and DTFM, on patients with mechanical neck pain. *Method:* The study was of an experimental design, with 30 subjects, 12 were female, 18 were male, and all subjects were assigned into two groups, 15 subjects in each, according to criteria (inclusion & exclusion) and carried out at physiotherapy OPD of CSS Hospital. In both groups, disability & pain were assessed by using the NDI & NBQ score respectively. The collected data were of men and standard deviation of NDI & NBQ score and has been analyzed using SPSS software. Paired T-test was used to find the difference between two groups. *Results:* The results showed that there was significant difference in pain and disability with their NDI and NBQ score (p=0.000).

Keywords: Mechanical Neck Pain; SNAG's (Sustained Natural Apophyseal Glides); DTFM (Deep Transverse Friction Massage); NDI (Neck Disability Index) & NBQ (Neck Bournemouth Questionnaire).

Introduction

Neck pain in particular is considered to be a major health problem in modern societies. Neck pain is a very common problem with two-thirds of population having neck pain at some point in their lives. It is also increasing in intensity, frequency and severity of episodes. As people are increasingly sedentary in nature, live fast-paced and sedentary lives, they place more stress and strain on the upper back and neck regions of their spines [1].

Neck pain is a common complaint in the general population with the lifetime prevalence of approximately 50% [2]. Most patients who present with neck pain symptoms fit into the category of mechanical neck pain, having postural or mechanical basis.[3]Aetiological factors include poor posture, neck strain or occupational or sporting activities, anxiety, depression, but are often multifactorial and poorly understood. Its exact pathology remains obscure, but the source of symptoms has been asserted to involve mechanical dysfunction of the cervical spine, particularly the zygapophysial joints [4].

Neck pain is a common source of disability in the general population. Around 67% of adults will have neck pain sometimes during their life time [5]. Causes of neck pain are varied most causes are believed to be due to sprain or strain in the muscles and soft tissues of the neck. Mechanical neck pain is probably due to minor strains and sprains and is often associated with poor postures [6]. Mechanical neck pain refers to pain that has been present for less than 3 months. It does not refer to the severity or quality of pain [7]. Some studies have shown that altered muscle activation and reduced neck muscle strength is a well-known feature of neck pain, which presents with increased levels of disability [8].

SNAGs are the acronym for "Sustained natural apophyseal glides" and are the useful as a treatment of cervical, thoracic and lumbar spine. It is a specific type of spinal mobilization technique applied over the joints. It was developed by Brian R Mulligan and is currently used in clinical practice. It is a specific technique for loss of joint movement, pain associated with movement and pain associated with specific activity. As this technique is sustained at the end of available pain-free range and still follow the plane of the apophyseal joints under treatment [9].

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It is a specific type of connective tissue massage applied precisely to the soft tissue structure such as tendons. It was developed by empirical way by James Cyriax and is currently used in rehabilitative practices**.** The transverse, or Cyriax, method of deep friction massage is increasingly being used in sports medicine [10].

Aims and Objective

To compare the effectiveness of Mulligan's Technique (SNAGs) versus Deep Transverse Friction Massage for reducing pain and disability on patient with mechanical neck pain.

Materials and Method

Bournemouth Questionnaire

A lot of questionnaires which concentrate on pain and disability in patients with low back pain and neck pain already existed. However, since other dimensions are also involved with musculoskeletal pain, the BQ was developed. The development was based on the dimensions of the ICF, which means that, next to the pain and disability, it also takes the affective and cognitive aspects of neck pain and low back pain in account. Both versions of the questionnaire consist of seven core items, which are: pain intensity, function in activities of daily living, function in social activities, anxiety, depression levels, fear avoidance behavior and locus of control behavior. The only difference between the questionnaire for low back pain and the Neck BQ is the subscript in the item 'activities of daily living'. The items "walking", "climbing stairs" and "getting in/out of bed", described in the Back BQ, where modified to "lifting", "reading" and "driving" in the Neck BQ. Both the questionnaires are used in the same way. The questionnaires exist of 7 questions which contain the different dimensions of the ICF. Each item is rated on a numeric rating scale (NRS) from 0 to 10. A total score on 70 can be calculated, in which a higher score reflects more complains [11].

Neck Disability Index

The NDI has become a standard instrument for measuring self-rated disability due to neck pain and is used by clinicians and researchers alike.

Each of the 10 items is scored from 0-5. The maximum score is therefore 50. The obtained score can be multiplied by 2 to produce a percentage score. Occasionally, a respondent will not complete one question or another. The average of all other items is then added to the completed items.

The original report provided scoring intervals for interpretation, as follows:

0 - 4 = no disability

5 - 14 = mild

15 - 24 = moderate

25 - 34 = severe

Above 34 = complete.

It is recommended that the NDI be used at baseline and for every 2 weeks thereafter within the treatment program to measure progress. As noted above, at least a 5-point change is required to be clinically meaningful. Patients often do not score the items as zero, once they are in treatment. In other words, it is common to find that patients will continue to score between 5 - 15 despite having made excellent recovery (i.e., they may be back to work). The practitioner should avoid the trap of "treating till zero", as this is not supportable based on current evidence [12].

Hypothesis

Experimental Hypothesis

There is significant difference between Mulligan's Technique (SNAG's) and Deep Transverse Friction Massage to reduce pain and disability in mechanical neck pain.

Null Hypothesis

There is no significant difference between Mulligan's Technique (SNAG's) and deep transverse friction massage to reduce pain and disability in mechanical neck pain.

Limitation of Study

Small Sample Size

The duration of study is so small.

Research is done only among a particular age group. It could have taken on large groups.

Only pain and disability recovery was considered.

Variables

Dependent Variable: BQ score and NDI score

This study is an experimental design in nature, a comparative study.

Sample Selection: Convenient sample of 30 subjects, according to the inclusion and exclusion criteria, randomly assigned into two groups include in the study. This study was conducted in physiotherapy OPD of CSS Hospital Subharti University Meerut.

Inclusion Criteria

1. Age 25-35 year
2. Gender both male and female
3. History of pain less than 2 months
4. Muscles spasm
5. Neck disability index more than 10%
6. Bournemouth questionnaire score for neck pain more than 3.

Exclusion Criteria

1. Age not above 35 year
2. History of any trauma to cervical spine
3. Rheumatoid arthritis
4. Degenerative disorder
5. Sign of spinal cord compression
6. Vertigo/Dizziness
7. Ankylosing spondylitis
8. Tumors
9. Vertibrobasilar insufficiency symptoms
10. Any pathology around shoulder region such as Periarthritis, Bursitis, Tendinitis.
11. Cervicogenic Headache
12. Congenital and Acquired deformity i.e Torticolis, Scoliosis, Kyphosis
13. Whiplash Injury

Tools Used in Study

1. Couch
2. Talcum
3. Cotton
4. Towel
5. Gel

Protocol

After getting their informed consent the subjects were randomly assigned into two groups. Both of two groups i.e. group A and group B have 15 patients in each. SNAGs with moist heat pack and ultrasound therapy was given to group A subjects. It was given to the patient with duration of 3 sets of 6 repetition/ session. Deep Transverse Friction Massage was given to the patients with moist heat pack and ultrasound therapy. It was given to the patient with duration of 15 minutes/session for 2-3 days in a week.

- Moist heat pack was given to the both group of patient for 10 minutes(before SNAGS and Deep Transverse Friction Massage)to reduce pain and muscle spasm and to help improve tissue extensibility.
- Ultrasound therapy was also given to the both group of patient for 8 minutes with a frequency of 1MHz by direct method in a pulse mode 1:1 with an intensity of 0.7-0.9w/cm2.
- Patients attended physiotherapy session for 6 days a week for 3 weeks.

Data Analysis

All analysis was obtained using SPSS version 13.0 (For window 7). Demo graphic data of the patients including age and gender were summarized. The dependent variables for the statistical analysis were BQ and NDI. A base line data was taken at the beginning of the study **(**pre test values) and after the completion of the treatment (post test values) to analyze the difference between the two treatment groups; independent t-test was used. A level of 0.05 was used to determine the statistical significance.

Table 1: Mean, standard deviation & s.e.m. for b.q. scores in group a& group b

S. No.	Time Periods	Group 1 (Mean±S.D.)	S.E.M.	Group 2 (Mean±S.D.)	S.E.M.
1	At 1 St Day	4.1373±.6925	.1785	4.1447±.5940	.1526
2	At 21 St Day	1.8007±.9578	.2469	1.8447±.8637	.2226

Table 2: Mean, standard deviation & s.e.m. for n.d.i. score in group a& group b

S. No.	Time Periods	Group 1 (Mean±S.D.)	S.E.M.	Group 2 (Mean±S.D.)	S.E.M.
1	At 1 St Day	.256±.0718	.0185	.26±.0875	.0226
2	At 21 St Day	.076±.0241	.0062	.0827±.0446	.0115

Table 3: Mean, standard deviation for the difference (1st – 21stday)

S. No.	Time- Difference	Group 1 (Mean±S.D.) (Difference)	Group 2 (Mean±S.D.) (Difference)
1	(1-21) Day B.Q. Score	2.3367 ±.7050	2.3±.6141
2	(1-21) Day N.D.I. Score	.18±.0641	.1773±.0645

Table 4: Comparasion B/W (1st – 21stdays) In B.Q.Scores & N.D.I. Scores (By Paired "T" Test) In Group A & Group B

S. No.	Type of Scores	Group **1 (P-**Value)	Group **2 (**P-Value**)**
1	B.Q. SCORE	.0000 (p<.05), significant	.0000 (p<.05) ,significant
2	NDI SCORE	.0000 (p<.05), significant	.0000 (p<.05), significant

*p<.05 shows a significant difference at á=.05 level of significance

Table 5: % improvemennt b/w (1st – 21stdays) in b.q. scores & n.d.i. scores in group 1 & group 2

S. No.	Type of Scores	Group 1	Group 2	Difference In % B/W The Groups
1	B.Q. Score	56.48%	70.31%	13.83%
2	N.D.I. Score	55.49%	68.19%	12.7%

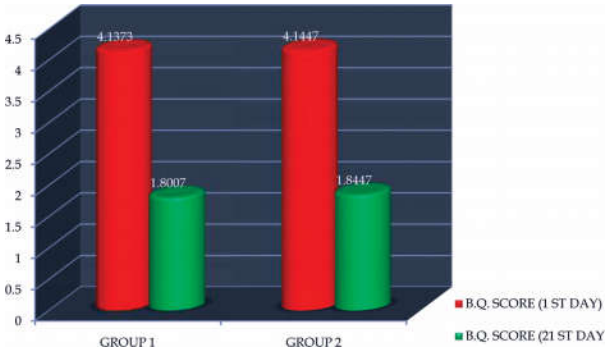

Fig. 1: The Bar chart of average values of B.Q. scores at 1st & 21 st day in two groups

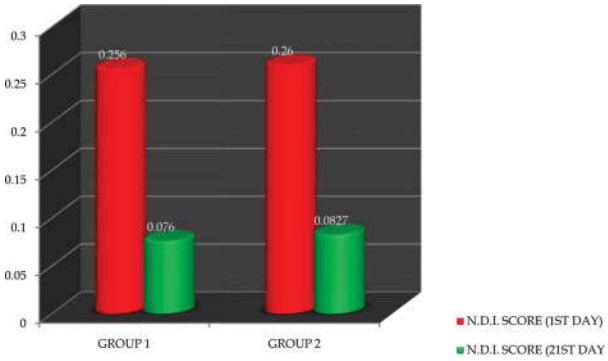

Fig. 2: The Bar chart of average values of N.D.I. scores at 1st & 21 st day in two groups

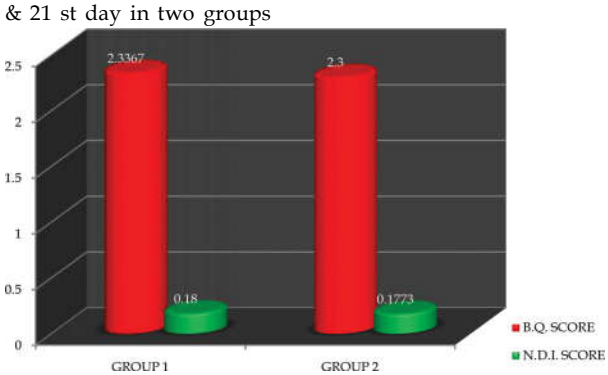

Fig. 3: The Bar chart of average difference b/w (1st- 21 st day) for B.Q. score & N.D.I. score in two groups

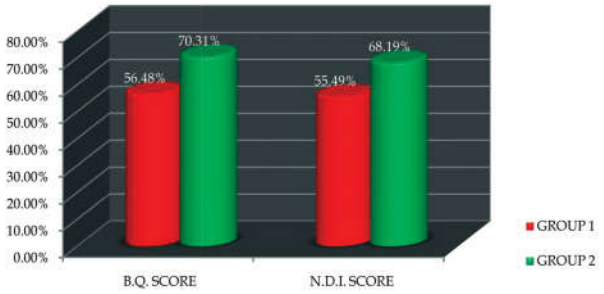

Fig. 5: The Percentage difference from (1st -21 st)day in two groups for B.Q. score & N.D.I.score

Result

A sample of size 30 (15 in SNAGs group & 15 in Deep Transverse Friction Massage group) was studied individually for BQ and NDI score at base line 1st and 21st day respectively. Table 1 presents the Mean & S.D. and standard error of Mean of SNAGs group and Deep Transverse Friction Massage group for Pre BQ and NDI score and Post BQ and NDI score respectively.

The Paired 't' test was applied to find the significant difference between Pre and Post –BQ and NDI score in SNAGs group and Deep Transverse Friction Massage group respectively, which shows a significant difference in both the groups separately at 5% level of significance (P<.05).(Table 4)

Further the BQ score increased in group B by (13.8%) in comparison to NDI score (12.7%). We can conclude that BQ score was better than NDI score. (Table 5)

Above set feature shows that Deep Transverse Friction Massage and SNAGs for the both type of score i.e. BQ and NDI. Further BQ score was better (1.13%) than NDI score for 15 patient study. The

average difference from 1st to 21st day in BQ and NDI score in shown.(Table 3) for both groups/ therapies which shows that group B, Deep Transverse Friction Massage therapy reduced pain and disability higher in comparison to SNAGs.

Discussion

The findings of this study indicated that subjects in both the groups had significant decrease in pain and disability. However, out of the two groups, the group receiving deep transverse friction massage had more improvement in both pain and disability. The reported success of deep transverse friction massage in the present study is supported by previously published trials. Lucie Brossea's et al compared the effectiveness of deep transverse friction massage, control or other treatment in managing neck pain symptoms. They concluded that deep transverse friction massage produced the more effective results in improving outcomes. A randomized controlled trial was conducted to evaluate whether is more effective than control or other treatment. The participants having age more than 18 year suffering from sub-acute and chronic neck pain divided into two groups. One group received transverse friction massage and other group received control or other treatment. The study was able to demonstrate that massage intervention is more effective for relieving for neck pain symptoms [13].

Conclusion

The study shows that the parameters utilized for the technique maneuvers were effective for improving pain and disability. Study supports experimental hypothesis H1.The significant difference was present between two types of therapies for BQ score as well as NDI score.

After seeing the data and graph, group B shows more significant improvement to reduce pain and disability. Therefore, Deep Transverse Friction Massage may be incorporated into the treatment regimen of the patient undergoing physiotherapy for the pain and disability in cervical region of spine.

Study conclude that the difference from 1st to 21st day in BQ and NDI which shown in (Table 3) for both groups/therapies which shows that group B i.e. Deep Transverse Friction Massage therapy reduced pain and disability higher in comparison to SNAGs.

Recommendation

1. NDI and BQ can be used as primary outcome to measure range of motion (ROM) of the neck movement for further study.
2. The comparison between Sustained Natural Apophyseal Glides and Deep Transverse Friction Massage techniques on other joints of spinal regions would be done for further study.
3. The comparison between Sustained Natural Apophyseal Glides and circular Friction Massage techniques would be done for further study.
4. MMT can be used as primary outcome to measure the strength of a neck muscles for further study.

References

1. Ariens GAM, Borghouts JAJ, Koes BW. Neck pain. In: Crombie UK, ed. The epidemiology of pain. Seattle, WA: IASP Press. 1999; 235-255.
2. Fejer R, Kyvik KO, Hartvigsen J. The prevalence of neck pain in the world population: a systematic critical review of the literature, Eur Spine J. 2006; 15: 834–848.
3. Ahn NU, Ahn UM, Ipsen B, An HS. Mechanical neck pain and cervicogenic headache, Neurosurgery. 2007; 60(1 Suppl 1): S21–S27.
4. G. Cooper, B. Bailey and N. Bogduk, Cervical zygapophysial joint pain maps, Pain Med. 2007; 8: 344–353.
5. Pierre Cote, J.David Cassidy, Linda Carroll. The epidemiology of neck pain: what we have learned from our population – based studies. J Can ChiroprAssoc 2003; 47(4).
6. Allan Binder. Neck Pain.BMJ Clinical Evidence. 2008; 08: 110
7. Merskey H **:** A list with definition and notes on usage recommended by the IASP subcommittee on taxonomy pain journal of Australian government national health and medical research council. 1979; 6: 249-252. Chapter 7 Page No: 35.
8. Deborah Falla, Gwendolen Jull, Trevor Russel, Bill Vicenzino, Paul Hodges. Effect of neck exercise on sitting posture in patients with chronic neck pain. Physical Therapy. 2007; 87.
9. Jack Miller B.Sc.(PT), Dip. Manip.Ther. (NZ), FCAMT, MCTA 1999. The Mulligan Concept; The Next Step in the Evolution of Manual Therapy.
10. James cyriax. "A system of orthpaedic medicine". 1991.
11. Use of the BQ in an NHS setting therapeutics. 2002; 25(3); 141: 148, http:// health and care. dh. Gov.uk/ back-and-neck pain-services/ Accessed 01-11-2012.

12. Vernon H,Mior S. The neck disability index: a study of reliability and validity.

13. Lucie Brosseau, George A, Peter Tugwell. Effectiveness of massage therapy on patient with sub-acute and chronic neck pain. 2012.