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Original Research Article

Short Term Effects of Kinesiology Taping on Mechanical Neck Pain

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ABSTRACT

Background: Improper posture due to modern lifestyle has caused many problems. It has been observed that neck pain is one of the common problems. Patients with mechanical neck pain have severe pain along with functional disability and reduction of cervical range of motion.
Aim: To find out the effect of kinesiology taping on mechanical neck pain, spasm, range of motion and additional effect of kinesio tape over exercise and manual therapy
Method: Approval was taken from the ethical committee. Total 50 subjects were recruited for study and were divided in two groups. Group A-controlled group was given exercise program and Group B was given same protocol along with kinesiology taping (space correction 35% stretch) for upper trapezius. Tape was kept for 5 days. Readings were taken before treatment and on 6th day. Numeric rating scale (NRS) for pain, cervical range of motion (ROM) in degrees and Neck disability index (NDI) were used as outcome measures.
Results: Post treatment values showed significant improvement in pain on NRS, range of motion in degrees and functional disability in both the groups. However, experimental group showed more significant improvement when compared between the groups.
Conclusion: Combination therapy (kinesio tape plus physical exercise) would work better than only exercise therapy in improving neck pain and decreasing limitation of functions.

Key Words: Mechanical neck pain, kinesio taping, Neck Disability Index, Spasm.

INTRODUCTION

Extreme sedentary lifestyle, constant stress, a limited number of options in terms of environment, and most importantly improper posture, has caused many problems, amongst which neck pain is prominent one. [1] It has been observed that two-third of population has neck pain once in their lifetime. [2] Its consequences can be seen to even affect national income, as it reduces productivity. [3] Also, the affected group is primarily working population. Mechanical neck pain can be caused due to improper or faulty posture because of poor muscular endurance. In most patients neck pain is due to mechanical factors. [4] This can result into reduction of range of motion and pain. To reduce spasm and pain in these people, effective treatment is necessary. Not attending it may result in serious consequences like long term pain. The occurrence of these issues so frequently in terms of both newer cases generated as well as the older cases repeatedly complaining the same on multiple occasions in life, makes it a priority to find a solution that

will last. There are various other techniques to treat neck pain like heat, manual therapy, physical exercises etc. Kinesio taping is new technique recently added to physiotherapist's tool box. Kinesio taping helps in body's natural healing process by allowing support and stability to muscles and joints without restricting body's range of motion. Kinesio taping may exert its effects by:

Increasing local circulation, reducing local oedema by decreasing exudative substances, providing a positional stimulus to the skin, muscle or fascial structures [5]

Purpose of study:

A large proportion of the patients presenting to the physiotherapy department are the ones with cervical pain and spasm which keeps them away from work for long time till the pain subsides. Therefore, we intend to find out an efficient and quick mode of treatment to relieve pain and spasm in neck.

Aim:

To find out the effect of kinesiology taping on mechanical neck pain and spasm.

Objectives:

To check effects of kinesiology taping on neck pain, range of motion, and evaluate additional effect of kinesiology taping over manual and exercise therapy.

Significance of study:

Significance of this study is to find out effectiveness of treatment for mechanical neck pain by Kinesio taping along with conventional exercises.

MATERIALS AND METHODS

Approval was taken from the ethical committee; notice regarding participation in the study was displayed. A written consent was taken from the subjects in their language. Total 50 subjects were recruited for study and divided in two groups (Group A- exercise protocol, Group B-exercise protocol along with kinesio tape) of 25 each by computer generated randomization technique. It was interventional assessor blinded study. Age group for study was 18 to 40 years.

Materials and equipments used-

Numerical rating scale for pain, [5] Goniometer for range of motion, [7] Neck disability index, [8] Kinesiology tape.

Inclusion Criteria consisted-

Patients with acute cervical/neck pain (NRS from 4-7) and patients with cervical spasm (upper trapezius muscle).

Exclusion Criteria-

Pain due to soft tissue injury, bony injury, patients with chronic pain, radiating pain and patients with any skin allergy or skin infection

Outcome Measures-

Pain: Numerical rating scale(0 to 10), Cervical ROM in degrees, Functional disability: Neck Disability Index.

Treatment for Group A:

Treatment received by control group for 5 days consisted isometric exercises for neck muscles: against manual resistance by therapist for 5 sec - 10 reps, core strengthening (chin in exercise): 10 reps, trapezius stretching: passively by therapist with hold of 5 sec, retraction in prone with shoulder extension, Myofascial release technique.

Treatment for Group B:

Treatment received by experimental group included same exercise protocol as that of group A along with kinesio tape at upper trapezius. The Kinesio tape used for study was of kinesio tex (width 5cm, thickness of 0.5mm made from porous cotton fiber) which was water proof and adhesive. Tape was used according to the treatment area. Blue and pink colour tapes were used. Technique for application was space correction with 25-35% stretch in middle third of the tape for upper trapezius muscle. Tape was kept for 5 days. Readings were taking pre treatment and on the 6^{th} day after removal of tape.

Statistical Analysis:

Analysis of data was performed using Statistical Package for Social Sciences (SPSS version 16). Within the group, non-

parametric data, pre and post treatment values were calculated using Wilcoxon signed rank test for pain on NRS and NDI and paired 't' test for ROM. Between the groups, Mann Whitney U test was used for measuring changes in post values of pain and NDI whereas unpaired 't' test for ROM in degrees. The level of significance was set as $p<0.05$.

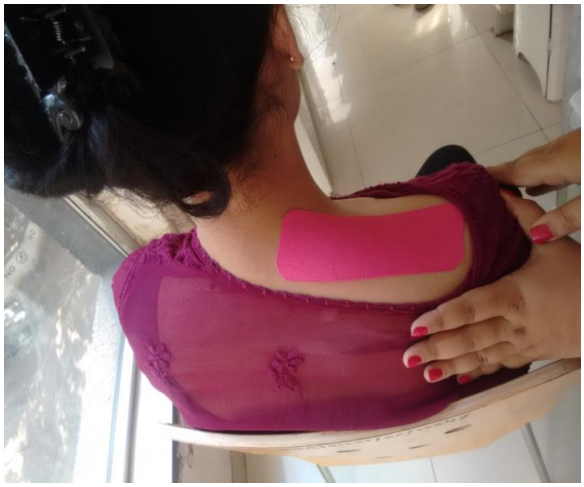


Figure: 1 Application of kinesio tape for upper trapezius muscle.
Technique: Space correction with 25-35% stretch.

RESULTS

No significant difference was found in pre treatment assessment between groups in all outcome measures.

Table: 1 Group A (Non KT group)

	Pre	Post	p value
Pain(on NRS)	5.8±1.35	3±1.47	0.001
ROM(in degrees)			
Flexion	40.8±6.12	44±5.59	0.00
Extension	65.36±4.6	67.1±4.5	0.016
Right lateral flexion	39.4±4.9	41.6±4.19	0.00
Left lateral flexion	39.5±4.42	41.36±3.40	0.001
Right rotation	70±5.08	73.6±4.6	0.00
Left rotation	74.8±3.6	76.6±4.01	0.00
NDI	24.5±6.83	19.2±6.43	0.001

p: probability

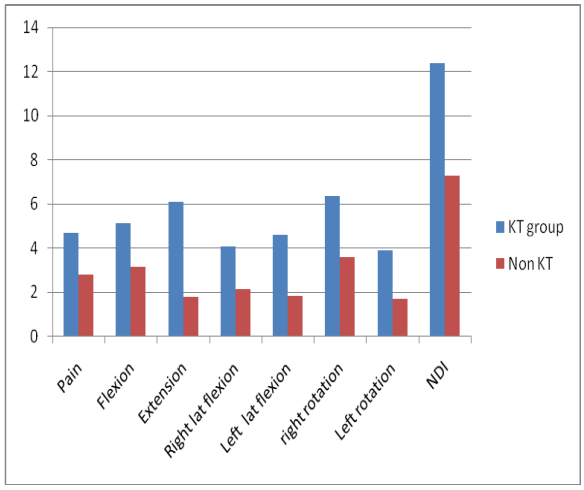
Table: 2 Group B (KT group)

	Pre	Post	p value
Pain(on NRS)	6.2±1.22	2.42±1.00	0.001
ROM(in degrees)			
Flexion	40.8±5.74	45.41±3.55	0.000
Extension	59.26±5.80	65.08±3.08	0.013
Right lateral flexion	36.27±6.12	40.12±4.00	0.000
Left lateral flexion	36.39±5.24	40.76±3.89	0.000
Right rotation	64.6±99.98	70.73±8.00	0.018
Left rotation	71.4±11.2	22.6±9.2	0.000
NDI	22.66±9.27	12.70±7.25	0.000

p: Probability

Table No. 3 Difference between experimental and control group:

Variables	Mean ± SD Group (A) post t	Mean ± SD Group (B) post t	p value
Pain (NRS)	3±1.47	2.42±1.00	0.000
ROM (in degrees)			
Flexion	44±5.59	45.41±3.55	0.01
Extension	67.1±4.5	65.08±3.08	0.006
Right lateral flexion	41.6±4.19	40.12±4.00	0.014
Left lateral flexion	41.36±3.40	40.76±3.89	0.073
Right rotation	73.6±4.6	70.73±8.00	0.021
Left rotation	76.6±4.01	22.6±9.2	0.019
NDI	19.2±6.43	12.70±7.25	0.000



Graph 1
Red bar shows improvement in all the variables i.e. reduction in pain on NRS, improvement in range of motion in degrees and decreasing functional disability score in control group.

Blue bar shows improvement in all the variables in experimental group.

As it can be concluded from the values in table 1 and 2 that there was significant difference within the group in pre and post treatment.
Also it can be seen in the graph that there was significant difference in pre and post treatment between the groups showing more efficacy of experimental group.

DISCUSSION

Kinesio tape shows effects by increasing circulation and providing positional stimulus to skin. It helps in relieving abnormal muscle tension which

helps in improving function of muscle and reducing pain. Exercise therapy helps in reducing neck pain and functional disability caused due to mechanical neck pain. [9] However there is a significant difference between pre and post assessment in both groups in all variables (pain on NRS, cervical range of motion in degrees and functional disability). Also it was observed that there was significant difference between post treatment means of control group and experimental group in favour of experimental group.

Decrease in pain on NRS was from 6.2 to 2.4 in experimental group, whereas in control group from 5.8 to 3. Significant reduction in functional disability from score of 22.66 to 12.70 in KT group compared to non KT group 24.5 to 19.2.

This shows that kinesio tape along with exercise protocol and manual therapy is better than only exercises. Hence this study shows that by additional effect of kinesio tape there was significant improvement in cervical range of motion in degrees, reduction in pain on NRS and functional disability in patients with mechanical neck pain.

The results of present study are in agreement with study by B. Kelle in 2015 on the effect of kinesiology taping application for acute non-specific low back pain. [10] Patients with low back pain were randomised into two groups: kinesiology taping group and control group. The interventional group was given information and reassurance along with kinesiology taping, whole the control group received information and reassurance only. All the participants were permitted to use as needed doses of paracetamol. Application of kinesiology tape was at the most painful area of low back for 12 days. Outcome measures used were numeric rating scale and Oswestry Disability Index. Pain and disability were assessed at baseline; follow up after 12 days and at 4 weeks. For the first 12 days, number of paracetamol tablets consumed daily was recorded. After 12 days of treatment, results showed significant improvement in pain and Oswestry Disability Index in both the groups. However, improvements in kinesiology taping group were superior. It was observed that kinesiology taping group reached pain control before the control group and also consumed less paracetamol. At fourth week, pain intensity was significantly reduced in kinesiology taping group. Hence, they concluded kinesiology taping shows significant improvements in pain and disability.

Also, similar results were found in study done by Javier Gonzalez-Iglesias studied in the year 2009 on the topic of Short-Term Effects of Cervical Kinesiology Taping on Pain and Cervical Range of Motion in patients with Acute Whiplash Injury. [7] Cervical range of motion and pain was assessed at baseline, immediately after treatment and follow up was done after 24 hours. It was concluded that patients of whiplash injury treated with proper application of kinesiology tape with accurate tension showed important improvement immediately after the application and at a 24 hour follow up.

Reduction in pain and spasm, improvement in range of motion in degrees and decrease in functional disability is essential for avoiding severe long term consequences. The additional effect of kinesio tape along with exercise protocol is more effective treatment in patients with mechanical neck pain.

CONCLUSION

Therefore we can conclude from the study that combination therapy would work better than only exercise therapy in improving neck pain and decreasing limitation of functions for mechanical neck pain as a result of which there is better compliance of patients to perform exercise which therefore helps in faster recovery.

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