



EFFECT OF PIRIFORMIS STRETCHING AND NEURAL TISSUE MOBILIZATION IN PIRIFORMIS SYNDROME.

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ABSTRACT

Background: The purpose of this study was to assess the effect of Piriformis stretching and neural tissue mobilization in Piriformis syndrome.

Method: 30 subjects with Piriformis syndrome were included in this study. Following the data collection, the subjects were allotted into 2 groups by simple random sampling. Group A –Experimental group (Piriformis stretching, ultrasound and hot moist pack, neural tissue mobilization) B- Conventional group (Piriformis stretching, ultrasound and hot moist pack) Before and after the treatment protocol subjects were assessed by Roland morris back questionnaire, VAS, Hip flexion ROM these outcome measures were analysed.

Result: statistical analysis was performed using t-test and unpaired t-test. Intra group comparison (within group) was analysed and statistically using paired t-test for RMBQ, VAS and Hip flexion ROM. This shows there is extremely significant effect in group A as compare to group B, while inter group comparison (Between groups) statistically showed that during pre intervention there was no significant difference in RMBQ and VAS while very significant difference in hip flexion ROM and during post intervention there was extremely significant difference in RMBQ, VAS and hip flexion ROM.

Conclusion: From this study, it can be concluded that there was extremely significant improvement in subjects who underwent experimental group statistically and clinically. Overall there was significant difference found between the groups. Hence this study accepts the alternative hypothesis (H¹).

KEYWORDS : Piriformis syndrome, neural tissue mobilization, Piriformis stretching.

Introduction

Piriformis syndrome is neuritis of branch of sciatic nerve caused by pressure of an injured or irritated piriformis muscle¹. In about 7% to 21% of studied cases, the sciatic nerve, actually penetrate the muscle^{3, 4}. It is also known as "Deep gluteal syndrome"². It is most common condition of sciatica of non- disc origin. There are more women diagnosed with piriformis syndrome than men, with a female-to- male ration of 6:1. This ration can be explained by the wider quadriceps femoris angle (Q angle) in the oscoxae of women⁵.

Piriformis syndrome characterised by pain, tingling and numbness in the buttocks and down the leg along with sciatic nerve. Symptoms are worsened with crossed leg sitting or ambulation⁴. It is frequently goes unrecognised or misdiagnosed in clinical practice.

Stretching is a form of exercise in which a specific muscle or tendon is deliberately flexed or stretched in order to improve the muscle felt elasticity and achieve comfortable muscle tone, To improve joint range of motion (flexibility), decrease muscle tension, improve circulation, relative muscle pain prevent injury these some are common aims of stretching^{12, 13, 14, 15}.

Neural tissue mobilization is one of the many methods of manual therapy of soft tissue conditions, and more specifically neural tissue and tissue surrounding the nervous system. Neural tissue mobilization is a set of techniques designed to restore plasticity of the nervous system, defined as the ability of nerve surrounding structure to shift in relation to other such structure. Moreover, it contributes to restoring the ability of neural tissue itself to stretch and tension, and stimulates the reconstruction of normal physiological function of nerve cells¹⁶. Neural tissue mobilization helps in improving intra neural mobility, axoplasmic blood flow, intra neural blood flow, mechano-sensitivity there by reduction in pain and inflammation.

So, there is need of neural tissue mobilization and stretching along with conventional method to better recovery with reduction of pain, spasm, and inflammation and disability rate along with improvement of range of motion.

Materials and methodology

An experimental study was conducted at physiotherapy department of Krishna College of physiotherapy. A total 30 patients were equally divided into two groups using simple random sampling (Group A and B). Group A was given conventional treatment with neural tissue mobilization and group B given conventional treatment. Patients were selected according to inclusion and exclusion criteria. Written informed consent was taken and whole study was explained to them. Inclusion criteria were as follows: 1) Age group between 20- 40 years.2) both male and female participants. 3) Gluteal pain is radiates through the posterior of thigh and lower limb 4) Patient with straight leg raise positive below 60 degree.5) Diagnosed sub acute and chronic piriformis syndrome. Exclusion criteria were as follows: 1) Intermittent vascular claudication 2) Spondylolisthesis.3) History of vertebral fracture.4) History of spinal surgery.5) TB spine, rheumatoid disease. 6) Leprosy.

Group A (experimental group) and following treatment protocol was followed

- Moist hot pack
 - Piriformis stretching
 - Ultrasound
 - Neural tissue mobilization
- Group B conventional group and following treatment protocol was followed
- Moist hot pack
 - Piriformis stretching
 - Ultrasound

Statistical analysis

The data was entered into Microsoft office excel 2016. The data was analysed using instant software. Descriptive statistics were used to analyse baseline data for demographic data. Pre and post treatment protocol was analysed using paired t-test and unpaired t-test.

Results:

30 subjects of piriformis syndrome meeting the inclusion criteria were included in study. Following the data collection, the subjects were allotted into two groups , Group A- neural tissue mobilization and conventional physiotherapy treatment and group B – Conventional physiotherapy treatment. During 2 week of protocol

15 subjects (6 males and 9 females) were in group A neural tissue mobilization and conventional physiotherapy treatment.

AGE DISTRIBUTION

Groups	Mean Age (Yrs)
Group (A)	26.13
Group (B)	25.06

Table no 1: Age Distribution

Age Group eligibility both male and female with 20 to 40 yrs with the mean age of individual in Group A was 26.13 and Group B was 25.06.

GENDER DISTRIBUTION

Groups	Group A	Group B
Males	6	8
Females	9	7
Total	15	15

Table no 2: Gender Distribution

A total of 30 subjects were taken for study. Out of 30 subjects 14 were males and 16 were females.

INTENSITY OF PAIN (VAS):

Groups	Pre-interventional Mean ± SD	Post-interventional Mean ± SD
Group (A)	9.06 ± 0.79	0.73 ± 0.70
Group (B)	9.13 ± 0.83	2.33 ± 0.97
P Value	0.8247	<0.0001

Table no 3: Comparison of intensity of pain score (VAS)

On comparing the pre interventional values, the results between the two groups using unpaired t test revealed that the score:

VAS for group A and group B has not statistically significant with p values of 0.8247.

On comparing the post interventional values, the results between the two groups using unpaired t test revealed that the score:

VAS for group A and group B has statistically extremely significant with p values of <0.0001

HIP FLEXION (ROM):

Groups	Pre-interventional Mean ± SD	Post-interventional Mean ± SD
Group (A)	15.93 ± 2.81	53.2 ± 2.17
Group (B)	19.4 ± 2.79	38.93 ± 4.62
P Value	0.0021	<0.0001

Table no 4: Comparison of hip flexion (ROM)

On comparing the pre interventional values, the results between the two groups using unpaired t test revealed that the score:

Range of motion of hip flexion (SLR) for group A and group B has very significant with p values of 0.0021.

On comparing the post interventional values, the results between the two groups using unpaired t test revealed that the score:

Range of motion of Hip flexion (SLR) for group A and group B has statistically extremely significant with p values of <0.0001

ROLAND MORRIS BACK QUESTIONNAIRE (RMBQ):

Groups	Pre-interventional Mean ± SD	Post-interventional Mean ± SD
Group (A)	13.73 ± 1.28	1.6 ± 0.82
Group (B)	14.46 ± 1.18	4.4 ± 1.54
P Value	0.1150	<0.0001

Table no 5: Comparison of Roland Morris back questionnaire

score(RMBQ)

On comparing the pre interventional values, the results between the two groups using unpaired t test revealed that the score:

RMBQ for group A and group B has not statistically significant with p values of 0.1150.

On comparing the post interventional values, the results between the two groups using unpaired t test revealed that the score:

RMBQ for group A and group B has statistically extremely significant with p values of <0.0001.

Discussion

The purpose of present study was to find out the effect of piriformis stretching and neural tissue mobilization in piriformis syndrome. The treatment programme is designed for patient with piriformis syndrome to reduce the pain, disability and improvement of hip flexion ROM.

This study was undertaken considering all mentioned points and sole of aim of the study was to study the effect of piriformis stretching and neural tissue mobilization in piriformis syndrome. Based on different studies, the subjects were treated with neural tissue mobilization as well as conventional method.

Effects of neural tissue mobilizations are It helps in improving intra neural mobility, axoplasmic blood flow, intra neural blood flow, mechano sensitivity there by reduction in pain and inflammation. So there is increasing ROM of hip flexion and reduction of pain and disability.

In this study, 42 subjects had participated who were diagnosed with piriformis syndrome. Out of which 12 patients did not come for follow up out of 30 involved patients 16 were females and 14 were males. The mean age of subjects included in group A was 26.13 and group B was 25.06. Study place was Krishna hospital, karad.

Patients were evaluated and were divided into two groups by simple random sampling allocation. Group A included 15 subjects and was given neural tissue mobilization and conventional treatment including piriformis stretching, hot moist pack, and ultrasound therapy and group B includes conventional treatment includes piriformis stretching, hot moist pack, and ultrasound therapy .The subjects were given the routine physiotherapy treatment for period of 5 days in week for 2 week.

Pre treatment outcome measures were RMBQ, VAS & Hip flexion ROM. The specific treatment protocol was followed as per the group for period of 5 days in week for 2 week. And post treatment outcome using RMBQ, VAS & hip flexion ROM were documented accordingly.

Intra group comparison (within group) was analysed and statistically using paired t-test for RMBQ, VAS and Hip flexion ROM. This shows there is extremely significant effect in group A as compare to group B, while inter group comparison (Between groups) statistically showed that during pre intervention there was no significant difference in RMBQ and VAS while very significant difference in hip flexion ROM and during post intervention there was extremely significant difference in RMBQ, VAS and hip flexion ROM.

In this study, an attempt was made to analyse the effect of piriformis stretching and neural tissue mobilization in piriformis syndrome. Patient was treated according to protocol and there was improvement seen in hip flexion ROM and reduction of pain as well as disability of patients with piriformis syndrome.

The results show that extremely significant improvement with neural tissue mobilization along with conventional physiotherapy treatment in patients with piriformis syndrome as compare to

conventional Physiotherapy treatment alone.

In conclusion, The results of current study shows that combination of neural tissue mobilization along with conventional physiotherapy treatment has extremely significant effect over conventional physiotherapy treatment alone in management of piriformis syndrome. We expect that neural tissue mobilization with our conventional treatment gives better results in the piriformis syndrome patients. Further study subjects can be assessed with electromyography as outcome measure and long term follow up may prove further efficacy of the treatment.

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