Section A-Research paper
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EFFECTIVENESS OF MANUAL TRACTION AND STRETCHING ALONG WITH CONVENTIONAL PHYSIOTHERAPY IN PATIENTS WITH CHRONIC CERVICAL RADICULOPATHY

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ABSTRACT:

Background: Cervical radiculopathy is a pain and sensorimotor deficit syndrome that is defined as being caused by compression of a cervical nerve root. . The location and patterns of symptoms will vary, depending on the nerve root level affected, and can include sensory and motor alteration if the dorsal or ventral nerve root is involved. Conservative treatment particularly physical therapy, is generally recommended as initial treatment for patients with cervical radiculopathy. Physical therapy management program, including manual traction, stretching and conventional therapy used to treat cervical radiculopathy.

Aim: To find the effectiveness of manual traction and stretching in patients with chronic cervical radiculopathy.

Methodology : This is randomized control study in which 30 subjects with chronic cervical radiculopathy. Subjects were selected according to inclusion and exclusion criteria. A control group received conventional exercise programs and the study group receive manual traction and stretching in additional to conventional exercise program. The outcome measures were cervical range of motion, neck disability test, VAS.

Results : The mean difference of over the study period was 3.9 in the study group and 1.2 in the control group, indicating and improvement of 2.6 points (P=0.017) in the study group.

Conclusion: The study showed that in patients with chronic cervical radiculopathy manual traction and stretching along with exercise is effective in short term improvement of pain , neck function and neck ROM

Keywords : chronic cervical radiculopathy, manual traction, stretching, neck disability index

INTRODUCTION

Cervical radiculopathy is a pain and sensorimotor deficit syndrome that is defined as being caused by compression of a cervical nerve root. It is a common clinical diagnosis classified as a disorder of a nerve root and most often is the result of disc herniation, spondylosis, instability, trauma or sometimes tumors[1]. Nerve roots C6 and C7 are most commonly affected. Radicular pain develops as change in vascular response ,intraneural edema and inflammatory mediators combined in response to nerve compression. Shoulder and neck pain are more common presenting complaints for primary care providers, orthopedists and sport medicine physicians[2]. The based incidence of cervical radiculopathy is 83 per 100,000 person, making it less than lumbar radiculopathy. cigarette smoking, axial load bearing and prior lumbar radiculopathy may also predispose patient to cervical radiculopathy[3cc. Although patients with cervical radiculaopthy may have complaints of neck pain, the most frequent reason for seeking medical assistance is arm pain. The usual complaint of patient with tingling, pain, numbness and upper extremity weakness which results in significant function limitation and disability .The goal for clinicians should be the rapid diagnosis and treatment of this condition in order to facilitate the return of the patient to their normal state of health[4]. Most of the time cervical radiculopathy appears unilaterally, however it is possible for bilateral symptoms to be present if severe bony spurs are present at one level, impinging/ irritating the nerve root on both side. If peripheral radiation of pain, weakness or pin and needle are present the location of the pain will follow back to the concerned affected nerve root [5]. Cervical radiculopathy may also occur without an identifiable cause. Other conditions that can mimic cervical radiculopathy which should be included in differential diagnosis are upper extremity nerve entrapment, primary shoulder disease, brachial plexus disorder and peripheral neuropathies. This article focuses on radiating pain secondary to compression of cervical nerve root by herniated disc material or pain that is associated with cervical spondylosis.

Research suggests that patients treated conservatively experience superior outcomes to patients treated surgically[6].

Conservative treatment particularly physical therapy, is generally recommended as initial treatment for patients with cervical radiculopathy. Physical therapy includes, but is not limited to therapeutical exercises mechanical and manual cervical traction and cervical collar. Previous studies also found that vertebral mobilization and manipulation of cervical spine were effective in improving pain, neck movement and function in patients with cervical radiculopathy[7].

The purpose of this study is to describe both short and long term patient outcomes for a series of patients with cervical radiculopathy who were treated with a physical therapy management program, including manual traction, stretching and conventional therapy.

METHODOLOGY

An approval for the study was obtained from protocol committee an institutional ethical committee of Krishna Vishwa Vidyapeeth 'Deemed to be University', Karad, Maharashtra. This is randomized control study in which 30 subjects with chronic cervical radiculopathy were selected. The inclusion criteria were age group between 30-60, both male and female and subject clinically diagnosed with chronic cervical radiculopathy. The exclusion criteria includes neck pain ,muscle weakness and previous cervical surgery . The procedure was explained and consent was taken from the participants. The patients were assessed on basis of cervical range of motion, visual analogue scale and neck disability index. Patients were randomized into two equal groups. A control group received conventional exercise programs and the study group receive manual traction and stretching in additional to conventional exercise program. Assessments were conducted after 6 weeks assessment include cervical range of motion, neck disability index and visual analogue scale.

INTERVENTION

Conventional exercises program

This included isometric exercises and range motion exercises of neck. Isometric exercises were applied for 10 second with 10 repetitions.

Manual cervical traction

Cervical spinal traction is used to relieve pain associated with neck nerve root compression or neck muscle spasm. The head is lifted to a 25 to 30 degree angle to stretch the muscle and

soft tissues of the neck. This opens up the spaces between the upper vertebrae which release tension and pressure on neck structures.

- The head and neck are held in the hand of practitioner and gentle traction of pulling force is applied.
- Intermittent period of traction can be applied, holding each position for about 10 seconds.

Cervical stretching

1) Upper trapezius stretch

   Begin by retracting patients head back into chin tuck positions. Therapist one hand should be placed to stabilized the head and upper thorax. With therapist other hand when patients head towards patients opposite shoulder and perform it on both sides.

2) Levator scapula stretch

   Therapist one hand placed on the shoulder and other hand should be placed on the back of the head, then ask the patient to bent his head down first and then move towards the both sides. Therapist should give pressure to head with other hand.

RESULTS

Table 1. Outcome measures in both groups at baseline

Outcome measure	Study group	Control group	Mean difference
Cervical ROM (degree)			
Flexion	48±11.4	43±11.9	5(-3.6,14.5)
Extension	52±19.5	48±15.9	-4(-17.7,9.9)
Rotation (affected)	59±13.3	57±11.8	-2(-7.0,12.6)
Rotation (unaffected)	61±8.2	62±10.3	-1(8.7,5.7)
Lateral flexion(affected)	33±8.7	32±8.1	-1(-53,7.8)
Lateral flexion(unaffected)	34±5.7	39±7.8	5(-0.8,9.8)

VAS			
0-10	6.4±1.3	6.4±1.7	0(-1.2,1.2)
NDI			
0-50	36.5±7.2	35.3±13.9	1.2(-7.4,9.7)

The mean of the outcome measures at baseline are presented in table 1

Table 2. Mean change from baseline in within group and in between group for the outcome measures immediately and 6 weeks after intervention.

Outcome measure	Within group mean difference		Between group mean difference
	Study group	Control group	
Cervical range of motion			
Flexion			
Immediately	4(-3.4,10.1)	4(-2.6,11.0)	-0.8(-10.4,8.7)
Week 6	5(-3.1,11.5)	3(-3.4, 12.2)	0.3(-8.3,10.1)
Extension			
Immediately	0(-5,8, 6.1)	-3(9.2, 2.7)	3.1(-5.3, 11.5)
Week 6	10[a](1.3,17.7)	-4(-2.4,11.2)	0.3(-9.3,10.0)
Rotation (affected)			
Immediately	6[a](0.6,12.1)	-2(-8.1,3.4)	8.7[a](0.6,16.8)
Week 6	12[a](7.7, 8.3)	-3(-7.9,1.8)	15.6(8.8,22.5)
Rotation (unaffected)			
Immediately	3(-3.4,56.9)	0(-5.6,59)	2.1(-6.0,10.2)
Week 6	4(-1.7,8.3)	1(-4.2, 5.9)	2.4(-4.7,9.5)
Lateral flexion(affected)			
Immediately	7[a](1.6,11.4)	0(-4.8,5.0)	6.5(-05,14.4)
Week 6	8[a](4.3,14.4)	-1(-1.4,14)	9.5[a](2.3,16.8)
Lateral flexion(unaffected)			
Immediately	-1(-5.6,4.1)	0(-4.2,3.6)	-1(-5.6,4.5)
Week 6	0(-4.2, 4.8)	-1(-5.4,4.5)	1.5(-5.9,7.6)

VAS (0-10)			
Immediately	1.7a(0.7,3.8)	0.3(-0.5,1.4)	-1.3[a](-1.8,-1.0)
Week 6	4.9[a](3.4,5.2)	1.2(-0.3,3.6)	-2.6[a](-4.6,-0.7)
NDI (0-50)			
Week 6	15.2[a](7.4,24.0)	2.5(-4.3,8.1)	-14.0[a](-23.3,-4.3)

The difference in the outcome measures over the study period between the study group and the control group is shown in table 2. Overall, there were improvements in the study group compared with the control group in the VAS, NDI and Cervical Range of Motion. For pain as measured by VAS, a group -by- time effect ($p<0.050$) was found. The mean difference of over the study period was 3.9 in the study group and 1.2 in the control group, indicating and improvement of 2.6 points (P=0.017) in the study group.

According to NDI there was a group by time effect ($p<0.050$). And the mean difference of NDI was 16.2 in study group and 2.4 in the control group indicating an improvement of 14.0 points(P=0.006) in the study group.

According to cervical range of motion there was a group by time interaction for extension ($P<0.050$), rotation to affected side ($P<0.001$), and lateral flexion to the affected side($P<0.050$). No group by time interaction was found for flexion (P=0.9670, rotation to the unaffected side(P=0.788) and lateral rotation to the unaffected side(P=0.742). There was an increase of 14.0^0 extension(P=0.021), 15.60^0 rotation to the affected side ($P<0.001$) and lateral flexion to the affected side (P=0.012) compare to control study.

DISCUSSION

This study has investigated that the effect of manual traction and stretching along with conventional therapy in patients with chronic cervical radiculopathy. Manual traction and stretching used in the study group shown improvement in pain intensity neck function active cervical range of motion. Followed by manual traction and stretching, observed a reduction of mechanical pain. Some recent studies has identified accurate method for clinical diagnosis and appropriate conservative management of cervical radiculopathy appears to remain a clinical enigma [8]. Another studies conducted by Sterling et al.[9]and Lopez-Lopez et al.[10] have investigated the effect of physical therapy in patients with cervical radiculopathy

found improvement in neck function and cervical range of motion. The result of present study are similar to previous studies on patience with cervical radiculopathy in which they used manual therapy with or without other technique [11,12,13].

In this current study disability related to neck pain was measured by neck disability index and decreased after stretching and cervical range of motion exercises (mean difference 16.2 points) . This progression was greater than the MCID of 8.5 points or the MDC of 13.4points[14]. The present study findings are similar to the finding of another studies on cervical radiculopathy shown changes of 17.8 -22.4 points [15,16].

Cervical range of motion improved after manual traction . This improvement in range of motion may due to decrease in pain and improvement in muscle function. Previous study showed improvements in extension and bilateral bending after 4 and 8 weeks of treatment[17]. Our study did not find relationship between the measures such as VAS and NDI.

Therefore manual traction and stretching along with conventional therapy benefited the chronic cervical radiculopathy patients, males and females. Statistically it was found that the result showed significant difference before and after 6 weeks of treatment.

CONCLUSION

On the basis of the result of the study, it can be concluded that there is an increase in ROM and improvement in NDI and decreased in pain intensity. Therefore the study showed that in patients with chronic cervical radiculopathy manual traction and stretching along with exercise is effective in short term improvement of pain , neck function and neck ROM.

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