# Original Article

# Evaluation of effect of home cervical traction on patients with cervical spondylotic radiculopathy

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## Abstract

***Background:*** *Patients with cervical spondylotic radiculopathy is more responding by application of cervical traction with NSAIDs, exercise and ADL than treating with NSAIDs, exercise and ADL.* ***Objectives:*** *Study is to know the effect of home cervical traction on patients with cervical spondylotic radiculopathy.* ***Materials & Methods:*** *A randomized controlled trial was conducted in the department of physical medicine and rehabilitation, BSMMU during the period of 3-9-2012 to 2-9-2013 to find out the effect of home cervical traction on patient with cervical spondylotic radiculopathy.* ***Results:*** *A total of 120 patients with cervical spondylotic radiculopathy attended the department. Sixty patients was treated with NSAID, Isometric neck muscle strengthening exercise, Activity of daily living advice (ADL) and soft cervical collar, other 60 patients was treated with NSAID, Isometric neck muscle strengthening exercise, Activity of daily living advice (ADL) and soft cervical collar with home cervical traction. The patients were treated for 6 weeks. There was marked improvement in both groups after treatment. But there was significant difference regarding improvement in treatment with home cervical traction (p=0.432).* ***Conclusion:*** *So, it can be concluded that the home cervical traction is effective in cervical spondylotic radiculopathy. Male and female ratio was 1.9:.6. In respect of occupation the maximum patient was housewife (27.5%) followed by businessman (25. 8%). Highest number of patients is in the 41-50 years age group.*

***Keywords:*** *CSR, HCT.*

***Date of received:*** *16. 12. 2017*

***Date of acceptance:*** *03. 04. 2018*

***KYAMC Journal.2018;9(2): 65-68.***

## Introduction

Pain in the neck or from the neck is the most common musculoskeletal disability confronting the physiatrist.[1] Cervical spondylosis is a common degenerative condition of the spine. Cervical spondylosis is a clinical syndrome in which the spine degenerates to such extent that symptom arise.[2] It is characterized by osteophytosis, narrowing of inter-vertebral joint spaces and foramina and sometimes compression of nerve root and spinal cord. It most frequently affects adult in their fourth and fifth decade of life. Cervical radiculopathy has a annual incidence rate of 107.3 per 100000 for man .63.5 per 100000 for women with peak 50-54 years of age. The most common cause of cervical radiculopathy (70-75%) of cases is foraminal encroachment of spinal nerve due to combination of factor such as decreased disc height and degenerative changes of uncovertebral joint anteriorly and zygagophyseal joint

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posteriorly.[3] Neck pain is not necessarily associated with radiculopathy and frequently can be absent. Patient with radiculopathy can have upper limb numbness or weakness in addition to pain. Pain is usually worse with extension and rotation and improved with neck flexion. The radicular patient typically displays decreased active cervical range of motion. Upper limb weakness can be present when there is significant motor root compromise but must be differentiated from pain related weakness.[4] There can be decreased sensation of pain, light touch and vibration. Physiotherapy is the mainstay of treatment. Patient usually being maintained in relative comfort by various measures including exercise, gentle manipulation and intermittent traction.[5] Cervical traction applies a distractive force across the cervical intervertebral disc space. It is commonly used by patient with cervical radiculopathy. It is presumed to work via decompression of cervical soft tissues and intervertebral discs. Twenty-five pounds of force are required to distract the mid cervical segment when applied 25 min at an angle of pull of 24 degrees. Cervical traction can be executed with an intermittent heavy weight or a continuous light weight regimen in the therapy gym or home setting.[6] In another study it was notice that physical therapy (SWD and Cervical traction) could be helpful for the treatment of neck pain but cervical traction may have its better result than SWD.[7]

# Materials and Methods

Randomized clinical trial. Department of Physical Medicine & Rehabilitation, Banghabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka. The study period of this study came out from 3-9-12 to 2-9-13. 120 patients of cervical spondylosis with radiculopathy were enrolled in this study program. Patients who are suffering by the features of cervical spondylosis with radiculopathy both in clinical and radiological findings were included in this study. The selected patients were divided in two groups.

**1. Group A:** NSAID + ADL + Cervical collar (control group)
**2. Group B:** NSAID + ADL+ cervical collar + Home Cervical Traction.

**Selection of Patients**

**Patients Inclusion Criteria:**

a) Patients of both sexes were included in this study. b) Patient's age range for the study was from 30 Years to More than 60 years. c) Age of Patients were ≥ 30 years and ≤ 70 years Patient with neck pain due to cervical spondylotic radiculopathy.

**Patients Exclusion Criteria:**

a). Patients below 30 years and above 70 years. b). Patients having severe acute neck pain. c). Patients having cervical spondylosis with features of Myelopathy. d). Patients who were having any possibilities of cervical spinal instability.
e). Patient who were suffering from any malignant disease or having skin lesion at the neck. f). Patients who were suffering from Ischemic heart disease and other serious systemic illness. g). Clinical examination: A through clinical examination of cervical spine and upper limbs which included general examination, locomotors examination, and neurological examination was done to find out the cause of neck pain clinically. The lower limb also examined for abnormal sign. All signs were recorded accordingly and a clinical diagnosis was made. h). Investigation: Full haematological examination, urine R/M/E, X-ray cervical spine (A/P, Lateral and both oblique view) were done for all patients. Radiological investigation of the chest, blood sugar estimation, RA test done in some patient where indicated. Confirmed diagnosis was made to find out the cause of neck pain. MRI was done in selected patient who were not responding to conservative treatment in the form of intermittent cervical traction.

# Results

**Demographic Information**

A total of 120 patients with cervical spondylotic radiculopathy were studied during a period of one year from 3.9.2012-2.9.2013. Among these patients Percentage male and female was 65 and 35 percent respectively. Male female ratio was 1.9:1. (Table I).

**Table I:** Base line characteristics of patients

| Sex | Number of patients | Percent |
|---|---|---|
| Male | 78 | 65 |
| Female | 42 | 35 |
| Total | 120 | 100 |

**Age Distribution**

All the cases were managed as out patients. The age range of the patients in the study varied from minimum 30 years and maximum 70 years irrespective of sexes. The mean age of the patients of both sexes was 47.05 ± 8.9 years. Out of total 120 patients irrespective of sexes it was observed that most patients that is 40 (33%) belonged to age group 41 to 50 years (Figure 1)

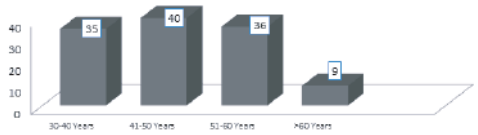


**Figure 1:** Age Distribution

**Occupation Classification**

Out of the 120 patients 33 (27.6%) which is the most in number was housewife. 31 (25.8%) were businessman, 19 (15.8%) were table worker, 13 (10.8%) were retired Service holder, 6 (5%) patients were factory worker, rest 18 (15%) to other population (Table II).

**Table II:** Occupation Classification

| Occupation | Frequency | % |
|---|---|---|
| Table Worker | 19 | 15.8 |
| House Wife | 33 | 27.6 |
| Business man | 31 | 25.8 |
| Factory Worker | 6 | 5.0 |
| Retired Service Holder | 13 | 10.8 |
| Others | 18 | 15.0 |
| Total | 120 | 100.0 |

1. Treatment response in group A (NSAID + Therapeutic neck muscle strengthening exercise + Soft cervical collar + ADL instruction). Sixty patients were included in Group A and all of them took the treatment allocated to them regularly. Based on Visual Analogue Scale (Table III), Pain score (Table IV), pain frequency scale (Table V), pre-treatment and after treatment data were compared statistically. 2. Treatment response in group B (NSAID + Therapeutic neck muscle strengthening exercise + Home cervical collar + ADL instruction)

**Table III:** Comparative Improvement of VAS between Group A& Group B in Different time points

| Group | Score at Week 1 | Score at Week 2 | Score at Week 3 | Score at Week 4 | Score at Week 5 | Score at Week 6 |
|---|---|---|---|---|---|---|
| A (N=60) | 6.09±1.30 | 5.59±1.12 | 4.96±1.03 | 4.69±1.03 | 4.14±.955 | 3.70±.91 |
| B (N=60) | 6.16±1.03 | 5.49±.97 | 4.98±.95 | 4.39±.86 | 3.94±.90 | 3.32±.70 |
| 95% CI | .254 to .683 | .194 to .908 | .352 to .898 | .196 to .891 | .0967 to .775 | .254 to .683 |
| p-Value | 0.416 | 0.112 | 0.033 | .584 | 0 | 0 |

3. Treatment response in group A (NSAID + Therapeutic neck muscle strengthening exercise + Soft cervical collar + ADL instruction). Sixty patients were included in Group A and all of them took the treatment allocated to them regularly. Based on Visual Analogue Scale (Table III), Pain score (Table IV), pain frequency scale (Table V), pre-treatment and after treatment data were compared statistically.

**Table IV:** Comparative Improvement of Pain Score between Group A& Group B in Different time points

| Group | Score at Week 1 | Score at Week 2 | Score at Week 3 | Score at Week 4 | Score at Week 5 | Score at Week 6 |
|---|---|---|---|---|---|---|
| A (N=60) | 1.83±.51 | 1.80±.53 | 1.61±.55 | 1.38±.52 | 1.30±.46 | 1.20±.41 |
| B (N=60) | 1.80±1.03 | 1.86±.52 | 1.79±.53 | 1.49±.54 | 1.22±.42 | 1.13±.34 |
| 95% CI | .154 to .783 | .234 to .568 | .321 to .675 | .234 to .563 | .234 to .452 | .298 to .765 |
| p-Value | 0.045 | 0.0123 | 0.033 | .0231 | 0 | 0.432 |

4. Treatment response in group A (NSAID + Therapeutic neck muscle strengthening exercise + Soft cervical collar + ADL instruction). Sixty patients were included in Group A and all of them took the treatment allocated to them regularly. Based on Visual Analogue Scale (Table III), Pain score (Table IV), pain frequency scale (Table V), pre-treatment and after treatment data were compared statistically.

5. Treatment response in group B (NSAID + Therapeutic neck muscle strengthening exercise + Home cervical collar + ADL instruction)

**Table V:** Comparative Improvement of Pain Frequency Score between Group A& Group B in Different time points

| Group | Score at Week 1 | Score at Week 2 | Score at Week 3 | Score at Week 4 | Score at Week 5 | Score at Week 6 |
|---|---|---|---|---|---|---|
| A (N=60) | 2.78±.46 | 2.709±.930 | 2.580±.897 | 2.145±.740 | 1.9677±.786 | 1.7742±.733 |
| B (N=60) | 2.94±.67 | 2.792±.7685 | 2.358±.810 | 2.094±.6860 | 1.7170±.769 | 1.5472±.695 |
| 95% CI | .231 to .498 | .230 to .673 | .120 to .479 | .219 to .689 | .231 to .461 | .161 to .654 |
| p-Value | 0.045 | 0.0123 | 0.033 | .0231 | 0 | 0 |

**Clinical examination**

A through clinical examination of cervical spine and upper limbs which included general examination, locomotors examination, and neurological examination was done to find out the cause of neck pain clinically. The lower limb also examined for abnormal sign. All signs were recorded accordingly and a clinical diagnosis was made.

**Investigation**

Full haematological examination, urine R/M/E, X-ray cervical spine (A/P, Lateral and both oblique view) were done for all patients. Radiological investigation of the chest, blood sugar estimation, RA test were done in some patient where indicated. Confirmed diagnosis was made to find out the cause of neck pain. MRI was done in selected patient who were not responding to conservative treatment in the form of intermittent cervical traction.

## Discussion

Most of thepatients with radiculopathy were colthing 41-50 years age group (33%). The mean age of patient in our study was 44.12 years. Bhattecharjee et al, in his study recorded 293 patients of which lowest age was 21 years and highest was 78 years old, and the maximum number of patient in the 40-49 yrs, which favor the result found in our study. On the other hand, study of British Association of Physical Medicine showed most patients fell in the 40-60 yrs age group, which is also in agreement to our study.[8] In our observation among a total of 120 patient 78 (65%) were male and 42(35%) were female. And the male female ratio was 1.9:6. In respect of occupation the maximum patient were housewife (27.6%) followed by businessman (25.8%). In a study at a tertiary level hospital in Dhaka, it was found the male female ratio was 1:0.8. Regarding the occupation housewife topped the list (27.5%), businessman (25.8%) was in the second position, and table worker was in third position (18.8%). Highest number of patient is in this study was housewife but Bhattecharjee B N et al[9] found that highest number of patient was desk worker, house wife was the second. In our study, a significant improvement was observed in response to Home cervical traction and exercise. 71 % of the patient notice improvement after 6 weeks of home cervical traction. British association of Physical Medicine reported 75 % improvement after 4 weeks of traction.[10] Goldie and Landquist[11] reported 69% improvement in cervical traction group. 71% improvement after 6 weeks of treatment are comparable with both British association of Physical Medicine and Goldie and Lindquist. We found that there was improvement in both group but between two types of treatment group, patients who took home cervical traction showed more improvement than patient without home traction.(p=0.432).

## Conclusion

In conclusion, it may be concluded that home cervical traction can be effective in patients with cervical spondylotic radiculopathy.

## Acknowledgements

We are extremely grateful to Professor Dr. Md. Quamrul Islam, Professor of Physical Medicine & Rehabilitation Department, Honorary consultant, BIRDEM General Hospital, Dhaka. It is our great pleasure to express our regards to all the staffs of department of Physical Medicine & Rehabilitation,

Bangabandhu Sheikh Mujib Medical University, Dhaka for their endless support during the study period. Special thanks are extended to Prof. Dr. Md. Zulfiker Ali, Professor & Head, Dept. of Medicine & Gastroenterology, KYAMCH for revising and correcting the manuscript.

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