



International Journal of Medical and Exercise Science

(Multidisciplinary, Peer Reviewed and Indexed Journal)

ORIGINAL ARTICLE

<p>PHYSICAL THERAPY MANAGEMENT IN PATIENTS WITH CERVICOGENIC DIZZINESS-A CASE SERIES</p>	<p>Search engine: www.ijmaes.org</p>
---	--

GITANJALI SIKKA¹, BHARTI ROHILLA², SUMAN MEHRA³

Corresponding Author

¹Assistant Professor, College of Physiotherapy, Pt.B.D.S, University of Health Sciences, Rohtak, Haryana, India. Email: gitanjali.sikka@gmail.com

Authors

²B.P.Th Student, College of Physiotherapy, Pt.B.D.S, University of Health Sciences, Rohtak, Haryana, India. Email: bhartirohilla26@gmail.com

³Assistant Professor, College of Physiotherapy, Pt.B.D.S, University of Health Sciences, Rohtak, Haryana, India. Email: s.mehra005@yahoo.com

ABSTRACT

Background: Cervical spondylosis is degenerative disorder of cervical spine and is often associated with a sense of cervicogenic dizziness or disequilibrium. . There is dearth of literature regarding physical therapy evaluation and management of patients suffering from cervical spondylosis and presenting with cervicogenic dizziness. We present our experience with physical therapy management of patients suffering with cervical spondylosis and complaining of dizziness of cervical origin with an aim to improve balance and proprioception. **Materials and methods:** A total of ten patients ranging in age from 25-50 year, Mean +S.D. (36.8±8.72), clinically diagnosed with cervical spondylosis and presenting/complaining of cervicogenic dizziness were recruited from Out –Patient Department, Pt.B.D.S., U.H.S., Rohtak. Patients were then tested using following four tests namely romberg`s test, vestibulo-Ocular Reflex (VOR) autorotation test/Head Thrust Test, hallpik-dix test and functional position test and those responding with positive outcome for various tests were included. Patients were then given exercise therapy treatment for 30 days. **Results:** Paired t- test analysis showed that there was highly significant improvement in scores of the four tests namely romberg`s test, vestibulo-Ocular Reflex (VOR) autorotation test/Head Thrust Test, hallpik-dix test and functional position test ($p<0.01$). Comparing mean values of test scores in terms of percentage improvement from baseline there was significant increase. **Conclusion:** Physical therapy exercise programme is effective in cervicogenic dizziness, it improves balance and proprioception in patients clinically diagnosed with cervical spondylosis and presenting with cervicogenic dizziness.

Keywords: Cervical spondylosis, cervicogenic dizziness, balance, proprioception

Received on 29th November 2017, Revised 07th December 2017, Accepted on 12th December 2017

INTRODUCTION

Cervical spondylosis is degenerative disorder of cervical spine. There is degeneration of intervertebral disc, with its protrusion and bony outgrowth of adjacent vertebrae (osteophytosis) and vertebrobasilar insufficiency. Due to the strong connections between the cervical proprioceptors and balance function; it is understandable that injury or pathology of the neck may be associated with a sense of dizziness or disequilibrium. Cervicogenic dizziness is dizziness attributed to the involvement of cervical spine. Cervical spondylosis is extremely common in adults. It has been estimated that 75% of persons over the age of 50 years have narrowing of spinal canal and intervertebral foramina and 50% of these cases are symptomatic^{1,2}.

Studies have concluded that, to date data on diagnostic accuracy for both screening and diagnostic test and measures in large part are absent or insufficient to support a research based management approach. Further research is required both on psychometric properties of the individual test and measures and the most effective and efficient management strategies for patient with cervicogenic dizziness.^{1,2} Outcome studies will require the use of reliable, valid and responsive outcome measures and monitoring of the effect of long term compliance with home programme instructions. There is dearth of literature regarding physical therapy evaluation and management of patients suffering from cervical spondylosis and presenting with cervicogenic dizziness. We present our experience with physical therapy management of patients suffering with cervical spondylosis and complaining of dizziness of cervical origin with

an aim to improve pain, balance and proprioception.

Materials and Methods

A total of ten patients ranging in age from 25-50 year, Mean +S.D. (36.8 ± 8.72) were recruited from Out –Patient Department, Pt.B.D.S., U.H.S., Rohtak. Patients included in the study were in the age group (25-50 year), both male and female, clinically diagnosed with cervical spondylosis and presenting/complaining of cervicogenic dizziness and responding with positive results to the tests namely romberg`s test, vestibulo-Ocular Reflex (VOR) autorotation test/Head Thrust Test, hallpik-dix test and functional position test. Patients with radiculopathy, drug allergy and neurological deficits were excluded from the study. Detailed history and physical examination, including the onset and nature of symptoms, general and systemic manifestations were recorded for each patient.

Procedure

All the patients who met the inclusion criteria were evaluated thoroughly using an evaluation performa. Medical history of 10 patients who were seen in College Of Physiotherapy, E-BLOCK, Pt.B.D.S, U.H.S.R.,Rohtak was collected and recorded .Patients were screened and included if they are fulfilled the inclusion criteria. The demographic data of patients was established (Table 1).Patients were then tested using following four tests namely Romberg`s test,Vestibulo-Ocular Reflex(VOR) Autorotation test/Head Thrust Test, Hallpik-dix test and Functional position test and those responding with positive outcome for various tests were included. Patients were then given exercise therapy treatment for 30 days. The patients received initial exercise therapy in the college

premises and further continued as home exercise programme. The exercise programme included exercises namely- Balance exercise, Static neck exercise, and Habituation exercise. Measurements were taken at two time intervals, one before intervention i.e. at 0 day (PRE) and the second one after intervention i.e. at 30 days (POST) for dependent variables including test scores of four tests namely romberg's test, vestibulo-ocular Reflex (VOR) autorotation test/Head Thrust Test, hallpike-dix test and functional position test.

Protocol

The patients were given physical therapy exercise management, which included the following exercise protocols:-

1. Static Neck Exercises:

- a. **Static Flexion-** Patient was instructed to place both hand on forehead and then to apply backward pressure but head to be kept straight forward without any movement. Patient resists to backward pressure.
- b. **Static Extension-** Patient was instructed to place both hand on back of head and then to apply forward pressure on head. Patient resists to forward pressure and keeps neck straight forward.
- c. **Isometric Right lateral flexion-** Patient was instructed to place right hand on the right side of head and to apply pressure on right side of head keeping neck straight forward and not to move into lateral flexion.
- d. **Isometric Left lateral flexion-** Following the same procedure of the isometric Right

lateral neck flexion, but patient was asked to place left hand on the left side of head.

2. Balance Exercises:

- a. standing position with feet together and eyes closed.
- b. standing on one leg
- c. tandem stand
- d. tandem walking
- e. straight line walking
- f. walking sideways and backward

3. Habituation Exercises

Frequency and Repetitions: Each exercise was done thrice a day, with 10 repetitions and 10 second hold.

Data analysis

The data collected for different variables at different time intervals was subjected to statistical analysis using SPSS software. Mean and standard deviation of demographic variables were calculated for all patients (Table 1). Measurements of different variables, before and after intervention were compared using paired t-test and percentage improvement was also calculated.

RESULTS

Mean \pm SD for Romberg's Test pre is 10.8 and Post is 17.2, the percentage improvement from baseline in score of Romberg's test is 16.2 %. Also, the p values were highly significant on comparing the pre and post intervention using paired t-test ($p < 0.01$). (Table 2) Mean \pm SD for VOR/Head Thrust test pre is 5 and post is 9.2, the percentage improvement from baseline in score of VOR/Head Thrust test is 8.2% and highly significant p value using paired t-test ($p < 0.01$).

SL. No.	Symptoms and signs	No. of Patients (%)
1	Cervical Dizziness	10(100%)
2	Description of sensation	7(70%)
3	Occurrence of falls due to imbalance	10(100%)
4	Dizziness in Different position such as Lying down	0(0%)
5	Dizziness during Rolling over in bed and getting up to quickly	10(100%)
6	Dizziness during Looking up or neck movement	10(100%)

Mean \pm SD for Hallpik-Dix test pre is 21.6 and post is 31.4, the percentage improvement from baseline in score of Hallpik-Dix is 30.4% and highly significant p value using paired t-test ($p < 0.01$).

Mean \pm SD for Functional position test pre is 5.1 and post is 9.5, the percentage improvement from baseline in score of Functional position test is 8.5% and highly significant p value using paired t-test ($p < 0.01$).

Table 1. Patient Demographics

	Romberg'S Test		VOR/Head Thrust Test		Hallpik-Dix Test		Functional Position Test	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mean	10.8	17.2	5	9.2	21.6	31.4	5.1	9.5
STDV	1.39	1.619	0.816	0.919	3.836	3.978	0.876	0.707
% improvement	16.2		8.2		30.4		8.5	
t- value	-10.667		-14.453		-49.00		-15.565	
p-value	0.000***		0.000***		0.000***		0.000***	

**Measurements are statistically significant at $P < 0.05$;

Table 2: Comparison of mean values before and after intervention

DISCUSSION

Cervical spondylosis is becoming increasingly prevalent throughout the world. Prevalence is generally higher in women. Determined that the prevalence of dizziness ranges from 1.8% in

young adults to more than 30% in the elderly population, many patients complain of dizziness or feeling of imbalance, with dizziness being the chief complaint in 2.5% of all primary care visits, or roughly eight million visits per year. The prevalence of balance problem is

greater in patients with cervical spine dysfunction than that in general population^{2,3}.

Common term used to describe dizziness include following: vertigo, presyncope, and disequilibrium. Dizziness-as various abnormal sensations relating to perception of the body relationship to space. Vertigo refers to the false sensation that oneself or one's surrounding are moving or spinning. Dysequilibrium referring to the sensation of postural instability mainly felt in lower extremity, is most prominent when standing and walking and can be relieved by sitting or lying down. Good balance is generally thought to require normal functioning of visual, proprioceptive and vestibular system. Problem in these systems can be peripheral in origin, related to the disorder of the eyes and optic nerve, proprioceptive nerve endings and nerve bundles from the extremities or the vestibular labyrinth and nerve^{2,3}.

Diseases affecting any of the peripheral pathway or central circuits can lead to imbalance. Diseases affecting the peripheral system include ocular motor disorder which affect vision, ataxia, hypotonia and sensory polyneuropathy, which affect proprioception and lesion of the labyrinth, BPPV, meniere's disease and labyrinth, which affect vestibular system. Condition such as cerebellar degeneration, multiple sclerosis, head trauma, stroke, and VBI can cause central imbalance. A dysfunctional visual system can cause dizziness or imbalance. Certain condition exist which can affect both the visual and vestibular system, such as Wallenberg's Syndrome and can cause severe balance and vision dysfunction including vertigo, nystagmus and diplopia².

Faulty posture and muscle imbalance might also cause decrease ROM and produce conflicting signals with regard to head position

to the central nervous system (CNS) when it compares vestibular, visual and cervical input. Both the deep cervical flexor muscles and cervical joint capsules are lined with mechanoreceptors and are hypothesized to play a role in dizziness if dysfunctional^{1,2}.

Due to the strong connection between the cervical proprioceptor and balance function, it is understandable that injury or pathology of the neck may be associated with a sense of dizziness or disequilibrium. Diagnosis and management of patients with a main complaint of dizziness requires advanced knowledge and skills. Therefore patients may benefit from management by physical therapy^{1,2}.

Physical therapy exercise intervention may include stability exercise, postural re-education, stretching of shortened muscles, strengthening of weak muscles, and improvement of cervical spine joint play.⁽¹⁾Balance exercise and vestibular rehabilitation is an exercise based programme for reducing the symptom of the disequilibrium and dizziness associated with vestibular pathology. Vestibular rehabilitation treatment is an alternative treatment involving specific exercise that can eliminate or significantly reduce symptoms by promoting CNS compensation for inner-ear deficits. Studies incorporating manual therapy treatment of patients with cervicogenic dizziness reported consistent post treatment decrease in symptoms and signs of dizziness. Vestibular rehabilitation is sometimes a necessary adjunct to the treatment of patients with dizziness of suspected cervical origin. Several authors have reported successful outcome when incorporating vestibular rehabilitation exercise with physical therapy exercise in treatment of patient with cervicogenic dizziness¹⁻⁴.

The results of present study showed that exercise improved balance in patients with cervicogenic dizziness. As there was 16.2% improvement in score of romberg's test, 8.2% improvement in score of VOR/head thrust test, 30.4% improvement in score of Hallpike-Dix test, 8.5% improvement in score of Functional position test. Also, the p values were highly significant on comparing the pre and post intervention using paired t-test ($p < 0.01$) for all the four tests. Therefore, these set of exercises are beneficial for patients suffering from cervicogenic dizziness⁴. After 30days, patients have improvement in pain, balance and proprioception.

CONCLUSION

The present study concludes that the physical therapy exercise programme is effective in cervicogenic dizziness. These exercises improve pain, balance and proprioception in patient clinically diagnosed with cervical spondylosis and presenting with cervicogenic dizziness.

REFERENCES

1. Schenk R, Coons LB, Bennett SE, Huijbregts PA: Cervicogenic Dizziness: A case report illustrating orthopedic manual and vestibular physical therapy comanagement: The Journal of Manual & Manipulative therapy: Vol. 14.No.3 (2006), E56-68.
2. Ana Minguez-Zuazo, Mónica Grande-Alonso, Beatriz Moral Saiz, Roy La Touche, Sergio Lerma Lara. (2016) Therapeutic patient education and exercise therapy in patients with cervicogenic dizziness: a prospective case series clinical study. Journal of Exercise Rehabilitation 12:3, 216-225.
3. Shereen A. Machaly, Mohammed K. Senna, Ahmed G. Sadek. (2011) Vertigo is associated with advanced degenerative changes in patients with cervical spondylosis. Clinical Rheumatology 30:12, 1527-1534.
4. Peter Roland, Patti Blau. 2010. Diagnosis and Management of Balance Disturbances Following Traumatic Brain Injury. Traumatic Brain Injury, pages 193-254.

Citation:

Gitanjali Sikka, Bharti Rohilla, Suman Mehra. Physical therapy management in patients with cervicogenic dizziness- A case series , IJMAES, 2017; 3 (4), 429-434.