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Role of Cawthornecooksey Exercise Along with Conventional Physical Therapy Verses Conventional Physical Therapy Alone to Improve Balance, Coordination and Sense of Spinning in Vertigo Patient - An Experimental Study

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Abstract

Objective: *To study the role of cawthornecooksey exercise along with conventional physical verses conventional physical therapy alone in improving balance, coordination and sense of spinning in patient with vertigo.*

Method: *A total 30 participants were included. The data was collected with berg balance scale and dynamic gait index through physical examination.30-50 years of patients were selected for the study. Results were calculated with their post and pre assessment including berg balance scale and dynamic index.*

Results: *The data was analyzed using SPSS Version 26. Parametric test was used in Group B showed the effective result in patients of vertigo.*

Conclusion: *According to the study, cawthornecooksey exercise along with conventional physical therapy was found more effective than conventional physical therapy alone to improve balance, coordination and sense of spinning in subject with vertigo.*

Keywords: *Vertigo, Cawthornecooksey, Berg balance scale.*

INTRODUCTION

Vertigo is a condition characterized by the sensation of spinning or movement, either of oneself or the surrounding environment, even when there is no actual movement. It is a symptom rather than a disease and can occur due to various underlying conditions. Some of the common conditions associated with vertigo include Meniere's disease, which affects the inner ear and is characterized by episodes of vertigo, hearing loss, tinnitus, and a feeling of fullness in the ear. Otitis media, an infection or inflammation of the middle ear, can also lead to vertigo. Labyrinthitis and vestibular neuritis, which involve inflammation of the inner ear or the vestibular nerve, respectively, are other causes. Ototoxicity, which refers to damage to the ear due to certain medications, and neurological conditions like multiple sclerosis can also present with vertigo. The clinical features of vertigo are varied and can include problems with balance, coordination, and a persistent or episodic sense of spinning or dizziness. Patients often experience unsteadiness, difficulty in walking, and a sensation of the ground moving beneath them. These symptoms can lead to a significant reduction in the quality of life, as they may interfere with daily activities and increase the risk of falls.

Assessment of patients with vertigo is crucial to identify the underlying cuse and determine the appropriate treatment. Several diagnostic tests are commonly used to assess vertigo. The HINTS examination (Head Impulse, Nystagmus, Test of Skew) is a three-step bedside test used to differentiate between central and peripheral causes of vertigo. The Dix-Hall pike maneuver is used to diagnose Benign Paroxysmal Positional Vertigo (BPPV), which is a common cause of vertigo. The Caloric reflex test assesses the function of the vestibular system by stimulating the inner ear with warm or cold water or air. The Romberg test evaluates a person's sense of balance, while the Weber and Rinne tests are used to assess hearing function, which can also be affected in patients with vertigo.To objectively measure the outcomes of treatment in patients with vertigo, several outcome measures are used. The Berg Balance Scale (BBS) is a widely used tool that assesses balance through 14 simple tasks, such as standing up, turning, and reaching. It is particularly useful in predicting the risk of falls in patients with balance disorders.

The Dynamic Gait Index (DGI) evaluates a person's ability to modify gait in response to changes in task demands, such as walking around obstacles or changing speed. Both of these

scales are instrumental in assessing the effectiveness of interventions aimed at improving balance and coordination in patients with vertigo.

In the treatment of vertigo, physiotherapy plays a vital role. So patients were treated with conventional physiotherapy, which includes interventions such as epley maneuver , pillow modification and positioning, neck isometric exercises, breathing exercises, and balance and coordination exercises. These treatments aim to reduce symptoms and improve functional abilities by addressing the underlying vestibular dysfunction and patients were also treated with cawthornecooksey exercise which is a set of progressive exercises designed to desensitize the vestibular system and improve balance, coordination, and the sense of spinning. These exercises begin in a supine position, where patients perform head and eye movements, and progress to sitting, standing, and eventually moving around. Activities include head movements, eye tracking, bending over, standing with eyes open and closed, and walking with changes in speed and direction. The exercises are designed to be repetitive and gradually increase in difficulty as the patient's symptoms improve.

Need of the Study

Vertigo significantly affects patients' sense of spinning, balance, and coordination. Previous research has shown that these symptoms are common among vertigo patients. Numerous studies have been conducted on vertigo management, but studies that specifically address the role of Cawthorne-Cooksey exercise along with conventional physical therapy verses conventional physical therapy alone in improving these symptoms are quite rare. Through this study, we can learn more about the challenges that vertigo patients face and how these exercises may help improve their quality of life.

OBJECTIVES OF THE STUDY: To study about effectiveness of cawthornecooksey exercise along with conventional physical therapy verses conventional physical therapy alone in vertigo patient.

INCLUSION CRIETERIA

1. Subjects with ear infection who have vertigo.
2. Subjects between 30-50 year of age
3. Patients have vertigo from past 1 month, with active range of motion.

4. Significant limitation of balancing.

EXCLUSION CRIETERIA

1. subjects with cervical spondylitis, cervical spine fracture
2. history of cervical spine fracture less than 5 months
3. patient with dyspnea and cardiac condition
4. patient undergone through multiple surgeries

Data Collection and study Design.

An experimental study conducted on vertigo patient to show the effectiveness of cawthornecooksey exercise along with Conventional Physiotherapy versus Conventional Physiotherapy alone. The procedure was clearly explained to all the Patient and their written informed consent form was obtained. Data was collected between 3rd November 2022 - 28th January 2023. Berg balance scale and Dynamic gait index scale was discussed among the patient then initial evaluation was done for all patient with demographic detail, medical history, HINTS examination, , eye ball movement observation, vitals, investigation reports, were recorded. All the patient are taken under the selection criteria. Study was conducted on 30 patient in which they are divided into 2 groups each in which 15 were treated with conventional Physical therapy + Cawthornecooksey exercise and 15 with only conventional physical therapy for 2 times/ day for 4 weeks.

MATERIALS AND METHODOLOGY

- **Study Design:** Experimental study
- **Sample Design:** Convenience sampling followed by random allocation
- **Study Population:** Participants with Vertigo
- **Sample Size:** 30 participants [Group A=15, Group B =15]
- **Study Setting:** OPD at GMERS Dharpur medical College and hospital.
- **Study Duration:** 6 Months
- **Treatment Duration:** 4 weeks

RESULT

This study include 30 subjects. For the statistical analysis SPSS version 26 was Berg balance scale of between groups is showed in table, Dynamic gait index of between group is showed in table.

For assessment outcome measure. Paired t- test was used for comparison between groups and result show that there is a significant difference between groups.

Paired t-test was used for Berg balance scale, for within 2 groups comparison which showed that Berg balance scale in group A at 4 weeks, which were treated with conventional physiotherapy alone when compared with group B by paired t-test which were treated with conventional physiotherapy + Cawthornecooksey exercise which showed a significant improvement in vertigo symptoms as compared to group A Dynamic gait index was compared between group A, B has a significant improvement with comparison with group A within 4 weeks (P <0.01) hence proved that the patient has improved function capability and relief from symptoms of vertigo after conventional physiotherapy + Cawthornecooksey exercise.

Table: 1 Post DGI between Group A and Group B

	GROUP	MEAN	SD	t-VALUE	p-VALUE
DGI	GROUP A	18.4	1.2	-8.7	0.00
	GROUP B	21	1.4	-10.4	0.00

Table: 2 Post BBS between group A and group B

	GROUP	MEAN	SD	t-VALUE	p-VALUE
BBS	GROUP A	47.8	2.6	-10.6	0.000
	GROUP B	50	2.8	-.5	0.000

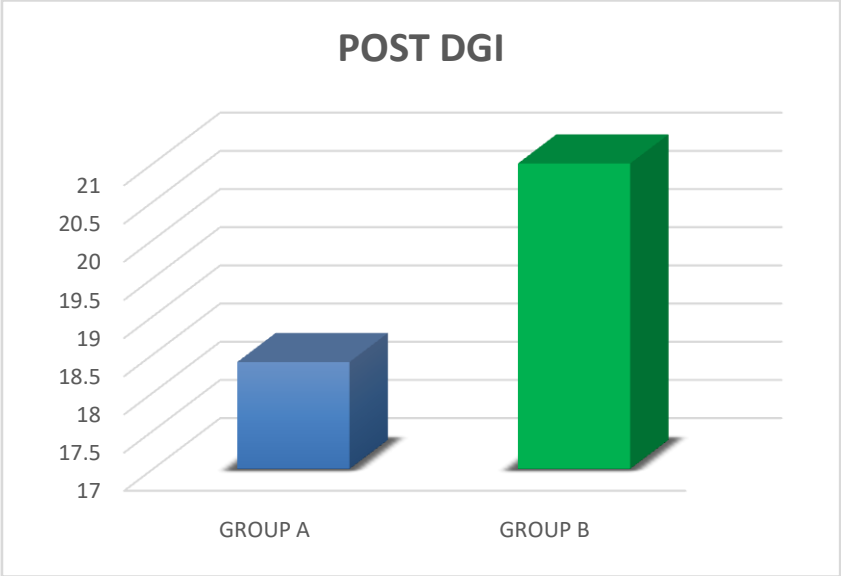

Figure 1: Post DGI between Group A and B

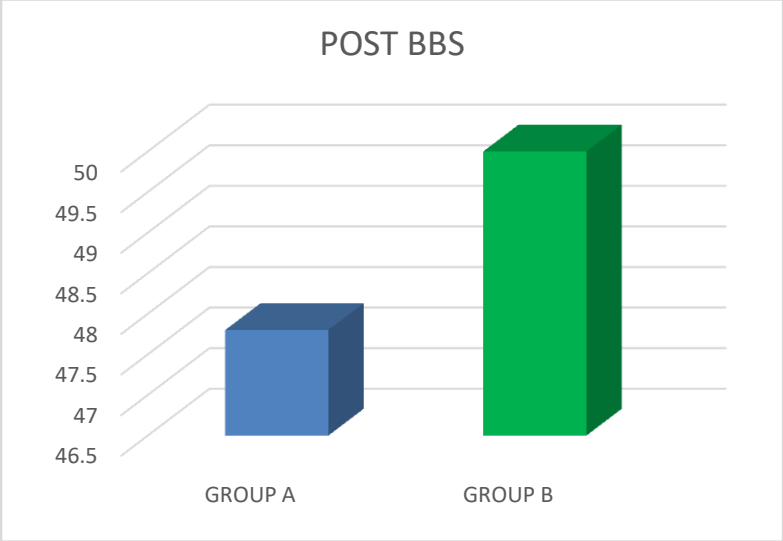

Figure 2: Post BBS between Group A and B

DISCUSSION

The study was performed on 30 patients with vertigo, they were divided into 2 groups with 15 patients. The pre, post values of Berg balance scale and Dynamic gait index were taken and after 4 weeks of protocol given it was again takend analyzed.

The purpose of the study was to determine whether there is any significant difference between the effectiveness of conventional physiotherapy along with Cawthornecooksey

exercise Or only conventional physiotherapy in normalizing symptoms of vertigo, boost immunity and limit the functional disability patient with Vertigo.

In this present study the Berg balance scale was assessed and Dynamic gait index was used to assess the functional capacity.

Vertigo is a medical condition characterized by a sensation of spinning or dizziness, where the person feels as if they or their surroundings are moving, even when stationary. It is often associated with problems in the inner ear (vestibular system), but can also stem from neurological conditions. Vertigo can lead to issues with balance, nausea, vomiting, and difficulty walking.Vertigo affects approximately 15-35% of people globally at some point in their lives. It is more common in women than in men, with about 57% of cases occurring in females and 43% in males. The incidence increases significantly with age, particularly after 60 years.

In India, vertigo is estimated to affect around 20-30% of the population at least once in their lifetime. The condition is more prevalent in older adults, with a noticeable increase in those above 60 years of age. Women are more likely to experience vertigo than men in India as well.

The result found in this study disclosed that after 4 weeks of intervention program of 2 groups, Group A, which received conventional physical therapy and Group B which recieved Conventional physical therapy along with Cawthornecooksey exercise attained a statistically and clinically significant improvement after the treatment intervention.

CONCLUSION

The result indicates that the treatment in 2 groups were effective in patient with vertigo to improve balance, coordination and sense of spinning , but cawthornecooksey exercise along with conventional physical therapy was found more effective than only conventional physical therapy alone in the management of vertigo.

LIMITATION

No long term follow up was taken.

REFERENCES

1. David J.Magee , Orthopaedic Physical Assessment (Fifth Edition)
2. B.O'Sullivan ,Thomas J.Schmitz ,George D.Fulk , Physical Rehabilitation (seventh edition)
3. Joanne Watchie, Cardiovascular and Pulmonary Physical Therapy (second edition)
4. Francesco Dispenza , Alessandro De Stefano,Textbook of vertigo Diagnosis and Management(First edition)
5. Carolyn kisner, Lynn Allen Colby, Therapeutic Exercises, Foundations and Techniques (Fifth edition)
6. Takçalan E, inal HS, Sentürk MN, Mengi E, Alemdaroglu- Gürbüzi, Effectiveness of the epleys maneuver versus cawthorne- cooksey vestibular exercises in the treatment of posterior semicircular canal (BPPV) A randomized controlled trial, journal of bodywork and movement therapies, 2021;28(397-405).
7. Ye N, Ma Z, Wang X, Liu R, GuX, Effectiveness of Caw throne- cooksey exercise in Wallenberg syndrome induced central vertigo ,ActaNeurologicabelgica, 2024 Aug; 124 (4)
8. Tekin Dal B, Bumin G, Aksoy S Günaydin RÖ. Comparison of activity- based home program and cawthrone- exercise in patients with chronic unilateral peripheral vestibular disorder, archives of physical medicine and rehabilitation, 2021 ; 102 (7)
9. Corna S, Nardone, A Prestinari A, GalanteM, Grasso, Schieppati M, comparison of cawthrone- cooksey exercises and sinusoidal support surface translation to improve balance in patient with unilateral vestibular deficit, archives of physical medicine and rehabilitation, 2003 ; 84 (8)
10. Wrisley D, Walker M, Echternach J, Strasnick B. Reliability of the Dynamic Gait Index in people with vestibular disorders. Archives of physical medicine and rehabilitation. 2003;84:1528–1533
11. Marchetti GF, Whitney SL, Blatt PJ, Morris LO, Vance JM. Temporal and spatial characteristics of gait during performance of the Dynamic Gait Index in people with and people without balance or vestibular disorders. Physical Therapy And Rehabilitation journal, 2008 May; 88(5):640-51.
12. Whitney S, Wrisley D, Furman J. Concurrent validity of the Berg Balance Scale and the Dynamic Gait Index in people with vestibular dysfunction. Physiotherapy Research International. 2003 Nov; 8(4):178-86.

13. Yardley L, Beech S, Zander L, Evans T, Weinman J. A randomized controlled trial of exercise for dizziness and vertigo in primary care, British Journal of General Practice therapy, 998; 48(429):1136-40.
14. Barnana Roy, Mainak Sur and PatralikaNath. Cawthrone Cooksey exercise and its clinical implications: An updated narrative review. Int. J. Otolaryngology Res. 2024; 6(1):10-17. DOI: 10.33545/26646455.2024.v6.i1a.36
15. Brandt T, Daroff RB. Physical therapy for benign paroxysmal positional vertigo. Arch Otolaryngology. 1980 Aug; 106(8):484-5. Doi: 10.1001/archotol.1980.00790320036009. PMID: 7396795.
16. Dix MR. Treatment of vertigo. Physiotherapy. 1974 Dec; 60(12):380-4. PMID: 4467199.
17. Ye, N., Ma, Z., Wang, X. et al. Effectiveness of cawthorne-cooksey exercises in wallenberg syndrome-induced central vertigo. ActaNeurolBelg 124, 1319–1321 (2024). https://doi.org/10.1007/s13760-024-02521-0
18. Swaminathan, B., Shanmugam, V.U., Shanmugam, R. et al. 3D Virtual Reality Rehabilitation Therapy for Patients with Vertigo Due to Peripheral Vestibular Dysfunction. Indian J Otolaryngol Head Neck Surg 75, 2222–2226 (2023). https://doi.org/10.1007/s12070-023-03678-5
19. Özden, F. Letter to the editor regarding article: "Effectiveness of virtual reality-based programs as vestibular rehabilitative therapy in peripheral vestibular dysfunction: a meta-analysis". Eur Arch Otorhinolaryngol 280, 5667–5668 (2023). https://doi.org/10.1007/s00405-023-08201-8
20. Anson, E.R., Gimmon, Y. (2023). Vestibular Rehabilitation: A Patient-Centered Approach. In: Crane, B.T., Lustig, L., de Souza, C. (eds) Disorders of the Vestibular System. Springer, Cham. https://doi.org/10.1007/978-3-031-40524-2_14
21. Rezaeian, A., Abtahi, H., Moradi, M. et al. The effect of vestibular rehabilitation in Meniere's disease: a systematic review and meta-analysis of clinical trials. Eur Arch Otorhinolaryngol 280, 3967–3975 (2023). https://doi.org/10.1007/s00405-023-08066-x.
22. Kim JS, Zee D. Clinical practice. Benign paroxysmal positional vertigo. N. Engl. J. Med. 2014; 12:1138-47.

23. Herdman SJ, Blot PJ, Schubert MC. Vestibular rehabilitation of patients with vestibular hypo function or with benign paroxysmal positional vertigo. CurrOpin Neurol. 2000; 13(1):39-43.
24. Szturm T, Ireland DJ, Lessing- Turner M. Comparison of different Exercise programs in the rehabilitation of patients with chronic Peripheral dysfunction. Neurology. 1994; 838-44.
25. Wolf M, Hertanu T, Novikov I, Kronenberg J. Epley'smanoeuvre for benign paroxysmal positional vertigo: a prospective study. ClinOtolaryngol Allied Sci. 1999; 24(1):43-6.
26. FallahzadehAbarghuei A, Fadavi-Ghaffar M, Tousi S, Amini M, Salehi AR. Effect of cawthorne and cooksey exercises on balance and quality of life of 60 to 80 year- old individuals in Shiraz: A randomized clinical trial. Med J Islam Repub Iran. 2018 Aug 19; 32:74. doi: 10.14196/mjiri.32.74. PMID: 30643749; PMCID: PMC6325277. Vertigo article.