

Case Report

Effectiveness and psychological improvement in chronic vestibular problem using home-based balance rehabilitation with step 1 (head and neck movement): A case report

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Abstract

Chronic vestibular problem or disorder is a complicated vestibular disorder that can involve multiple complications such as psychological and others. A standard and latest term that is globally used for this chronic disorder is recurrent vestibulopathy. Recurrent vestibulopathy is defined as an illness of unknown cause characterized by more than a single episode of vertigo of duration characteristic of that occurring with hydrops, but without auditory or clinical neurological symptoms or signs for more than 6 months' duration. During this pandemic period, home-based module is one of the valuable rehabilitation methods to treat non benign paroxysmal positional vertigo vestibular cases.

Vestibular Rehabilitation (VRT) is a specific form of physical therapy designed to habituate symptoms and promote adaptation to and substitution for various aspects of deficits related to a wide variety of balance disorders. Most VRT exercises involve head movement which are essential in stimulating and retraining the vestibular system. Bal Ex is a home-based module of VRT with specific modules that are available in three forms viz. manual book, poster and DVD. This module was developed with a combination of customized Cawthorne Cooksey Exercise and prayer movements. Foam exercise is one of the VRTs. It consists of twenty movements divided into three levels. This physical exercise module has many advantages. In this case study we evaluated the effectiveness and psychological improvement in chronic vestibular problem using level 1 Home-based Balance Rehabilitation in a 30-year-old female patient.

Keywords: *Bal Ex, home-based module, Recurrent Vestibulopathy, Bal Ex Module, imbalance*

INTRODUCTION

The term 'Recurrent Vestibulopathy' refers to a condition with an unknown cause that is marked by more than a single episode of vertigo of duration similar to that seen with hydrops but without auditory or clinical neurological symptoms or signs. Patients with frequent episodes of vertigo lasting from about 5 minutes to 24 hours with no auditory or neurological symptoms or signs are referred to as having recurrent vestibulopathy¹. This disorder can be characterized by dizziness, imbalance, nausea and vision problems. Three of the most common clinical syndromes manifesting as recurrent vertigo are benign paroxysmal positional vertigo (BPPV), Meniere's disease (MD) and vestibular neuronitis (VN)².

Case Report

A 30-year-old female patient, diagnosed as recurrent vestibulopathy, presented with dizziness and balance problem six months ago. She also complained of sudden attack of vomiting, feeling like floating and nausea. The patient then underwent home-based BAL Ex treatment just for Level 1 using only the manual, doing this twice per day for 1 month, 60 minutes each session and without taking any medicine during the treatment.

On examination, the patient was conscious and alert. The patient was given three questionnaires to complete before and after treatment. These were the Malay Version of Vertigo Symptom Scale (MVVSS), Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). After 1 month of balance exercise only in level 1, the patient showed huge difference and improvement (2% for MVVSS, 83% for BDI, and 18% for BAI).

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Table I: Subjective measures Pre- and Post-treatment

Component	Pre-therapy	Post 1 month therapy
Malay Version of Vertigo Symptom Scale (MVVSS)	13	5
Beck Depression Inventory (BDI)	12	2
Beck Anxiety Inventory (BAI)	22	18

To evaluate the postural control pre- and post-therapy we used Bal Exzz Foam test (Figure I). This Bal Exzz test has a structured scoring foam that is divided into seven sections (Table II). Positive Fukuda test has been identified (Table II). The patient previously experienced symptoms in the past six months but improved after the treatment.



Figure I: Bal Ex Foam

Table II: Bal Ex Scoring Foam

Level	Description	Pre-therapy	Post 1 month therapy
1	Stand on the floor with arms across your chest and feet together and hold for 30 seconds (opened eyes)	Normal	Normal
2	Stand on the floor with arms across your chest and feet together and hold together and hold for 30 seconds (closed eyes)	Normal	Normal
3	Stand on the floor with arms across your chest, toe touching the other side of heel and hold for 30 seconds (opened eyes)	Normal	Normal
4	Stand on the floor with arms across your chest, toe touching the other side of heel and hold for 30 seconds (closed eyes)	< 4 seconds	< 4 seconds
5	Stand on a 3-inch-high density foam cushion with your arms crossed, feet together and hold for 30 seconds (opened eyes)	Normal	Normal
6	Stand on a 3-inch-high density foam cushion with your arms crossed, feet together and hold for 30 seconds (closed eyes)	< 2 seconds	< 2 seconds
7	Fukuda test	Degree: > 50 degrees Side Deviation: to Left side	Degree: > 50 degrees Side Deviation: to Right side

VRT is a type a physical therapy that aims to habituate symptoms and encourage adaptation to and substitution for various aspects of deficits associated with a wide variety of balance problems. The vestibular system must be stimulated and retrained, hence the majority of VRT activities include head movement. The prognosis for patients with recurrent vestibulopathy is good³.

Bal Ex is a home-based module that is available in three forms viz. manual book, poster and DVD⁴. The Bal Ex Home-based balance is a VRT with specific modules and a video guide. To assist people with various balance disorders, it includes nine distinct languages (Malay,

English, Mandarin, Tamil, Hokkien, Nigeria, Parsian, and Arabic). The Bal-Ex module video is a completely structured home-based video and audio guided tool designed to help individuals with Peripheral Vestibular Disorder (PVD). This module was created using a modified exercise and prayer movements. One of the VRT exercises is foam exercise. There are numerous advantages to use this physical exercise module. This exercise consists of 20 movements and is divided into 3 levels targeting specific functions of balance organs (Table III). Bal Ex is an adaptation from Customized Cawthorned Cooksey Exercise and prayer movement.

Table III: Three levels in the Bal Ex module video

Level 1	Level 2	Level 3
<ul style="list-style-type: none"> • Head & neck • Eye focusing • Heaviness of the neck 	<ul style="list-style-type: none"> • Positioning • Daily activities (i.e. prayer, up and down) • Return to normal daily activities 	<ul style="list-style-type: none"> • Postural • Increase the postural control • Return to normal walk, running and use a stair

Discussion and Conclusion

Recurrent Vestibulopathy is one of the vestibulopathies disorders of the inner ear. Dizziness and trouble in balance are the most common symptoms. The prognosis for patients with recurrent vestibulopathy is good. After Bal Ex Home-based Balance Rehab in level 1, the patient showed fast recovery whereby her dizziness is reduced and she improved with mild imbalance. With home-based step 1 module, patients will be able to improve their postural control if they continuously undergo balance rehabilitation at home.

REFERENCES

1. Rutka, J. A., & Barber, H. O. (1986). Recurrent vestibulopathy: third review. *The Journal of Otolaryngology*, 15(2), 105–107.
2. Gacek R. R. (2013). A perspective on recurrent vertigo. *ORL; Journal for Oto-rhino-laryngology and its related specialties*, 75(2), 91–107. <https://doi.org/10.1159/000348710>
3. Leliever, W. C., & Barber, H. O. (1981). Recurrent vestibulopathy. *The Laryngoscope*, 91(1), 1–6. <https://doi.org/10.1288/00005537-198101000-00001>
4. Rosminah M., et al. "Home-Based Video Module for Balance Exercise (Bal Ex): A Cost Effective Tool for Peripheral Vestibular Disorders Patient." *Proceedings of the 5th International Conference on Health Sciences (ICHS 2018)*, Atlantis Press, 2019. DOI.org (Crossref), doi:10.2991/ichs-18.2019.33.