

Telerehabilitation for Impaired Functional Mobility and Balance Secondary to COVID-19 Induced Vestibular Dysfunction: A Case Report and Literature Review



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INTRODUCTION

- On the 11th of March 2020, the coronavirus disease 2019 (COVID-19) outbreak was declared a global pandemic affecting various countries including the Philippines causing interruption in face-toface delivery of medical services including Physical Medicine and Rehabilitation (PM&R).
- The main clinical symptoms of COVID-19 are respiratory but due to its evolving pathophysiology, it may also affect the hearing and vestibular systems, commonly presenting as hearing loss, dizziness, and imbalance.
- We present a case of a young adult physician with RT-PCRconfirmed COVID-19, presenting with sudden-onset dizziness and headache that persisted for several months affecting her daily function and work.

PATIENT INFORMATION

- This is a case of a 36-year-old female, married, third year Surgery resident physician, residing in the Bicol Province, Philippines, who was referred for physiatric teleconsultation due to headache and dizziness recalcitrant to medical management.

CLINICAL FINDINGS

- A comprehensive physiatric evaluation was done through videoconferencing. The telerehabilitation team, composed of a physiatrist, PM&R resident physician, and physical therapist trained and experienced in conducting vestibular rehabilitation, maximized the virtual means in evaluating and designing the rehabilitation program individualized for the patient.
- The rehabilitation team was able to virtually conduct the Dix-Hallpike test, supine roll test, and active head impulse test which all tested positive indicating a vestibular dysfunction.

TIMELINE





Fig 1. Dix-Hallpike Test conducted via telerehabilitation. (A) Starting position. (B) End position.



Fig 2. Supine Roll Test conducted via telerehabilitation. (A) Starting position. (B) End position.



Fig 3. Active Head Impulse Test conducted via telerehabilitation.

THERAPEUTIC INTERVENTIONS

 The physiatric assessment tools and corresponding rehabilitative interventions conducted via telerehabilitation for the patient are summarized in Table 2, guided by the World Health Organization -International Classification of Functioning (WHO-ICF).

Table 2. Treatment Strategies conducted via telerehabilitation

Alterations in Body Structure	Limitations in Activity	Limitations in Participation
and Function (Impairment)	(Disability)	(Handicap)
-Active range of motion exercises of bilateral upper and lower limbs (as warm-up, and repetitions eventually increased as tolerated) -Stretching of bilateral gastrocnemius, hamstrings, and quadriceps to enhance ankle and hip strategies -Resistance training -Heel raises, toe raises, squats, lunges -Gaze stabilization exercises -Habituation training	-Sit-to-stand exercises -bADL and iADL retraining -Part practice of functional tasks, followed by whole practice as prerequisite skills are mastered	-Work assessment and simulation -Work task modification -Gradual resumption of work- related activities -Symptom diary at work -Cognitive behavioral therapy

RESULTS AND CONCLUSION

- After four months of telerehabilitation, there were improvements in exercise tolerance and safety and independence in ambulation.
- The scores obtained from the outcome measures, namely the Mini BESTest, ABC Scale, Falls Efficacy Scale, Vertigo Symptom Scale, and SF-36, were all improved from baseline.
- It is uncertain how long the COVID-19 pandemic may last and how much other multi-organ effects the virus may cause. During and beyond the pandemic, telerehabilitation may continue as a safe and alternative option in the diagnosis and treatment of patients with vestibular dysfunction, especially in situations of difficult and untimely access to specialized services, geographical barriers, time and financial constraints, and social distancing to limit the spread of the virus.
- This case utilized novel techniques, such as virtual testing and rehabilitation, and is an addition to the limited literature of COVID-19induced vestibular dysfunction, and its physiatric diagnosis and management.