

## Physiotherapeutic management of 72 year male patient with Parkinsonism: A case study

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### ABSTRACT

Parkinson's disease is a neurological condition which consists of motor and non motor symptoms. In this case, we present the case of 72-year male having complaints of slowness of movement, heaviness while performing movements in limbs. With this complaints patient visited nearby hospital at avbrh and has undergone investigations and was diagnosed with hyponatremia. On physical examination patient has slowness of movement, difficulty in walking and tremors and was further diagnosed with Parkinson's disease. After that physiotherapy treatment was given to the patient for 6 weeks. Physiotherapy interventions show significant improvement in patients' functional activities.

**Keywords:** Parkinson's disease, physiotherapy, tremors, bradykinesia, case study

### 1. INTRODUCTION

Parkinsonism is a complex functional illness that affects both motor and non motor skills. Tremors at rest, slowness of movement, rigidity, balance problems and an altered gait posture, including freezing of gait are all important motor characteristics (Radder et al., 2020). The non motor problems include anxiety, depression, bowel and bladder dysfunctions, fatigue, cognitive impairments etc. These problems further lead to difficulty in activities of daily living, withdrawal from social activities, fear of fall, depression and anxiety etc. At the end, these problems will further be leading to compromised functional ability (Kumar et al., 2019).

Exercise and physical therapy approaches are being studied alongside pharmaceutical and surgical treatments for Parkinsonism. Physiotherapists has an important place in the rehabilitation of persons with parkinsonism basically for improving motor functions preventing secondary complications and improving well being of patient (Darware and Naqvi et al., 2020). Physiotherapy interventions can be useful for improving muscle weakness, increasing cardiovascular endurance, preventing risk of falls by regaining balance and normal gait patterns (Bawiskar et al., 2020; Mak et al., 2017). Therapeutic activities with medical treatment can be effective in management of patients of Parkinsonism. Mobility exercises, resistance training, treadmill activities, robotics, gait training are various advances in management of

Parkinsonism. In addition to these activities, progressive resistance training can also show significant refinement in rigidity of patients with Parkinson’s disease. In this case report, we present the case of patient with hyponatremia which further diagnosed with Parkinson’s disease. Physiotherapy interventions along with pharmaceutical management were given to the patient.

## 2. PATIENT INFORMATION

We present the case of 72 years old male; Patient was apparently alright around 4 days back then on 7th of February in the evening he started feeling some heaviness and stiffness in his upper limbs and slowness while performing the movements. After about half an hour the family members noted that the patient was behaving in a confused state. Then on 8<sup>th</sup> of February the patient was taken to Acharya Vinoba Bhave Rural hospital in the morning which is situated in Sawangi Meghe, Wardha for some investigations. His investigations revealed that the patient was in a state of hyponatremia (sodium levels were 118mmol/L). The patient was then admitted in medicine ICU on the same day for his further management. Patient was there in ICU for 3 days and after that he was shifted to medicine ward and after assessing all the clinical symptoms and signs patient was diagnosed with Parkinson’s disease. For that same patient was advised to perform physiotherapy.

## 3. CLINICAL FINDINGS

Patient was apparently alright with Glasgow coma score 15/15 and was oriented to time, place and person. On examination superficial, deep and cortical sensations were intact.

### On cranial nerve examination

Olfactory: Parosmia (altered sense of smell)

Optic: Near vision was affected.

Oculomotor, trochlear and abducent: Vertical gaze was absent (conjugate, bilateral, limitation of eye movements in up gaze and/or down gaze)

Trigeminal: Intact

Facial: Frowning of the face was absent

Vestibulocochlear: Impaired

Hypoglossal: Intact.

### On motor examination

Range of motion: Active ranges for both upper limbs and lower limbs were reduced.

Muscle tone: Rigidity was constant throughout the range of motion for upper limb and mild rigidity for lower limb.

### Reflexes

Glabella tap was present Biceps Jerk, Triceps Jerk, Knee jerk for both the sides were normal.

Planter response was absent

## INVESTIGATIONS

MRI brain age related atrophic changes are seen on MRI and Sodium potassium levels.

**Table 1** Sodium Potassium levels

Table 1 sodium potassium levels		
Investigation date	Potassium (K+)	Sodium (Na+)
09-02-2022 2.46 pm	4.3	118
09-02-2022 8.29 pm	4.2	115
10-02-2022 7.09 am	4.3	120

### Timeline of events

The date of admission of patient was 08-02-2022 and date of examination was 14-02-2022. Physiotherapy treatment was started from 14-02-2022.



Figure 1 Patient performing D1 flexion pattern of PNF



Figure 2 Patient performing D1 extension pattern of PNF

## PHYSIOTHERAPY FUNCTIONAL ASSESSMENT

### PHYSIOTHERAPY INTERVENTIONS

The goals of physiotherapy management are as follow

1. To reduce the rigidity.
2. To improve the aerobic functions.
3. To maintain the musculoskeletal properties.
4. To improve the functional mobility.
5. To prevent and manage the orthostatic hypotension.

Phase wise physiotherapy management is as follow

#### PHASE 1 In-patient hospital phase (0-1 WEEK)

Pursed lip breathing exercises was taught to the patient with 10 repetitions.

For reducing rigidity, various generalized relaxation techniques were performed on patient.

Bed side mobility such as log rolling, segmental rolling, sitting on bed with support, standing with support was taught to the patient with blood pressure monitoring.

Rhythmic initiation technique of PNF was performed on patient in which movements such as passive to active assisted was performed in first week.

**PHASE 2 Out-patient department phases: (1-2 WEEK)**

Continuing the first week protocol patient was advised to walk with support of assistive devices or any assistance of caregiver. Rhythmic initiation technique was performed in this phase.

Balance training was taught to the patient by performing Frenkel’s exercises and by auditory and visual cues.

Repetitions of equilibrium and non-equilibrium test were performed to improve co-ordination of patient.

**PHASE 3 Out-patient department phases: (2-4 WEEK)**

In addition to previous phase treatment, task oriented activities are performed during this phase by giving visual feedback of mirror and auditory cues by therapist.

Gait training was taught to the patient. For increasing step length and for reducing cadence, various blocks was drawn on floor accordingly patient was advised to walk on that particular block.

**PHASE 4 Follow up phase: (4-6 WEEK)**

During this phase patient was come to OPD (Out Patient Department) for follow up.

Patient’s gait was observed and some corrections regarding posture and gait were advised to the patient.

**OUTCOME MEASURES**

The pre and post treatment outcome measures are explained in the Table 2.

**Table 2** Outcome Measures

Table 2 OUTCOME MEASURES			
S no	Outcome measures (Grade)	Pre-treatment	Post-treatment
1.	Hoehn and Yahr (grade1-5)	5	3
2.	Mini Mental Status Examination Scale (MMSE- Score out of 30)	27	29
3.	Berg Balance Scale (score out of 56)	11	22
4.	Falls Efficacy Scale International (FES-I) (score 16-no concern of falling to score 64-maximum concern of falling)	Not assessed	28
5.	Modified Parkinson Activity Scale (M-PAS score out of 56)	12	29

**4. DISCUSSION**

Parkinsonism is a neurological state which is characterized by tremors, bradykinesia, postural instability and rigidity. Anxiety, depression, bowel bladder problems can be also present in Parkinson’s disease. Pharmacological management in combination with physiotherapy interventions can be used in Parkinsonism patients (Mishra et al., 2020). Physiotherapy management includes bed mobility exercises, generalized relaxation exercises, balance and co-ordination exercises etc (Kelly et al., 2016). In previous study, Parkinson’s disease treatment included various graded exercise program, tread mill training, dance exercises and was compared with various outcome measures (Soegiarto et al., 2017). Chiropractic measures are helpful for reducing pain in patients with Parkinson’s disease. In this case, patient was assessed with various scales at the first day of treatment and after completion of treatment. Physiotherapy management is important for preventing secondary complications and for improving the functional activities in Parkinsonism patients.

**5. CONCLUSION**

Parkinsonism is a state which includes tremors, rigidity, bradykinesia and postural instability. Other symptoms of Parkinson’s disease include depression, pain, anxiety, bowel bladder problems etc. In this case report, Proper systematic physiotherapy management was given to the patient who shows significant result in patient.

**Author's contributions**

She came with the idea of manuscript writing. She did the proper assessment of patient and planned proper treatment protocol of patient. All the authors read the manuscript before submission.

**Informed Consent**

Patient was informed about the procedure and written consent was taken from the patient.

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**Conflicts of interest**

The authors declare that there are no conflicts of interests.

**Data and materials availability**

All data associated with this study are present in the paper.

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