

Physiotherapeutic Rehabilitation in a Patient with Right Cerebellar Haemorrhage with Ventricular Extension and Mild Hydrocephalus: A Case Report

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ABSTRACT

Cerebellar haemorrhage can result in impaired coordination, balance disturbances, and reduced functional independence. This case report describes the physiotherapy rehabilitation of a 55-year-old female diagnosed with right cerebellar haemorrhage with ventricular extension and mild hydrocephalus. After medical stabilisation, physiotherapy was initiated focused on balance training, coordination exercises, gait training and functional retraining for a period of 10 days. During rehabilitation, improvement was observed in balance, coordination and independence in activities of daily living, which was supported by changes in the outcome measure scores. This case suggests that early physiotherapy intervention may support functional recovery in patients with cerebellar involvement.

Keywords: Ataxia, Balance training, Cerebellar haemorrhage, Physical therapy

CASE REPORT

A 55-year-old right-handed female was brought to the hospital on 8th October 2025, with a history of sudden loss of consciousness while sitting at home. According to family members, she became unresponsive for approximately three minutes and regained consciousness spontaneously. She complained of severe headache following the episode and experienced multiple episodes of vomiting during the same night. There was no history of seizures, trauma, or similar previous episodes. She was a known hypertensive patient and not on regular medications.

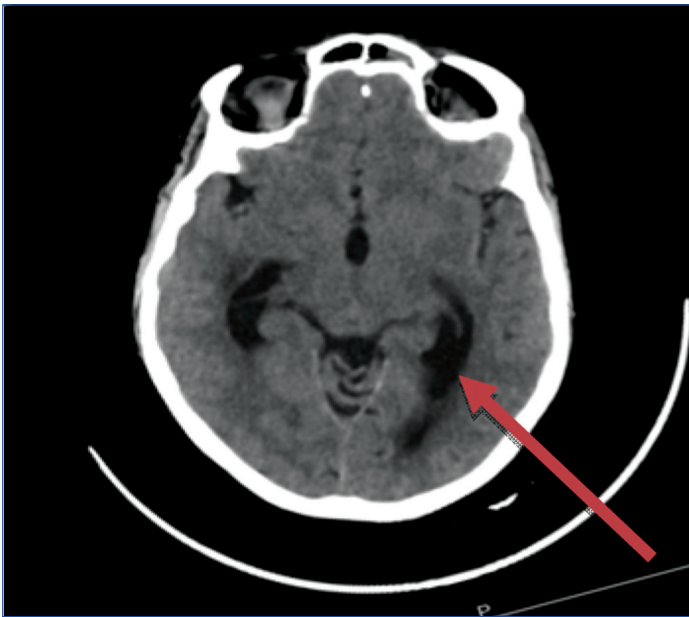
On the day of admission (Day 1), she was taken to a nearby primary healthcare centre and was referred to a tertiary care hospital for further evaluation. On arrival at the emergency department, her blood pressure was 170/96 mmHg, heart rate was 88 beats per minute, respiratory rate was 20 breaths per minute, and oxygen saturation was 98% on room air. She was conscious and oriented but complained of headache and dizziness.

A Computed Tomography (CT) scan of the brain performed on the same day showed a right cerebellar haemorrhage with ventricular extension and mild hydrocephalus, along with a small parietal bleed [Table/Fig-1]. She was managed conservatively under the medicine department. The patient was monitored in the intensive care unit from 9 to 11 October 2025 for neurological observation and was shifted to the general ward on 12 October 2025 after stabilisation.

Physiotherapy referral was given on 11 October 2025, and rehabilitation was initiated on the same day.

Clinical Findings at Physiotherapy Assessment

At the time of physiotherapy assessment, the patient was conscious, alert, and able to follow verbal commands. Speech was mildly slurred but understandable. Higher mental functions were intact,



[Table/Fig-1]: CT scan of brain showing right cerebellar haemorrhage with ventricular extension and mild hydrocephalus.

and no cognitive deficits were noted. Muscle tone was normal in all four limbs. Muscle strength was graded 4/5 on the right-side and 5/5 on the left-side according to the Medical Research Council scale. Deep tendon reflexes were normal and symmetrical. Plantar response was flexor bilaterally. Sensory examination was normal for light touch, pain, temperature, vibration, and proprioception. Cranial nerve examination was normal, except for complaints of giddiness during head movements. Cerebellar examination findings are summarised in [Table/Fig-2].

Test	Measurement parameter	Right-side	Left-side	Interpretation
Finger-to-Nose test	Accurate touches (out of 10)	6	9	Mild dysmetria and intention tremor on right-side
Finger-to-Finger test	Successful alterations (out of 10)	5	9	Slight irregularity and decomposition of movement on right-side
Dysdiadochokinesia (Rapid alternating movements)	Full cycles in 10 seconds	6	9	Mild slowing and irregularity on right-side (dysdiadochokinesia)
Heel-to-Shin test	Time to complete (seconds)	9	6	Mild deviation and unsteadiness on right-side

Rebound Phenomenon (Stewart-Holmes sign)	Rebound control	+ (present)	– (absent)	Mild delay in checking movement on right-side
Nine-Hole Pegboard test	Completion time (seconds)	38 sec	26 sec	Slower performance on right upper limb, mild incoordination and reduced dexterity

[Table/Fig-2]: Cerebellar examination.

Baseline functional status and outcome measures: At the time of physiotherapy evaluation, the patient required assistance for standing and walking due to poor balance. Transfers were performed with supervision. The Scale for the Assessment and Rating of Ataxia (SARA) score was 19/40, indicating moderate ataxia. The Berg Balance Scale score was 18/56, suggesting impaired balance with increased fall risk. The Timed Up and Go Test was 28 seconds, indicating reduced functional mobility. The Nine-Hole Peg Test (right hand) was completed in 38 seconds. The Functional Independence Measure score was 90/126, indicating partial dependence in activities of daily living [Table/Fig-3] [1-5].

Outcome measure	Description	Score/Time
SARA Scale [1]	Assesses ataxia and coordination	19/40
Berg Balance Scale [2]	Functional balance	18/56
Timed Up and Go Test [3]	Functional mobility	28 sec
Nine-Hole Peg Test [4] (Right)	Manual dexterity	38 sec
Functional independence measure (FIM) [5]	Functional independence	90/126

[Table/Fig-3]: Outcome measures- prerehabilitation [1-5].

SARA: Scale for the assessment and rating of ataxia

Physiotherapy intervention: Physiotherapy treatment was started on 11 October 2025 after medical stabilisation. Sessions were conducted twice daily for about 30-40 minutes. Exercises were progressed gradually based on the patient's balance and tolerance [Table/Fig-4].

Phase	Intervention	Dosage
Day 1-3	- Sitting balance and trunk control exercises were performed. - Weight shifting in sitting and simple coordination activities was practiced. - Frenkel exercises in lying and sitting positions were introduced to improve coordination. - Movements were carried out slowly with visual feedback. - The patient required supervision due to truncal sway. - Strengthening exercises for both upper and lower limbs were also included.	30-40 minutes/ session, twice daily
Day 4-7	- Standing activities were introduced. The patient practiced standing with a wide base of support and gradually progressed to a narrower base. - Frenkel exercises in standing were added with support. - Supported weight shifting and spot marching were practiced. - Gait training was initiated using a walker with therapist assistance. Emphasis was placed on controlled steps and equal weight bearing.	30-40 minutes/ session, twice daily
Day 8-10	- Treatment was progressed to dynamic balance activities. - Advanced Frenkel exercises and coordinated stepping activities were practiced. - Sit-to-stand practice and reaching activities were performed. - Walking distance was gradually increased with minimal assistance. - Functional activities were included to improve independence in activities of daily living.	30-40 minutes/ session, twice daily

[Table/Fig-4]: Physiotherapy intervention.

During the first three days, treatment focused mainly on sitting balance and trunk control exercises. The patient practiced weight shifting in sitting and simple coordination activities such as finger-to-nose and heel slides. Frenkel exercises were also incorporated to improve coordination. Movements were performed slowly with visual feedback. She required supervision due to truncal sway. Along with that strengthening of both the upper limb and lower limb was provided.

From Day 4 to Day 7, standing activities were initiated. The patient practiced standing with a wide base of support and gradually progressed to a narrower base. Supported weight shifting and spot marching were practiced. Gait training was started using a walker with therapist assistance. The patient was guided to take slow controlled steps with equal weight bearing on bilateral lower limbs.

During the final three days, treatment was progressed to more challenging dynamic balance activities. The patient performed repeated sit-to-stand practice and reaching activities. Walking distance was gradually increased with minimal assistance. Functional activities were included as part of training to improve independence in activities of daily living.

Post-rehabilitation outcomes: After 10 days of rehabilitation, the SARA score reduced from 19/40 to 8/40. The Berg Balance Scale score improved from 18/56 to 40/56. Functional mobility and independence also improved, as shown in [Table/Fig-5].

Outcome measure	After 10 days of rehabilitation
SARA Scale	8/40
Berg Balance Scale	40/56
Nine-Hole Peg Test (Right)	28 sec
Timed Up and Go Test	16 sec
Functional Independence Measure (FIM)	113/126

[Table/Fig-5]: Outcome measures post 10 days of rehabilitation.

SARA: Scale for the assessment and rating of ataxia

At discharge, the patient was advised to continue a home exercise program focusing on balance and coordination exercises. A follow-up review was scheduled after four weeks to reassess functional status. At follow-up after four weeks, the patient was able to walk independently with improved balance and reported better confidence in daily activities.

DISCUSSION

In this case, the patient had right cerebellar haemorrhage and presented with poor balance, incoordination, and difficulty performing daily activities independently. Physiotherapy was started once she was medically stable. Exercises were progressed gradually based on her tolerance and functional status. During the rehabilitation period, her balance and mobility improved.

Cerebellar haemorrhage commonly leads to ataxia due to involvement of cerebellar pathways responsible for coordination and postural control [6]. Rehabilitation approaches that include balance training, coordination exercises, and task-based practice are commonly used in patients with cerebellar disorders [7]. Earlier studies have reported that structured physiotherapy programs may help reduce ataxia severity and improve balance and gait performance in such patients [6,8]. In the present case, treatment was progressed from sitting balance activities to standing and gait training according to her clinical response. Similar findings have been described in earlier reports on patients with cerebellar haemorrhage [9-12]. In one such case involving cerebellar haemorrhage with obstructive hydrocephalus, the patient showed gradual improvement in balance and functional mobility following structured physiotherapy. The authors pointed out that early rehabilitation and gradual progression of exercises seemed to support recovery [9]. Another report by Wilson CM et al., that followed rehabilitation from the intensive care unit to the outpatient stage also noted steady improvement in coordination and independence. In that case, therapy was adjusted based on the patient's tolerance, which appeared to help in improving functional abilities over time [10].

Comparable observations have been noted in other reports as well, where patients with cerebellar bleed improved in balance and daily activities with physiotherapy. These interventions mainly involved simple, task-based exercises with gradual progression [11,12]. Overall, these findings are in line with the present case, where the patient showed gradual improvement as the exercises progressed from sitting balance to standing and gait training.

Certain clinical factors may have contributed to recovery. Although the patient had a history of hypertension, she did not develop major complications such as brainstem compression. Imaging showed only mild hydrocephalus, and there was no rapid neurological deterioration. This allowed early mobilisation. Her preserved cognitive function also helped her actively participate in therapy sessions. Early referral to physiotherapy after stabilisation may have supported functional gains.

It should also be considered that spontaneous recovery can occur in the early phase after cerebellar haemorrhage. As rehabilitation was carried out for only 10 days and this is a single case report, the improvement cannot be attributed entirely to physiotherapy. The short duration of follow-up limits interpretation of long-term effects. Further studies with larger samples and longer rehabilitation periods are needed to clarify the role of physiotherapy in similar cases.

CONCLUSION(S)

This case report shows functional improvement in a patient with cerebellar haemorrhage following a short period of structured physiotherapy. Balance training, coordination exercises, and task-based activities were incorporated based on the patient's clinical presentation. Although improvement was observed during the rehabilitation period, spontaneous recovery may also have

contributed. Further studies with longer follow-up are needed to better understand the role of physiotherapy in similar cases.

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