

Case Report

Functional Recovery in a Geriatric Woman with Late-Subacute Stroke and Vascular Dementia: A Case Report

Pemulihan Fungsional pada Wanita Geriatrik dengan Stroke Subakut Lanjut dan Demensia Vaskular: Sebuah Laporan Kasus

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Received: May 25, 2025

Accepted: August 18, 2026

Abstract

This case report presented task-oriented rehabilitation of a 66-year-old woman with vascular dementia due to late-subacute stroke. The patient exhibited cognitive and mobilization decline that led to significant functional impairments in her daily activities, including her hobby of gardening, looking after her grandchildren, and partial dependence on self-care. This report highlighted the effectiveness of task-oriented rehabilitation for a geriatric patient with late-subacute stroke, in which isolated rehabilitation was thought to be less effective. A multidisciplinary approach combining executive-function and divided-attention training, tailored to the patient's individual needs and goals for resuming avocational activities (gardening and caring for her grandchildren, including playing catch and having them sit on her lap), was implemented. The intervention comprised task-oriented occupational therapy and cognitive rehabilitation targeting executive function and divided attention. The patient showed notable improvements, with avocational activities performed daily and independently within 3 months of task-oriented rehabilitation. The MOCA-Blind score improved from 12 to 15 out of 22, BMI increased from 12 to 15.22 kg/m², and the Zarit Burden Interview score decreased from 22 to 11. Combined-personalized, task-oriented rehabilitation was effective in late-subacute stroke rehabilitation, especially in the geriatric population in which the consequences of aging limit functional recovery.

Keywords: task-oriented-rehabilitation; neurorehabilitation; late-subacute stroke; vascular dementia

How to Cite:

Kurniawan FD, Sumardi N, Tanuwidjaja D, Biben V. Functional recovery in a geriatric woman with late-subacute stroke and vascular dementia: a case report. Journal of Medicine and Health. 2026; 8(2): 191-6. DOI: <https://doi.org/10.28932/jmh.v8i2.11889>.

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Introduction

Vascular dementia, a common consequence of stroke, significantly affects cognitive and functional abilities, particularly in older adults.¹ Sarcopenia, characterized by progressive loss of muscle mass and strength, further exacerbates disability in stroke survivors.² Approximately 30% of stroke patients develop cognitive impairment, with vascular dementia often associated with multiple cerebral infarcts.³ In addition, uncontrolled comorbidities such as hypertension and hypertriglyceridemia increase the risk of recurrent stroke.⁴

This case report describes a 66-year-old female with post-stroke vascular dementia and sarcopenia, highlighting the potential role of functional, task-oriented rehabilitation in late-subacute stroke recovery. The intervention incorporated combined executive-function and divided-attention training—an approach not commonly reported in previous studies—to improve independence in activities of daily living and overall quality of life.

This report aims to evaluate the effectiveness of task-oriented rehabilitation in a geriatric patient with late-subacute stroke, a stage in which isolated rehabilitation approaches may be less effective. A multidisciplinary strategy was applied, integrating occupational therapy and cognitive rehabilitation tailored to the patient's functional goals, particularly her avocational activities such as gardening and caring for her grandchildren (e.g., playing catch and holding them on her lap). The intervention emphasized executive function and divided attention training within meaningful, real-life tasks to enhance functional recovery.

Methods

This case report was conducted at Hasan Sadikin Hospital, Bandung, from March to July 2024. A 66-year-old female was referred to the Physical Medicine and Rehabilitation Department post-stroke. Data were collected via clinical interviews, physical examinations, MOCA-Blind, SARC-F, Barthel Index, and brain MRI. The patient's daughter, her primary caregiver, actively participated in the treatment and rehabilitation process by assisting with home-based exercises and monitoring progress. The intervention uniquely embedded divided-attention and executive-function tasks within functional activities (the patient was asked to fill, use, and clean a makeshift watering tool – a mineral water plastic bottle with holes on the lid and playing catch with her grandchild), addressing calls for standardized dual-task cognitive–motor protocols in stroke rehab and to the authors' knowledge, there had not been a consensus on dual-task-cognitive-motor protocol for stroke rehabilitation. Informed consent for examination and presentation as a case report was requested from the patient and her caregiver.

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Case Description

A 66-year-old widowed female presented with an inability to self-care following a stroke in February 2024. Brain MRI showed multiple late-subacute lacunar infarcts in the right subcortical frontal lobe and bilateral corona radiata, with senile cerebral atrophy, suggestive of vascular dementia (Fazekas scale 2). She reported generalized weakness, malnutrition (BMI 12), and suspected sarcopenia (SARC-F score 11). Comorbidities included impaired visual acuity, uncontrolled hypertension, and hypertriglyceridemia. She was wheelchair-bound, with a Barthel Index of 30/100 (very dependent) and MOCA-Blind score of 12/22, indicating severe cognitive impairment.

Rehabilitation included functional, task-oriented training in a closed facility with no-to-minimal distraction, focusing on gardening activities, such as watering with a lightweight can, trimming with adaptive scissors, and transplanting seedlings in small, elevated pots tailored to her mobility limitations to improve fine motor skills, cognitive planning and playing catch with her grandchildren for coordination exercise – activities she wanted to re-achieve until the level before her illness, combined with divided attention exercise by maintaining conversation regarding her past and family members while doing the targeted activities. The rehabilitation process faced challenges, including the distance from the patient’s home to the medical facility and her low economic status, which limited resource access. The distance was mitigated by designing a home-based program which was proven to be as effective compared to hospital-based rehabilitation if done structurally, with the caregiver trained to guide exercises using household items (e.g., water bottles as weights) due to limited funds.^{1,2} Referrals to a clinical nutrition specialist and ophthalmologist were made, and in 3 months her MOCA-Blind score improved to 15/22, BMI increased to 15.22, and she could change from lying to sitting independently. Caregiver burden (Zarit Burden Interview) reduced from 22 to 11. The treatment timeline was shown in Table 1.

Table 1 Timeline of Treatment

Event	Stroke Onset	Hospital Referral	Rehabilitation Initiation	Follow-up
Date	February 2024	March 2024	April 2024	July 2024
Status	• Inability to perform self-care and mobilization • Malnutrition	Vascular dementia diagnosed	Task-oriented rehabilitation	• Improved cognition and mobility, leading to regained avocational independence

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Discussion

Clinical Manifestations

The patient fulfilled criteria for vascular dementia, with cognitive impairment (MOCA-Blind 12/22) and MRI evidence of multiple infarcts.³ Sarcopenia, prevalent in post-stroke patients due to poor nutritional intake, low BMI, and older age, was indicated by muscle atrophy and a high SARC-F score. This condition worsened her mobility issues.⁴ Untreated hypertension and hypertriglyceridemia since 2022 likely contributed to stroke recurrence, consistent with literature linking comorbidities to vascular events.⁵

Comparison with Literature

Similar to the case reported by Kumral et al., bilateral corona radiata lesions increased the risk of cognitive decline.³ Unlike typical stroke cases, this patient's malnutrition and sarcopenia worsened dependency, aligning with studies on post-stroke muscle loss.^{4,6} Task-oriented rehabilitation improved functional outcomes even in late-subacute to chronic stroke cases, as supported by Kumar et al. and Lee et al., who noted reduced caregiver burden with patient recovery. Unlike traditional rehabilitation, which emphasizes isolated exercises (e.g., passive stretching), task-oriented rehabilitation directly targets functional tasks like reaching, grasping, and dressing, improving real-world applicability.^{7,8} This approach helps individuals relearn and integrate motor skills within the context of daily life, leading to better functional outcomes.⁹⁻¹² The tailored intervention and strong caregiver support likely contributed to her progress, offering insights for similar cases. The uniqueness of this case was also highlighted in the combined divided attention and executive function tasks within the functional activities. The lack of consensus and protocols for cognitive-motor dual-task training, as mentioned in a study by Cao et al.¹³ This study responds to that gap and showcases an innovative, personalized rehabilitation methodology.

Rehabilitation Efficacy

Cognitive and task-oriented exercise enhanced attention and memory, mirroring findings on neuroplasticity in stroke recovery, although in the later phase of stroke, the rate of recovery would decline and reach an asymptotic level, as mentioned by Ballester et al., from which task-oriented rehabilitation plays a crucial role in re-educating the patient on tasks that they were able to perform before stroke onset.¹⁴⁻¹⁷ Nutritional support addressed malnutrition, critical for sarcopenia management.^{4,6} Compared to historical cases, where dependency persisted, this case demonstrated the efficacy of task-oriented, multidisciplinary intervention. While the patient made

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progress in avocational activities, some cognitive deficits persisted, highlighting the need for ongoing support.^{18–20}

Future Directions

Long-term rehabilitation should focus on maintaining independence in desired activities and sustained weight gain that reflects an increase in energy required to perform tasks. Public and medical personnel awareness of post-stroke rehabilitation can reduce stigma and encourage early intervention. Task-oriented rehabilitation can also be integrated into standard stroke care protocols to optimize geriatric recovery.

Conclusion

This case highlighted the complex interplay of vascular dementia, sarcopenia, and comorbidities in post-stroke disability. Multidisciplinary rehabilitation, addressing cognition, mobility, and nutrition, improved functional outcomes and reduced caregiver burden. We recommend early, targeted interventions as an integral part of management to optimize recovery in similar cases.

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