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CASE REPORT

Walking and body balance training in people after Stroke: Case Report

Entrenamiento de la marcha y el equilibrio corporal en personas después de un accidente cerebrovascular: Informe de un caso

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ABSTRACT

Introduction: population aging increases the risk of several acute and chronic diseases. Of these, stroke is one of the most prevalent in Portugal, resulting in neurological and motor deficits in the individual, with serious implications for their mobility, functionality and quality of life. Objective: to describe the gains in body balance, muscle movement and gait with the intervention of Rehabilitation Nursing in a person after a Stroke. Case report: descriptive study, case report type, in which CARE recommendations were followed, of an individual with impaired body balance, muscle strength and walking with a walking aid after a stroke. An initial assessment was carried out with the development of a rehabilitation nursing care plan, and the respective health gains were demonstrated. The importance of training the individual in relation to body balance, muscle strength, walking with a walking aid and their relationship with the level of independence and functionality of the individual, in their home context, is highlighted. Conclusions: after intervention by a specialist nurse in rehabilitation nursing, there was an improvement in body balance, muscle strength and walking with a walking aid, with an increase in the level of independence and functionality of the person.

Keywords: Rehabilitation Nursing; Stroke; Postural Balance; Gait; Functional Status.

RESUMEN

Introducción: el envejecimiento poblacional aumenta el riesgo de varias enfermedades agudas y crónicas. De ellos, el ictus es uno de los más prevalentes en Portugal, produciendo déficits neurológicos y motores en la persona, con graves implicaciones para su movilidad, funcionalidad y calidad de vida. Objetivo: describir las ganancias en el equilibrio corporal, movimiento muscular y marcha con la intervención de Enfermería de Rehabilitación en una persona después de un Accidente Cerebrovascular. Reporte de caso: estudio descriptivo, tipo reporte de caso, en el que se siguieron las recomendaciones de CARE, de una persona con deterioro del equilibrio corporal, de la fuerza muscular y de la marcha con ayuda de un andador, después de un accidente cerebrovascular. Evaluación inicial realizada con elaboración de plan de cuidados de enfermería de rehabilitación y demostración de las respectivas ganancias de salud. Se destaca la importancia del entrenamiento de la persona en relación al equilibrio corporal, la fuerza muscular, la marcha con ayuda de un andador y su relación con el nivel de independencia y funcionalidad de la persona, en su contexto doméstico. Conclusiones: tras la intervención de una enfermera especializada en enfermería de rehabilitación, se observó una mejoría del equilibrio corporal, de la fuerza muscular y de la marcha con ayuda de un andador, con un aumento del nivel de independencia y funcionalidad de la persona.

Palabras clave: Enfermería en Rehabilitación; Accidente Cerebrovascular; Equilibrio Postural; Marcha; Estado Funcional.

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INTRODUCTION

Population aging and changing lifestyle habits favor an increase in acute and chronic diseases; resulting in an increase in morbidity; functional dependence and mortality.(1)Among cardiovascular diseases; stroke is one of the main causes of death and disability in Portugal; as in the rest of Europe.(2)

Stroke is a clinical syndrome with an abrupt and insidious onset; characterized by focal or global vascular alterations; resulting in neurological and motor deficits. It mainly affects people over 65 and is associated with modifiable and non-modifiable risk factors. Hemiparesis is one of the most common sequelae; compromising balance and gait.(3)

It is a major public health issue and one of the main causes of death and disability in Portugal.(4)Balance and gait are the most affected areas; interfering with movements such as standing; sitting and transferring; increasing the risk of falls and worsening functional independence.(5)

Limitation of mobility seriously compromises a person's quality of life; making it essential for rehabilitation nurses to intervene to restore functional independence; whether in an acute or chronic situation; in hospital or at home.(5;6)

This case study analyzes the health gains in balance; muscle movement and gait with a walking aid; promoting the person's functional independence; through the implementation of a rehabilitation nursing (RN) plan.

CASE REPORT

This case report was prepared according to the CARE recommendations and refers to a person with impaired body balance; muscle strength and gait with a walking aid; as a result of stroke sequelae. The functional motor re-education and training plan for the person and their caregiver; in a home setting; was outlined.

Data was collected through anamnesis and consultation of the clinical file; after obtaining free and informed consent; in accordance with the General Data Protection Regime; safeguarding the confidentiality and anonymity of the data.

Mr. C.; 84; lived with his 82-year-old wife; both suffering from multiple chronic illnesses; but capable of self-management and controlling their health conditions; maintaining independence in their activities of daily living (ADLs). They had the support of their two daughters in managing purchases; appointments and therapy.

He presented with mild dysarthria; difficulty walking; decreased strength in the lower limbs and body imbalance to the left. He went to the hospital emergency department; where he was diagnosed with an ischemic stroke of the right middle cerebral artery; of cardioembolic etiology secondary to atrial fibrillation; identified during hospitalization.

During hospitalization; neurological and motor deficits were identified; including hemiparesis on the left; deviation of the labial commissure on the right; dysphagia and moderate dysarthria. Although he had a favorable evolution; he remained with reduced mobility and functionality; resulting in a high level of dependence; incompatible with an immediate return home.

He was referred to the Medium Duration Rehabilitation Unit; where he stayed for four months; with an indication to continue with the rehabilitation program. He was admitted to the Integrated Continued Care Team to continue his rehabilitation at home.

On initial assessment; he had a slight deviation of the labial commissure to the right; with no changes in language or swallowing. He maintained a slight left hemiparesis; with brachial predominance; and walked with the support of a walker and a third person; unable to go up and down stairs. Partially dependent on ADLs; requiring support from the caregiver throughout the 24-hour period.

On his return home; Mr. C. identified the main objective as regaining the ability to leave the house; despite the existing architectural barrier (the house is on the second floor with no elevator).

For a comprehensive assessment of its functionality; a set of specific instruments was used. Regarding muscle strength (Medical Research Council); body balance (balance assessment and Tinetti Index); gait (Tinetti Index; Holden Functional Gait Classification); risk of falling (Morse Falls Scale); ADL (Barthel Index) and functionality (National Functionality Table) (Table 1).

An individualized RN care plan was drawn up with Mr. C and his caregiver; including RN interventions and diagnoses (tables 2 and 3); implemented three times a week for 6 weeks.

The exercises were adapted to Mr. C's ability in each session; considering frequency; intensity; time; type; volume and progression.

At the same time; Mr. C and his caregiver were given the knowledge; training and skills to perform them independently; once or twice a day.

Table 1. Evaluation instruments.

Evaluation instruments		Initial assessment	Final assessment
Medical Research Council	Upper Right Limb	4	4
	Upper Left Limb	3	4
	Lower Right Limb	5	5
	Lower Left Limb	4	5
Balance assessment	Static sitting	Present	Present
	Dynamic sitting	Diminished	Present
	Static orthostatic	Diminished	Present
	Dynamic orthostatic	Absent	Diminished
Tinetti Index	Static and Dynamic Balance	6	15
	Gait Assessment Scale	4	11
Holden Functional Gait Classification		Category 2 Dependent gait level I	Category 4 Independent walking (flat surface)
Morse Falls Scale		75	50
Índice de Barthel		40	70
National Functionality Table		112	53

Table 2. Rehabilitation Nursing Diagnoses

Rehabilitation Nursing Diagnosis	Initial assessment	Final assessment
Body Balance	Compromised	Improved
Potential to improve knowledge of body balance technique	ND	D
Potential to improve ability to use body balance technique	ND	D
Muscle movement in the left body	Diminished	Increased
Potential to improve knowledge of muscle and joint exercise techniques	ND	D
Potential to improve ability to perform muscle and joint exercise techniques	ND	D
Walking with a walking aid (walker)	Comprometido	Melhorado
Potential to improve knowledge about getting around with walking aids (walker and cane)	ND	D
Potential to improve the ability to walk with a walking aid (walker or cane)	D	D
Legend: ND - Does not demonstrate; D - Demonstrates		

DISCUSSION

After Mr. C's initial and final assessment; there was an improvement in muscle strength in the left hemisphere; while the level of strength in the right hemisphere remained the same. There was also progress in body balance (static and dynamic); evidenced by an increase in the Tinetti scale score; as well as progress in the gait category; according to the Holden scale. The level of independence and functionality improved; reflected in the increase in the Barthel Index score and the reduction in the National Functionality Table score. Despite maintaining a high risk of falling; there was a decrease in the Morse scale score; bringing it closer to the average risk.

This individualized RN care plan enabled Mr. C. to achieve his main goal; enabling him to get out of the house and walk on the street.

Mobility and gait are essential predictors of survival and determinants of ADL performance. Walking means independence and is only possible with muscle strength and body balance. These gains promote a better quality of life and greater participation in society.(2)

Table 3. Rehabilitation Nursing Exercise Plan

Exercise Plan	Repetitions	Material
Body Balance		
Postural correction (when performing exercises)		
Static and dynamic balance training while sitting and standing		
Hip flexion and extension	3x10	Walker/Chair
Hip abduction and adduction	3x10	Walker/Chair
Knee extension	3x10	Walker/Chair
Tibiotarsal flexion-extension	3x10	Walker/Chair
Andar com auxiliar de marcha (andarilho) Sitting and standing without support	3x10	Chair
Climbing up and down steps (step in each lower limb)	3x10	Stairs
Load alternation Lower Limb/Unipodal support		
Gait training with a walker		Walker
Walking with a cane		Cane
Climbing and descending stairs		Cane
Gait training with the walking aid on the street		Walker/Cane
Obstacle avoidance		
Muscle movement in the left body Pedal UL and LL	15 min	Pedalboard
Glenohumeral flexion and extension	3x10	Weight 300 g
Glenohumeral abduction adduction	3x10	Weight 300 g
Ulnar flexion-extension	3x10	Weight 300 g
Wrist flexion and extension	3x10	Weight 300 g
Facial muscle exercises	2xdia	
Perform facial muscle massage	2xdia	
Movement coordination exercises		

Mr. C. and his caregiver have shown an increase in knowledge and ability to perform body balance techniques; muscle and joint exercises; as well as to use walking aids; evolving from the walker to the cane; both at home and on the street. The Directorate-General for Health recommends daily mobilizations for people with mobility alterations due to stroke; 2-3 times a day; with a minimum of 10 repetitions.(7)

Health transition processes require the intervention of the rehabilitation nurse specialist; allowing the person to remain at home; with the necessary health care; promoting the greatest possible degree of independence and functionality.(8)

CONCLUSIONS

This case report highlighted the importance of functional motor re-education in the areas of body balance; muscle strength and gait; resulting in improved independence and functionality; as well as increased knowledge and training of the person and caregiver.

The conclusion is that; although it is not possible to reverse the sequelae of the disease; it is feasible to maximize functional capacity; preventing immobility and social isolation.

REFERENCES

1. Raposo P; Relhas L; Pestana H; Mesquita AC; Sousa L. Intervenção do enfermeiro especialista em reabilitação na capacitação do cuidador familiar após AVC: estudo de caso. Rev Port Enferm Reabil. 2020; 3(Suppl 1):18-22. Disponible en: https://rper.aper.pt/index.php/rper/article/view/92
2. Marques-Vieira C; Caldas AC. A relevância do andar: reabilitar a pessoa com andar comprometido. En: Marques-Vieira C; Sousa L; coordinadores. Cuidados de enfermagem de reabilitação à pessoa ao longo da vida. Lisboa: Lusodidacta; 2023. p. 547-55.
3. Marques DS; Veras RO; Faturi CLN; Costa FHS; Diniz AN; Mouzinho LSN; et al. Fatores de risco modificáveis e não modificáveis associados ao desenvolvimento de acidente vascular cerebral. CLCS. 2023 Oct 5;16(10):19411-25. Disponible en: https://ojs.revistacontribuciones.com/ojs/index.php/clcs/article/view/2429
4. Sociedade Portuguesa de Medicina Interna. O AVC é a principal causa de morte e incapacidade em Portugal. 2021. Disponible en: https://www.spmi.pt/o-avc-e-a-principal-causa-de-morte-e-incapacidade-em-portugal/
5. Rocha IDJ; Bravo MFM; Sousa LMM; Mesquita ACN; Pestana HCFC. Intervenção do enfermeiro de reabilitação no ganho de equilíbrio postural na pessoa após acidente vascular cerebral: estudo de caso. Rev Port Enferm Reabil. 2020 Oct 27;3(Suppl 1):5-17. Disponible en: https://rper.aper.pt/index.php/rper/article/view/91
6. Novo Lima AM; Salomé Martins Ferreira M; Ferreira Pereira da Silva Martins MM; Fernandes S. Influência dos cuidados de enfermagem de reabilitação na recuperação da independência funcional do doente. J Health NPEPS. 2019;4(2):28-43.
7. Araújo P; Soares A; Ribeiro O; Martins MM. Processo de cuidados de enfermagem de reabilitação à pessoa adulta/idosa com compromisso no sistema nervoso. En: Ribeiro O; coordenador. Enfermagem de reabilitação: conceções e práticas. Lisboa: Lidel; 2021. p. 164-233.
8. Oliveira C; Couto G; Silva RP. Enfermagem de reabilitação nos cuidados de saúde primários. En: Ribeiro O; coordenador. Enfermagem de reabilitação: conceções e práticas. Lisboa: Lidel; 2021. p. 654-70.

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