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CASE REPORT

Rehabilitation Nursing for people with Parkinson's Disease Immobility Syndrome: a case report

Enfermería de rehabilitación para personas con síndrome de inmovilidad por enfermedad de Parkinson: informe de un caso

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ABSTRACT

Introduction: Parkinson's Disease is an insidious neurodegenerative pathology that compromises mobility, balance and autonomy, significantly reducing the quality of life of the person facing this health condition. The Rehabilitation Nurse Specialist plays an essential role in mitigating these effects through interventions aimed at the autonomy and independence of the person with Parkinson's Disease.
Objective: to describe the benefits of implementing a rehabilitation nursing program for people with Parkinson's disease immobility syndrome in a community setting.
Case Report: this is a descriptive case report of a person with immobility syndrome due to Parkinson's disease. After identifying the nursing diagnoses, a care plan was drawn up centered on functional rehabilitation, focusing on body balance, muscle movement and intolerance to activity, in a home context. The therapeutic plan included home visits three times a week, including therapeutic exercises, mobilizations, balance training and muscle strengthening, as well as training for the family/caregiver.
Conclusion: after two and a half months of intervention, the rehabilitation nursing plan implemented for the person with advanced Parkinson's disease showed a positive evolution in mobility, muscle strength, body balance, increased functionality and, successively, independence for activities of daily living. The caregiver's burden was reduced, which was reflected in an overall improvement in the family's quality of life. In view of the motor and functional changes triggered by Parkinson's Disease, it is essential to implement a Functional Motor and Respiratory Re-education plan, associated with training strategies, which will maximize independence and improve the quality of life of the person and the caregiver.

Keywords: Parkinson's Disease; Rehabilitation Nursing; Functionality; Home Care.

RESUMEN

Introducción: la enfermedad de Parkinson es una patología neurodegenerativa insidiosa que compromete la movilidad, el equilibrio y la autonomía, reduciendo significativamente la calidad de vida de la persona que enfrenta esta condición de salud. El Enfermero Especialista en Enfermería de Rehabilitación desempeña un papel esencial en la mitigación de estos efectos a través de intervenciones dirigidas a la autonomía e independencia de la persona con enfermedad de Parkinson.
Objetivo: describir los beneficios de la implementación de un programa de enfermería de rehabilitación en personas con síndrome de inmovilidad debido a la enfermedad de Parkinson, en un contexto comunitario.

Reporte de Caso: se trata de un estudio descriptivo, tipo reporte de caso, de una persona con síndrome de inmovilidad debido a la enfermedad de Parkinson. Tras la identificación de los diagnósticos de enfermería, se elaboró un plan de cuidados centrado en la rehabilitación funcional, con enfoque en el equilibrio corporal, el movimiento muscular y la intolerancia a la actividad, en un contexto domiciliario. El plan terapéutico incluyó visitas domiciliarias tres veces por semana, abarcando ejercicios terapéuticos, movilizaciones, entrenamiento del equilibrio y fortalecimiento muscular, así como la capacitación del familiar/cuidador.
Conclusión: tras dos meses y medio de intervención, el plan de enfermería de rehabilitación implementado para la persona con enfermedad de Parkinson avanzada mostró una evolución positiva en la movilidad, la fuerza muscular, el equilibrio corporal, el aumento de la funcionalidad y, consecuentemente, en la independencia para las actividades de la vida diaria. La sobrecarga del cuidador se redujo, reflejándose en una mejora global de la calidad de vida de la familia. Ante los cambios motores y funcionales desencadenados por la enfermedad de Parkinson, resulta fundamental la implementación de un plan de Reeducación Funcional Motora y Respiratoria, asociado a estrategias de capacitación y entrenamiento, que permitan la maximización de la independencia y la mejora de la calidad de vida de la persona y del cuidador.

Palabras clave: Enfermedad de Parkinson; Enfermería de Rehabilitación; Funcionalidad; Atención Domiciliaria.

INTRODUCTION

Parkinson's disease is a progressive neurological condition characterized by motor symptoms (tremor, muscle rigidity, slowness of movement, postural instability) and non-motor symptoms (depression, apathy, cognitive changes, insomnia/excessive daytime sleepiness).[1,2]

The cause of this pathology is still unknown, but it is believed to be multifactorial, resulting from the death of neurons in the substantia nigra, which reduces the production of dopamine, essential for controlling movements.[1] This disease compromises mobility, balance and muscle control, affecting both resting and active movements.[3]

The treatment of Parkinson's Disease is individualized, taking into account the progression of the disease, the severity of the symptoms and the impact it has on the person's quality of life.[1] The intervention of the Rehabilitation Nurse Specialist (RNS) is fundamental in minimizing the impact of the disease, promoting the person's independence through specific rehabilitation plans. These plans involve non-pharmacological strategies that include adapting to functional changes and supporting the family and caregivers.

The aim of this case report is to describe the rehabilitation process of a person with Parkinson's disease immobility syndrome, in a community setting, as well as to present the rehabilitation nursing care that maximizes independence and improves quality of life.

This case report was conducted in accordance with the Equator CAse REport (CARE) guidelines.

CASE REPORT

Mr. J, 68, is a man with advanced Parkinson's Disease, Dementia Syndrome and Obstructive Sleep Apnea Syndrome, totally dependent on activities of daily living (ADLs). He lives with his wife, who is his main caregiver, and receives support from the parish Social Center for hygiene care 1x/day. He had been bedridden for four months following a worsening of his illness and has severe muscle stiffness, limiting joint mobility and preventing orthostatism.

The RNS's initial assessment revealed that Mr. J was uncooperative in his care, had pain on mobilization, motor fluctuation, muscle stiffness, and was totally dependent on feeding, hygiene, toilet use and ambulation. Mr. J had a high risk of developing pressure ulcers (12/23 points) and a low risk of falls (30/125 points). His wife showed a high degree of caregiver burden (77/100 on the Zarit Caregiver Burden Scale).[4]

The assessment carried out by the RNS was based on the following instruments:[5]

1. Medical Research Council (Evaluates muscle strength on a scale of 0 to 5, where 0 represents no contraction and 5 normal strength);
2. Modified Ashworth Scale (Measures the degree of spasticity (increased muscle tone) in individuals with neurological injuries, ranging from 0 (no increase in tone) to 4 (extreme rigidity);
3. The Simple Balance Scale assesses an individual's ability to maintain balance in different positions (sitting and standing positions) in order to analyze static and dynamic balance, typically using a qualitative classification (e.g., present/absent or maintains/does not maintain), without external support.
4. Morse Falls Scale (assesses the risk of falling based on a history of falls, secondary diagnoses, gait, mobility and mental state);
5. Barthel Index (measures a person's functional capacity to carry out activities of daily living such as eating, personal hygiene, walking and incontinence, and ranges from total dependence to independence);

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6. Functional Independence Measure (used to classify the degree of functional capacity/disability, assessing the person's performance and the need for care required to carry out a series of motor and cognitive tasks of daily living).

Table 1 shows the rehabilitation nursing care plan, including diagnoses, objectives, interventions and final assessment.

Table 1. Rehabilitation nursing care plan

Nursing Diagnosis	Objectives	Interventions	Final Assessment 18/07/2024
Compromised Body Balance	Promote body balance	- Monitor static and dynamic body balance using the simple balance scale (sitting and standing, whether you adopt vicious positions, presence of spinal deformities, changes in posture); - Stimulate the maintenance of body balance (alternating loads on the upper and lower limbs, trunk oscillation movements, movement coordination exercises, cross-facilitation, postural correction in front of a mirror); - Performing body balance training techniques (static and dynamic sitting balance: placing the person's knees bent at a right angle, aligned, keeping the feet on the floor with postural correction, performing anterior and posterior inclination movements and swaying from left to right); -Therapeutic exercises: rolling on the bed; cross-facilitation; self-mobilization of the upper and lower limbs, lifting and transferring; - Balance training and muscle strengthening; - Support in therapeutic and pain management.	Simple Balance Scale: Static sitting: Present Dynamic sitting: Present Static orthostatic: Absent Dynamic orthostatic: Absent
Compromised potential to improve knowledge of body balance technique	Improve knowledge of body balance techniques	- Evaluate knowledge of balance training techniques for compensating body balance (static and dynamic sitting balance: placing the person's knees bent at a right angle, aligned, keeping the feet on the floor with postural correction, performing anterior and posterior inclination movements and swaying from left to right, movement coordination exercises, postural correction in front of a mirror); - Instruction in balance training techniques for body balance compensation (static and dynamic sitting balance: placing the person's knees bent at right angles, aligned, keeping the feet on the floor with postural correction, performing anterior and posterior inclination movements and swaying from left to right, movement coordination exercises, postural correction in front of a mirror); - Education on balance strategies; - Therapeutic exercises: rolling on the bed; cross-facilitation; self-mobilization of the upper and lower limbs, lifting and transferring; - Teaching the wife to continue with rehabilitation nursing care.	Achieved
Compromised potential to improve ability to use body balance technique	Improve ability to use body balance technique	- Body balance compensation training techniques (static and dynamic sitting balance: placing the person's knees bent at a right angle, aligned, keeping the feet on the floor with postural correction, performing anterior and posterior inclination movements and swaying from left to right, movement coordination exercises, postural correction in front of a mirror; - Balance practice training; - Therapeutic exercises: rolling in bed; cross-facilitation; self-mobilization of upper and lower limbs, lifting and transferring; - Teaching the wife to continue with rehabilitation nursing care; - Support in managing therapy and pain.	Partially achieved as only sitting balance (static and dynamic) was possible

Compromised muscle movement	Maintain and increase joint and muscle range of motion; Maintain and increase muscle strength; Prevent spasticity; Prevent pressure ulcers	- Monitor muscle strength using MRC; - Perform passive muscle and joint exercise techniques; - Encourage the person to perform active muscle and joint exercises (self-mobilization: head and neck, MS and IM, and finger exercises); - Perform active-resisted muscle and joint exercise techniques for all limbs; - Perform positioning techniques; - Therapeutic exercises: rolling on the bed; cross-facilitation; self-mobilization of the upper and lower limbs, lifting and transferring; - Support in therapeutic and pain management.	MRC Evaluation: Upper Right Limb 5/5 Upper Left Limb 5/5 Right Lower Limb 4/5 Left Lower Limb 4/5
Compromised potential to improve knowledge of muscle and joint exercise techniques upper limb (UL) and lower limb (LL)	Improve knowledge of UL and LL muscle and joint exercise techniques	- Provide information on muscle and joint exercise techniques; - Assess knowledge of muscle and joint exercise techniques for the UL and LL; -Encourage about muscle and joint exercise techniques; - Teach active and resistance muscle and joint exercise techniques; - Therapeutic exercises: rolling on the bed; cross-facilitation; self-mobilization of the upper and lower limbs, lifting and transferring; - Validate knowledge of muscle and joint exercise techniques; - Teach the wife to continue with rehabilitation nursing care.	Achieved
Compromised potential to improve ability to perform muscle and joint exercise techniques UL and LL	Improve knowledge of UL and LL muscle and joint exercise techniques	- Assessing the ability to perform muscle and joint exercise techniques; - Provide instruction in active and resisted muscle and joint exercise techniques; - Train in active and resisted muscle and joint exercise techniques; - Therapeutic exercises: rolling on the bed; cross-facilitation; self-mobilization of the upper and lower limbs, lifting and transferring; - Teach the wife to continue with rehabilitation nursing care; - Support in managing therapy and pain.	Partially achieved in the execution of muscle and joint exercise techniques for the LL, as he still needed some help to perform them; Achieved in the execution of muscle and joint exercise techniques for the UL.
Compromised activity intolerance	Improve ability to perform muscle and joint exercise techniques UL and LL	- Monitor using the Borg scale; - Manage exercise; - Perform exercises progressively; - Supervise the response to exercise;	4/6 Moderate Activity
Compromised potential to improve knowledge of rest and energy conservation techniques	Improve knowledge of rest and energy conservation techniques	- Assess rest and relaxation techniques and energy conservation techniques (inhale slowly through the nose while standing still, perform activity while exhaling slowly with lips half closed); - Teach rest and relaxation and energy conservation techniques; - Validate rest and relaxation and energy conservation techniques; - Teach the wife to continue with rehabilitation nursing care.	Achieved
Compromised potential to improve the ability to perform rest and energy conservation techniques	Improve the ability to perform rest and energy conservation techniques	- Instruct rest and relaxation techniques and energy conservation; - Train rest and relaxation techniques and energy conservation; - Teach the wife to continue rehabilitation nursing care.	Achieved

A rehabilitation program was started with impaired body balance, impaired muscle movement and impaired activity intolerance as the main diagnoses. To this end, objectives were defined according to these diagnoses, followed by the necessary interventions. Home visits occurred three times a week with an average duration of 45 min to 1 hour for each session.

The observational assessment was conducted by the rehabilitation nurse during sessions, ensuring consistency in evaluation. The repetition of therapeutic exercises, such as 'rolling on the bed,' across different diagnoses is justified by their effectiveness in improving motor control, mobility, and independence, which are common

goals for individuals with various conditions. These exercises are adaptable to the specific needs of each diagnosis, contributing to the overall rehabilitation process.

An increase of 1 point on the MRC scale from 4/5 to 5/5 indicates significant improvement in muscle strength. Clinically, this improvement translates to enhanced functional capacity, as stronger muscles contribute to better mobility, stability, and overall independence in daily activities. This increase is especially relevant in rehabilitation, as it can lead to reduced risk of falls and improved quality of life.

The intervention of the Rehabilitation Nurse Specialist in Respiratory Functional Reeducation played a fundamental role, since this pathology can compromise respiratory function due to muscle rigidity, bradykinesia and postural changes. Since the rigidity and stooped posture present in Mr. J., hinder thoracic expansion and reduce lung capacity, breathing exercises helped to optimize ventilation and thoracic mobility; weakness of the respiratory muscles can lead to ineffective coughing and the accumulation of secretions, increasing the risk of respiratory infections, so he was trained in forced expiration techniques and cough training to help prevent them; improving the breathing pattern contributed to greater oxygenation of the tissues and increased functional capacity, reducing fatigue and improving quality of life; teaching strategies for controlling breathing enabled Mr. J. to control his breathing. J to better manage situations of stress and anxiety, promoting more independence in carrying out daily activities.

Results after two and a half months:

1. Physical improvement: Increased muscle strength in the upper limbs (4/5 to 5/5) and lower limbs (3/5 to 4/5), joint mobility and balance in a sitting position. Mr. J. began to help with basic care (hygiene, changing positions);
2. Reduction of functional dependence with relief of the wife's burden. Both Mr. J and his caregiver showed knowledge in the areas mentioned, being able to carry them out and adjust to Mr. J's health condition. The reduction in functional dependence has been quantified using the Barthel Index, where a total score of 100 indicates total independence, 91–99 indicates slight dependence, 61–90 indicates moderate dependence, 21–60 indicates severe dependence, and a score of 0–20 indicates total dependence. Pre- and post-intervention scores are provided to illustrate the improvements in functional independence. These metrics demonstrate the effectiveness of the rehabilitation process in enhancing the individual's ability to perform daily activities. Mr. J, at the time of the first home visit (Day 0), had a Barthel Index score of 10/100, indicating significant dependence in daily activities. After the intervention, the Barthel Index increased to 25/100, reflecting an improvement in functional independence, showing a progression from total dependence to severe dependence. This progress suggests that the rehabilitation process contributed significantly to the recovery of his ability to perform essential activities, highlighting the effectiveness of home-based follow-up and the interventions carried out.
3. Psychosocial Gains: Greater participation of the person in periods of lucidity and satisfaction of the couple with the progress.

Persistent Challenges:

1. Difficulties with walking and balance in an orthostatic position;
2. A stooped posture (typical of the disease), which limits the objectives of body balance in an orthostatic position.

This approach reinforced the importance of adjusting expectations and strategies according to the person's clinical evolution.

DISCUSSION

Parkinson's disease is characterized by its unpredictability, affecting each person in a unique way. The most effective therapeutic approach is multidisciplinary, combining a rehabilitation program and pharmacological treatment.

Rehabilitation, as shown in studies such as that by Loureiro et al.[3], provides multiple benefits to the person, including improved mobility, reduced risk of falls, greater ease in carrying out activities of daily living and, above all, improved well-being. Barbosa et al.[6] also tell us that integrating motor and cognitive activities into care plans offers significant benefits for the mobility and cognitive function of all those involved. Garcia et al.[7] highlight the importance of body balance for performing ADLs and for people's social participation. According to the authors, loss of balance is a determining factor in reduced functionality in the elderly, with negative consequences for their autonomy and quality of life.

Strength training and aerobic physical activity should be encouraged and promoted in people with Parkinson's disease.[8] An epidemiological study showed that patients with Parkinson's disease who practiced physical activity regularly had lower mortality, better quality of life and greater involvement in daily activities, compared

to those who were less active.[8] In addition, they are able to improve their performance with repetition, particularly in coordination exercises and upper limb movements, albeit more slowly and without reaching the performance levels of healthy individuals.[8]

Physical exercise plays an essential role in various aspects of the disease, but it must be maintained on an ongoing basis. It is therefore essential to focus on teaching, motivation and regular reassessments. In this sense, the exercises were structured according to the FITT-VP guidelines: to be performed daily, defining a specific type of exercise, its duration, intensity and evolution over time according to motor fluctuations and on-off blocks (characteristic of people with Parkinson's).[9,10] Repetitions, sets and rest for each exercise also play a central role. Rest should be one minute between each set. If, during an exercise, the pain exceeds 3 (on a scale of 0 to 10), it is necessary to reduce the number of repetitions and/or sets, or even stop the exercise immediately if the pain continues.[11]

The motor and functional Rehabilitation Nursing care plan was carried out twice a day, for around 30 minutes, subject to the person's tolerance, taking into account motor fluctuations based on the FITT-VP training acronym (frequency, intensity, time, type of exercise, volume and progression), plus the promotion of self-management, guaranteeing safety and quality criteria. During periods of reduced mobility, priority was given to range of motion. During periods of better motor performance, the focus was on gait, balance, and functionality.

Mr. J's case illustrates the challenges of rehabilitation for people with advanced Parkinson's disease. Despite the limitations imposed by the disease, the rehabilitation program resulted in improvements in mobility, balance and tolerance to exertion, highlighting the benefits of exercise and rehabilitation.

The RN plan implemented for Mr. J. in the "muscle movement" and "body balance" focus proved to be significant. It was possible to intensify the knowledge and ability to perform the techniques in order to improve muscle and joint movement and body balance. As a result, it was possible for Mr. J to help his wife with eating and drinking, as Mr. J was able to balance in a sitting position while maintaining a correct posture at the bedside for meals; it was possible for Mr. J to help with hygiene, diaper changes and positioning, as Mr. J was already collaborating more with mobilizations. He was already cooperating more with mobilizations and, consequently, facilitating positioning, as well as changing his diaper through pelvic elevation exercises, thus providing him and his wife/caregiver with greater satisfaction and quality of life. With continuous encouragement and the practice of exercises such as sitting and standing, Mr. J has progressed to the point where it is possible to transfer him to the armchair, although he still needs full assistance with transfers. The person with this pathology tends to adopt a posture with the spine flexed forward, as was the case, intensifying postural instability and does not allow the achievement of the objectives proposed for body balance, especially in the standing position, which also conditions the ability to walk.

The home setting offers unique challenges and opportunities for the Rehabilitation Nurse's practice, enabling a holistic assessment and personalization of the therapeutic plan, since it allows the person's health condition and socio-family context to be taken into account. It also enables the person and their caregiver to be trained and empowered, promotes co-responsibility in the rehabilitation process and makes it possible to adapt the environment for greater safety and well-being. The program developed for Mr. J also involved support for his family members, recognizing that this disease affects both the person and their caregiver. The family support network is essential for successful rehabilitation, highlighting the importance of the Rehabilitation Nurse Specialist in guiding and accompanying caregivers.

This intervention plan thus reduced the occurrence of complications, promoted improvements in functional independence and the person's satisfaction.

CONCLUSIONS

The interventions described in this case report meet the needs of a person with a neurodegenerative condition, namely Parkinson's Disease. These interventions constitute a safe and quality approach, providing adequate care for the person and their family and promoting better results. These results will enable the development of individual capacities for carrying out activities of daily living and instrumental activities of daily living, contributing to maximizing functionality, promoting autonomy and, consequently, improving quality of life.

Parkinson's disease represents a new health condition for the individual and can lead to limitations and/or disabilities with an impact on the personal, family and social spheres.

Nursing interventions aimed at the person, family and caregiver must be adapted to the specific needs and evolution of the disease, following a realistic perspective and focused on promoting quality of life.

Active aging programs are essential for improving the health and lifestyles of the elderly.[12] Aging brings vulnerabilities to chronic and degenerative diseases, impacting functional capacity and quality of life.[12] This case study highlights the importance of rehabilitation nurses' intervention in promoting the health and autonomy of the elderly, given the health gains that can be achieved. According to Faria et al.[12] there is indeed a positive impact of an active aging program on the functional capacity and lifestyles of the elderly, namely

in the improvements observed: such as reduction of musculoskeletal pain, perception of imbalance, risk of falling, feelings of sadness and memory changes; Increased functional capacity: Static and dynamic balance, handgrip strength and adherence to healthy lifestyles, but also impacts the lifestyles of the elderly: Greater adherence to physical exercise, stress management, healthy eating habits and preventive behaviors.[12]

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of Escola Superior de Saúde Atlântica n. 15 ESSATLA 2024 (approved at 12 July 2024) for studies involving humans.

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