Falls as a Common Problem in Elderly People with Neurological Diseases

Upadki jako częsty problem u osób starszych z chorobami neurologicznymi

Monika Biercewicz

Clinic of Geriatrics, Faculty of Health Sciences, Nicolaus Copernicus University, Toruń, Poland

Abstract

According to the WHO definition, a fall is defined as an event that causes a person to accidentally land on the ground, floor or other lower level. A fall can cause serious physical injury and may result in death. Neurological diseases, including Parkinson's disease, stroke or dementia, due to their course, significantly increase the risk of occurrence of this dangerous event. One of the important problems to which attention should be paid in these diseases, unfortunately not very often noticed, are falls. The aim of the study is to present the problem of falls in a group of elderly people with accompanying selected neurological diseases (Parkinson's disease, stroke, Alzheimer's disease), as well as the possibility of their assessment and prevention based on the analysis of the available literature on the subject (literature). According to the literature on the subject, falls are a common problem in neurological diseases, in particular Parkinson's disease, stroke and Alzheimer's disease. The frequency of falls that patients experience within one year of the onset of the diseases is high and increases with the progression of the disease. The occurrence of falls has a negative impact on the quality of life of patients, it may be associated with institutionalization and dependence on the caregiver. Fall prevention is an important part of the life of patients with neurological diseases. Raising awareness among patients and their caregivers is essential for them to take care of their health and to consciously prevent falls. The nurse plays an important role in the prevention of falls because she prepares the patient to live with the existing problem and self-care, and provides the patient with safe conditions in the care environment. **(JNNN 2022;11(3):137–141)**
Key Words: Alzheimer's disease (AD), elderly, falls, Parkinson's disease (PD), stroke

Streszczenie

Zgodnie z definicją WHO upadek określany jest jako zdarzenie, w wyniku którego osoba przypadkowo znalazła się na ziemi, podłoże lub innym niższym poziomie. Upadek może powodować poważne obrażenia fizyczne, a w następstwie prowadzić do śmierci. Schorzenia neurologiczne m.in. takie jak choroba Parkinsona, udary mózgu czy otępienie ze względu na swój przebieg istotnie podnoszą ryzyko wystąpienia tego niebezpiecznego zdarzenia. Jednym z ważnych problemów na jaki należy zwrócić uwagę w tych schorzeniach, niestety niezbyt często zauważanych są właśnie upadki. Celem pracy jest przedstawienie problemu upadków w grupie osób starszych z towarzyszącymi wybranymi schorzeniami neurologicznymi (z chorobą Parkinsona, udarem mózgu, chorobą Alzheimera), możliwości ich oceny i prewencji na podstawie analizy dostępnej literatury tematu. Zgodnie z literaturą tematu upadki stanowią częsty problem w chorobach neurologicznych, a w szczególności w chorobie Parkinsona, udarach i chorobie Alzheimera. Częstość upadków jakich doznają pacjenci w ciągu roku od wystąpienia choroby jest duża i wzrasta wraz z postępem choroby. Występowanie upadków wpływa negatywnie na jakość życia pacjentów, może wiązać się z instytucjonalizacją i zależnością od opiekuna. Zapobieganie upadkom jest ważnym elementem życia pacjentów z chorobami neurologicznymi. Zwiększenie świadomości u pacjentów jak i ich opiekunów jest niezbędne, aby mogli oni zatroszczyć się o swoje zdrowie i w pełni świadomie zapobiegać upadkom. Pielęgniarka pełni istotną rolę w profilaktyce upadków, ponieważ przygotowuje pacjenta do życia z istniejącym problem, do samopielęgnacji i samoopieki oraz zapewnia pacjentowi bezpieczne warunki w środowisku opieki. **(PNN 2022;11(3):137–141)**
Słowa kluczowe: choroba Alzheimera, osoby starsze, upadki, choroba Parkinsona, udar mózgu

Introduction

According to the WHO definition, a fall is defined as an event that causes a person to accidentally land on the ground, floor or other lower level [1]. A fall can cause serious physical injuries (e.g. fractures, contusions or haematomas) and subsequent death. Taking into account the age, the elderly over 65, with a functional deficit, multi-disease and multi-drug aspect, are particularly vulnerable to falls. It is estimated that about 1/3 of people over 65 (about 30%) will experience at least one fall in a year [2]. Neurological diseases, including Parkinson's disease (PD), stroke or dementia, due to their course, significantly increase the risk of occurrence of this dangerous event. One of the important problems to which attention should be paid in these diseases, unfortunately not very often noticed, are falls. Both patients and their carers must be aware of the risk of falls. At a certain stage of the disease, patients will, unfortunately, be completely dependent on the environment and the education of caregivers in terms of assessing the risk of falls and creating safe conditions for the patient is extremely important and undisputable. Considering that in the world the elderly constitute a large group of the population and neurological diseases such as stroke, dementia or Parkinson's disease are not uncommon and their number is gradually increasing, falls can be classified as an important global health problem. It should also be remembered that an important aspect of falls is also the economic context related to post-fall diagnostics and possible treatment, and often institutionalization of such patients in care facilities.

The aim of the study is to present the problem of falls in a group of elderly people with accompanying selected neurological diseases (Parkinson's disease, stroke, Alzheimer's disease), as well as the possibility of their assessment and prevention based on the analysis of the available literature on the subject (literature).

Review

Falls in Parkinson's Disease (PD), Strokes, Alzheimer's Disease (AD)

Parkinson's disease (PD) is a spontaneous, slowly progressive, degenerative disease of the central nervous system, belonging to the extrapyramidal system disorders. Parkinson's disease affects approximately 1% of the human population between the ages of 40 and 60, but it also happens in younger people. One of the main symptoms of Parkinson's disease are disturbances in gait and body posture. It is characteristic to walk with small steps with pulling the feet on the ground, reduction or disappearance of balancing with the upper limbs, sudden freezing occurring especially when walking through narrow passages or during turns or in particularly stressful situations for the patient. Posture disorders are primarily tilting the figure forwards, and sometimes also to the side. Gait and posture disturbances usually coexisting and often lead to falls. Postural instability in PD leads to a tendency to fall forward, backward, or to the side. Falls in Parkinson's disease are much more common than in people of similar age but without Parkinson's disease, and the frequency increases at the disease progresses and the disability associated with it. Prospective studies indicate that 45–68% people with PD fall at least once a year [3–4], while a large proportion, from 50–86%, fall multiple times [5]. On the other hand, in studies by Rudzińska et al. conducted on 100 subjects with PD and 55 people from the age-matched control group, falls within 12 months of follow-up occurred in 54% of patients with PD and 18% in the control group. It has been noted that the most common were the so-called sudden falls (31%), followed by tripping and "freezing" episodes (19.6%) [6].

Strokes are one of the most common health problems in the elderly, negatively affecting their fitness. The risk of falling in the first year after stroke is twice as high as in the general population and concerns approximately 40% of patients [7]. The consequences of falls, apart from factures or bruises, may also be the so-called post-fall syndrome associated with the fear of moving negatively affecting the patient's fitness. Falls, apart from urinary tract infections, pain and swelling in paresis limbs and depression, are the most common complications of patients rehabilitated due to stroke [8–9]. The studies conducted in Poland by Brola et al. in 2003–2004 on 312 patients of the stroke and rehabilitation wards within 12 months from the onset of the disease show that over 1/3 of respondents (35%) fell within a year at least 1 time, 7% of them ending in a serious injury. Falls most often concerned the period of early rehabilitation of people with hemiparesis. Contributing factors were balanced disorders, orthostatic hypotension, coexistence disorders, side neglect or hemianopia, sensory deficits, medication effects and dementia. Falls most often occurred while walking, getting out of bed or armchair, and sitting down [7]. Japanese studies conducted by Mizukami et al. on the elderly aged 65 and older (N=602) also showed that stroke is significantly associated with falls within 1 year of the onset of the disease [10].

Alzheimer's disease (AD) is a chronic, progressive neurodegenerative disease of the brain that causes nerve cell atrophy. AD leads to cerebral dementia — loss of memory, learning and thinking, and is its most common cause — it accounts for over 60% of dementia cases. The elderly with dementia are much more likely to fall than people without dementia [11–12]. As the disease

progresses, the patient's silhouette becomes slanted and walking becomes difficult. Patients suffer from stumbling and falls, which can lead to serious sprains or bone fractures, which are very difficult to heal in the elderly. Researchers estimate that the risk of falls is up to 10 times higher among people with dementia than among people without dementia [13]. Some researchers argue that a decrease in the MMSE scale (Mini-Mental Scale Examination) may indicate an increased risk of falling [14–15].

Falls Risk Assessment

The assessment of the risk of falls is an important supplementary element in determining the functional state of the patient and his exposure to the occurrence of a dangerous event, such as a fall. In addition to the individual assessment of risk factors for falls, the so-called external (environmental) and internal (related to the disease, medication taken, comorbidities) are also assessed using specific tools — scales/tests. There are many tools to make such an assessment. These are, for example: Timed Up & Go Test (TUG), Performance-Oriented Mobility Assessment (POMA), Test Berg, One Leg Standing Test, Stops Walking When Talking, Dynamic Gait Index, The Step Test, Four Square Step Test, Functional Reach test (FR), Four Square Step Test (FSST) [16]. A very simple tool used in Swedish clinics is the Downton Fall Risk Index [17]. There are also new or modified fall risk assessment tools dedicated to a specific disease, as in the case of PD, the PDF-Q tool [18].

Prevention

Taking into account multifactorial nature of falls, preventive measures, i.e. fall prevention, should be focused primarily on:
— making the public aware of the big problem of falls in the elderly, also with neurological diseases predisposing to these events, and with what consequences they are associated with (advertising campaign, brochures, videos),
— changing the lifestyle, and above all, activities improving the physical efficiency of patients as far as possible (walks, training, improvement exercises, tai-chi, choreotherapy, organized training groups), the regularity of exercises should be emphasized here very clearly [19–25],
— changing the housing conditions (a properly adapter apartment without rugs, cables and too much furniture).
Of course, it is important to recognize that falls cannot be completely eliminated, but all measures should

be taken to reduce their frequency. Careful observation, a properly collected interview, and screening for falls facilitate taking preventive measures. It is very important to maintain a healthy lifestyle, and often to modify it (regular activity, maintaining a healthy body weight, giving up alcohol and cigarettes). It is extremely important to implement rehabilitation and physical exercises aimed at stabilizing the balance, improving walking and increasing strength, if possible. Application during physical therapy: cold, heat or ultrasound, reduces muscle tension, has an analgesic and anti-inflammatory effect. Great use in improving also comes from exercises without load, e.g. in water. During exercise, it is important to avoid such a sudden drop in blood pressure (orthostatic hypotension) and an increase in heart rate. Attention should be paid to the fact that after a long stay in a lying or sitting position, make a few flexion movements with the foot, positively influencing the heart rate and the circulatory system. It is also important to learn the proper technique of getting up from a chair or bed (first sit on the bed, lower your legs outside the bed, and then get up). People immobilized in bed should be secured with rails to prevent falling out. Appropriately selected elastic stockings or knee-high socks are also used [26]. Preventive measures should also include systematic health checks. This assessment should include the examination of falls, blood pressure should be measured systematically and the correctness of the heart rhythm should be checked. You should also assess visual acuity and heating, and carefully analyse the medications taken, including medications without a prescription. Medicines should be taken as recommended by a physician, and any medications without recommendations should be consulted with the physician, as some medications cause dizziness and drowsiness, which in turn promotes falls. It is also very important to understand the circumstances surrounding previous falls. People with severe motor disabilities should obtain properly selected, fitted and easy to move around orthopaedic equipment. The following are useful: elbow crutches, walking sticks, tripods, walkers and hip protectors. The equipment should be safe, and the elbow crutch or the walking stick (cane) should be of such a height that when leaning on it, the limb flexion at the elbow joint was approx. 20°. Choosing too long or too short an elbow crutch gives insufficient support, making it difficult to walk up the stairs and increasing the load on the joints. It is also very important to choose the right glasses and hearing aids in order to improve the so-called auditory and visual gait control. For walking, shoes with non-slip soles should be used. Shoes should be flat, adequately stabilizing the ankle, light and easy to put on and take off. Falls most often occur in the immediate vicinity, therefore the apartment should be adapted to the functional abilities of the patient. Preventive measures include keeping the bathroom floor

dry, equipping with handles with a coarse structure, anti-slip mats in the shower tray, bathtub and on the floor, and chairs to facilitate bathing in a sitting position, equipping the toilet with an elevated toilet seat and handles, removing unattached rugs and, if necessary, the possibility of complete elimination of thresholds, securing lying wires and cables, placing stable and heavy furniture in such a place that they do not hinder free walking, ensuring adequate lighting, with a switch in an easily accessible place (discreet night lighting, which should not be glaring or too dark), placing everyday objects from the hips to the eye level, so that when removing them it is not necessary to climb ladders or stools or bend over too much, make sure that the handrails are on both sides of the stairs, are properly illuminated, secured with a special anti-slip tape on the edges of the steps, adapting the bed to the needs of an elderly person (access to the bed from three sides, height approx. 40–50 cm from the top edge of the mattress to the floor, placing the telephone or bell within the patient's reach, mounting a handle to facilitate getting up and rising, making sure that the armchairs and chairs are stable and with a high back, allowing both feet to be placed on the floor, so that the bend in the knee joint is approx. 90° **[27–28]**.

Conclusions

Fall prevention is an important part of the lives of patients with Parkinson's disease, Alzheimer's disease and stroke patients. A very important role is played by the education of the patient himself, his guardians and family in this matter, as well as creating safe conditions for the patient's environment. An extremely important element of prevention is systematic physical activity adapted to the current abilities of the patient, individually selected and his motivation. According to the authors of many studies, it should be emphasized that regular activity will allow you to maintain the best fitness for as long as possible, which in turn will improve the patient's quality of life and reduce the risk of falling.

Implications for Nursing Practice

Falls are an interdisciplinary problem that also affects neurological patients and should be known in the field of neurological nursing. Unfortunately, the assessment of the risk of falls and the possibility of prevention should be one of the priorities in the case of neurological patients, often in an elderly age. Education in this aspect and knowledge of the problem have a significant impact on the patient's safety.

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Corresponding Author:

Monika Biercewicz [iD]

Department of Geriatrics,
Faculty of Health Science,
The Nicolaus Copernicus University, Toruń, Poland
M. Skłodowskiej-Curie 9 street, 85-094 Bydgoszcz, Poland
e-mail: kamamb@cm.umk.pl