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The Importance of Stroke Rehabilitation to Improve the Functional Status of Patients with Ischemic Stroke

Znaczenie rehabilitacji poudarowej dla poprawy stanu funkcjonalnego chorych z udarem niedokrwiennym mózgu

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Abstract

Stroke is still the leading cause of disability. Traveling stroke reduces the quality of life in the functional and psychological sphere. The European Stroke Initiative recommends that patients with stroke should be assured with rehabilitation as soon as possible. The most important goal of stroke rehabilitation is to restore all the functions lost by the patient as a result of the disease and also to compensate those which have been irretrievably lost. The latest data from the literature show that the best period in terms of potential for improvement of the functional status after stroke is the first three months of the onset of the stroke incident. To review the literature in the area of stroke rehabilitation and its importance for the improvement of the functional state. (JNNN 2015;4(4):178–183)

Key Words: stroke, disability, post-stroke rehabilitation

Streszczenie

Udar mózgu nadal jest najczęstszą przyczyną niepełnosprawności. Przebyte udaru powoduje obniżenie jakości życia w sferze funkcjonalnej i psychicznej. Rekomendacje Europejskiej Inicjatywy Udarowej zalecają, aby chory z udarem mózgu miał jak najwcześniej zapewnioną rehabilitację. Najważniejszym celem rehabilitacji poudarowej jest odtworzenie wszystkich funkcji utraconych przez pacjenta w wyniku choroby, a także kompensacja tych, które zostały nieodwracalnie utracone. Aktualne dane z piśmiennictwa dowodzą, że najlepszym okresem pod względem możliwości uzyskania poprawy stanu funkcjonalnego po udarze mózgu są pierwsze 3 miesiące od wystąpienia incydentu udarowego. Celem pracy był przegląd piśmiennictwa z obszaru rehabilitacji poudarowej i jej znaczenia dla poprawy stanu funkcjonalnego. (PNN 2015;4(4):178–183)

Słowa kluczowe: udar mózgu, niepełnosprawność, rehabilitacja poudarowa

Introduction

According to the definition of the World Health Organization's 1970 "stroke is the rapidly developing signs of focal (or metastatic) brain dysfunction lasting longer than 24 hours or death, not caused by a cause other than vascular" [1].

Stroke is the third cause of death, after cardiovascular diseases and cancer diseases, worldwide and the leading cause of disability. A year after the stroke, 25%

of patients required total assistance in activities of daily living, and about 40% of patients significant assistance in performing activities of daily living [2]. It is estimated that by 2023 the incidence of stroke will increase by 30%. Epidemiological data also point at a reduction in mortality from stroke in developing countries [3].

The most common symptoms of stroke are: facial asymmetry (lowering one's mouth, dropping eyelids, a feeling of "numbness" in the face), dysarthria (slurred speech, problems with understanding speech, difficulty

in “finding the right word”), dizziness and imbalance (with nausea, vomiting), blurred vision (diplopia, vision monocular), numbness/limb muscle strength or body (sudden muscle weakness or limb of the body, sudden numbness in the limbs and/or trunk, sudden disturbances of gait, sudden worsening of mobility), headache (sudden and severe headache, may be accompanied by nausea, vomiting, sensitivity to light and noise) [4].

Identification of risk factors for ischemic stroke is important in primary and secondary prevention [5]. The so-called classic risk factors in the etiology of more than 90% of cardiovascular disease include hypertension, lipid disorders, diabetes, smoking, abdominal obesity and psychosocial factors. Secondary prevention should be covered by each patient after ischemic stroke, hemorrhagic stroke or TIA [4]. Among the risk factors for stroke there are also non-modifiable predictors, such as advanced age, male gender, race, family history of vascular disease and ischemic episode of the central nervous system [4].

Today, strokes are a major medical, social and economic concern. They are one of the major diseases that threaten human life [6].

Traveling stroke has consequences in the form of physical and mental disability [7]. It has a significant impact on all aspects of life and can dramatically change the existing human life [8,9]. In the world, there are over 55 million people with ischemic stroke. In half of these people this incident has a huge impact on the further functioning in everyday life [10].

The aim of the study is to present the importance of stroke rehabilitation to improve the functional status of patients with ischemic stroke, based on a review of the literature.

Review

A crucial element in the treatment of patients with ischemic stroke is post-stroke rehabilitation. This process is initiated already during the patient's stay in the ward which lasts throughout his life [11]. Early initiation of stroke rehabilitation plays an extremely important role in improving patient's independence in performing activities of daily living. The most important ones include: washing, eating and dressing. The mechanisms to return lost motor functions are not yet fully understood and require a lot of research [12].

Onset of a stroke causes stress for the patient and their family due to a new and unfamiliar situation. This situation reorganizes the functioning of the patient's family, there are new responsibilities, but also limitations. The lives of patients after stroke is the subject of much research. Patients must deal with many problems related

to, among others, loss of independence, employment, social status, anxiety, worsening financial situation and changes in family circumstances [13].

Due to the fact that the stroke is the leading cause of death, it is important to find the factors which may influence an improvement in stroke rehabilitation. In the studies, it was found that the quality of life after stroke, including functional dimension is reduced by the motor deficit, which usually leads to substantial disability [14].

Studies have shown that 30–42% of stroke patients continue to live independently without any visible restrictions. Therefore, it is important to identify factors that influence the functional status of the patient in order to determine the real rehabilitation purposes and the preparation of families or guardians to return the patient's home. According to some studies prognostic factors include age, severity of stroke in the initial stage, awareness of their disease, urinary incontinence, the severity of paralysis, disorientation of the patient in the place and time, preliminary results ADL. In addition, female gender, diabetes, hypertension, atrial fibrillation, physical inactivity, heart disease, depression, cognitive disorders and a lack of support and specialist care [15].

Based on the survey in 2001–2002, it was found that in Poland during hospitalization 8.0–32.8% of patients with stroke die, while 44.2–74.7% remains dependent on other people [16].

In turn, the world within 12 months of the onset of stroke patients die 1/3 and 1/3 remains disabled, which significantly restricts the exercise of self-service operations, and also requires support and assistance from other people [16].

The most rapid improvement in the functional status of the patient can be noticed within the first 3–6 months after stroke. Other authors observed a recovery period of three weeks to six months. Almost half of regaining functional independence. Another large study found that 2/3 of patients were unable to move without assistance in the first weeks after stroke [17].

According to research published 6 months after stroke, 22% of patients do not move alone, in 48% of states hemiparesis, 24–53% require assistance with activities of daily living, while 12–18% have impaired speech [18].

Post-stroke rehabilitation is an active process which begins during hospitalization and continues after returning the patient to the home environment. It aims to increase the chances of the patient to return to active and productive life [19].

The main goal of stroke rehabilitation is to restore lost functions up to a high degree, prevent complications and improve the quality of life [20].

The result led neurological rehabilitation is to reduce neurological deficits, disability and reduce the num-

ber of complications which cause subsequent hospitalization [21].

Modern rehabilitation implies that each patient after a stroke from the beginning should be treated in such a manner as if he had completely recovered all the lost functions. Compensatory measures may be taken until later rehabilitation, when there is no improvement effects [22].

In line with the Declaration of Helsingborg early post-stroke rehabilitation should include all patients after stroke, “without pre-selection” (I Conference in 1996; II Conference in 2006) [23].

According to the principles of the Declaration Helsingborg by 2015, 70% of patients in the third month after stroke, thanks to the rehabilitation, regain independence in daily activities. Unfortunately, the situation in Poland differs from these assumptions [23].

According to the current rehabilitation for patients with ischemic stroke should start already in the acute phase of the disease, in first/second day. Each time, the scope and nature of the exercise should be closely adapted to the state of health (neurological deficit) and the physical capacity of the patient [3].

Early neurological rehabilitation should be started three months after the stroke, and should last from three to nine weeks. Improving the therapeutic process can increase the patient's degree of independence in activities of daily living, which leads to a reduction in disability and quality of life [24,25].

Rehabilitation of patients after ischemic stroke can be divided into the following steps:

- a step of early hospital rehabilitation lasting from 1 to 14–21 days;
- a step of functional rehabilitation lasting from 2–3 weeks to 12 months;
- a step of environmental rehabilitation lasting from 1 year to 5 years [26].

After an initial assessment of the extent and severe paralysis in patients with massive hemiparesis apply:

- arranging a functionally correct position of the body,
- prevention of complications of respiratory,
- prevention of thromboembolic complications [27–29].

The aim of the arrangement is functionally correct ekstero- stimulation and proprioception leading to a favorable reorganization of damaged brain, prevent muscle contractures and prevention of pressure ulcers (via frequent positional change of position of the body, every 2–3 hours) [27–29].

In the following days and nights (3–4 day) of disease along with the improvement of the general condition gradually expanding the scope of exercises that are aimed at mastering the rotation around the long axis of the

body (rotating sideways) motion in the joints proximal extremities and preparation for tilting. After stabilization of the internal state and neurological as soon as possible a patient should stand up and also transfer to sitting “with downcast by the lower limbs” [27–29]. Recovery efficiency of the patient with hemiplegia includes restoration of motor function related to:

- transition from a lying or sitting position,
- maintaining balance while sitting,
- standing up from a sitting position to standing,
- standing without belaying,
- moving from bed to chair,
- independent walking and walking up the stairs [27–29].

Exercise should develop the ability to perform basic activities of daily living such as dressing/undressing, eating, using the toilet, taking care of personal hygiene [27–29].

They are also exercises associated with inhibition and paving proprioceptive roads (such as NDT-Bobath) [27].

Please note also that patients should spend part of the day in a seated position, in a properly secured seat or a wheelchair. It is also important to initiate any action with the patient (eg. the conversation, nursing interventions) on the paretic site for its continuous activation, especially in the case of unilateral neglect syndrome [3].

In the case of the so-called team repulsion (Pusher Syndrome, the band pusher), it is important to ensure the physical safety of the patient, who actively repels themselves from the not infected side of the body. It is important to protect them against falls in the direction of the infected side, both in a seated and standing position [30].

Scientific studies show that in the process of rehabilitation of the patient with stroke mechanisms are used that are associated with brain plasticity. Regenerative ability of the nervous system can be defined as reactivity and plasticity [31,32].

The rehabilitation of the patient with stroke very important role to assess the level of disability. This assessment should also take into account abnormal intellectual capacity, mainly in the field of cognitive function [33]. For this purpose, a standardized clinimetric tools. The most commonly used scales for assessing the functional status of the patient are Barthel Index and Rankin. In turn, the assessment of cognitive impairment applies to the Montreal Cognitive Function Assessment Scale (MoCA) and Short Scale Mental State Examination (MMSE) [3].

It is important to pay special attention to what the functional status of the patient after completion of the rehabilitation process is when they return to their environment. Deficits that occurred as a result of stroke

translate into their daily life, as well as participation in social, family and professional life.

Research conducted by Desrosiers et al., shows that the biggest problem for patients after stroke is to participate in activities related to leisure, professional work and education [34].

Improving the rehabilitation process helps the patient achieve the greatest degree of independence in daily life, which in turn tends to reduce disability and improve the quality of life [35].

Kwakkel in their observations, notes that early rehabilitation is a very important element in the care of patients after stroke, emphasizes its impact on the improvement of the functional status of patients [36].

A very important element is to ensure the continuity of patient care and rehabilitation. The early prospect to predict what the functional status of the patient with stroke will be facilitates individual relationship to therapy and rehabilitation and will prepare in advance support for the patient when they leave the hospital and return to their home environment [37].

In the twenty-first century there was an alternative for stroke rehabilitation — called Early Home Supported Discharge (EHSD). It is a model that is based on the continuation of the rehabilitation process at home. It enables realization of model assumptions proves rehabilitation and reduce disability and improve the functional status of patients [31,32,38].

A higher percentage of patients after stroke in the first weeks and months present some signs of retreating, also reduced disability. This, however, many people do not occur fully recovered. Among people who develop stroke approx. 60% recovered independence in the activities of daily living, 80% recovered the ability to move.

After 5 years of the onset of stroke, the third of living people remain with disabilities. Environmental post-stroke rehabilitation is very important for stroke care. Research shows positive indicators of its impact on disability and quality of life of patients [39].

An important role in the rehabilitation has a nurse. As a member of the rehabilitation team in a responsible and independent support of patients, helps them when performing activities of daily living [40].

Nurturing since the beginning of history combines humanistic content of medical knowledge and manual dexterity. It grew out of the idea of taking care of a sick person, faulty and infirm. At each stage of its development model, we attempted to determine the role of nurses and care for people with disabilities [41].

A Contemporary nurse works with a team of rehabilitation, but also independently realizing the idea of modern nursing, implementing the patient to self-care [41,42].

Through self-care we should understand the ability to take care of oneself to the correct functioning of the body to maintain health, life and well-being. By preparing the patient for self-care we help them become independent and active [43].

Self-care can be equated with independence in the provision of basic needs which include: control of physiological functions, diet, movement and personal hygiene [44].

In stroke rehabilitation, efficient cooperation of the interdisciplinary team has a significant impact on the pace of the restoration of independence in the functioning of the patient in everyday life. One of the cells of that team are nurses with appropriate preparation and much of practical knowledge that allows them to execute the nursing process suited to the patient's clinical condition.

The main criteria for evaluating the severity of the patient's condition from the point of view of nursing include verbal contact, the degree of independence in activities of daily living, motor activity, the ability to swallow, the tendency to the formation of bedsores and sphincter function [45,46].

It happens that the stroke does not cause permanent disability, but its effect may be anxiety, fear for their own future, about the operation after returning to the home environment, and depression. Therefore, the role of the nurse is to motivate the patient to action, support them, and inclusion of families in the process of care and rehabilitation [42].

The consequence of stroke is often impaired communication. A large percentage of patients have disorders of speech and communication. The key element is the ability of the nurse to communicate with the patient, which allows to understand the needs of the patient. Nurses by constant contact with the patient have the opportunity to collect important information about patient's communication deficits, significant insights provide the other members of the therapeutic team [47,48].

Conclusions

Summing up, traveling stroke leaves, in most cases, permanent disabilities leading to partial or total dependence on other people. It's important to study the basic activities of daily living of patients' after stroke [42].

The main role of the nurse in the rehabilitation of a patient with stroke is to prevent complications of a stroke, motivate the patient to self-perform activities of daily living, watch over the patient during exercise learned by a physiotherapist, assist in moving to the implementation of the self-care and education of the patient and their family [45,46].

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