Ogonowska Aleksandra, Uczciwek Mariola Monika. Physiotherapy in patients after ischemic stroke. Journal of Education, Health and Sport. 2018;8(8):598-605. eISNN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.1325179
http://ojs.ukw.edu.pl/index.php/johs/article/view/5746
https://pbn.nauka.gov.pl/sedno-webapp/works/872828

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eissn 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 02.06.2018. Revised: 18.06.2018. Accepted: 01.08.2018.

Physiotherapy in patients after ischemic stroke

Aleksandra Ogonowska, Mariola Monika Uczciwek

Scientific Circle at Department of Hygiene, Epidemiology and Ergonomics
Division of Ergonomics and Exercise Physiology,
Nicolaus Copernicus Univeristy in Toruń,
Collegium Medicum in Bydgoszcz, Poland

Introduction

According to the World Health Organization, stroke is a clinical syndrome consisting of the sudden appearance of focal symptoms or global brain dysfunctions, which if they do not lead to death, last more than twenty-four hours and result from vascular causes [2,3]. One of the main causes of disability in adults, both in Poland and in the world is the past, ischemic stroke. It usually touches a male person over seventy-five. It is believed to be a disease of an old age, but it can occur at different stages of life [3]. Very often, during the period of seven years from the occurrence of the first stroke, another vascular episode (in about 30% of patients) is noted, which is associated with a significant deterioration of the patient's existing quality of life.

Reducing the risk of disability and improving the psychomotor status of a patient after a stroke allows for a quick medical diagnosis and early, long-term and comprehensive rehabilitation, primarily by the physiotherapist [1].

Aim of the study: Discussion of physiotherapy in different stages of rehabilitation after ischemic stroke.

Keywords: stroke, ischemic stroke, physiotherapy

Physiotherapeutic procedure

The aim of physiotherapy

Patients with stroke should be provided with the earliest possible rehabilitation. The main goal of physiotherapy is to make the patient recover as many functions as possible lost by the patient and enable compensation of functions that have been permanently and irreparably damaged. This is to learn how to do things yourself, despite the limitations. In addition, it should be noted that the most important period is the first three months after the first symptoms of stroke. During this time, there are the greatest opportunities for recovering and improving the functional state of people after stroke [7,4]. Post-stroke rehabilitation must be adjusted individually. It depends on the size and location of brain tissue damage, which determines the occurrence of various clinical symptoms. As a result of stroke, impairment of the body's motility occurs, which becomes apparent in the so-called the busy site, in which the movement function is disturbed and the sensory stimuli are received. As a consequence, it manifests itself in structural and functional changes in the body, impairment of posture and body stability [5,6]. The goals must be determined individually for the patient.

Hospital physiotherapy in the acute phase

The most important is the rehabilitation of a patient after a stroke in the acute phase. It aims to minimize mortality among patients in the first month after the brain ischemia. Rehabilitation is mainly about prevention of life-threatening complications, reducing disability, improving well-being and quality of life [9].

In the acute phase of the disease, when the patient is unconscious, physiotherapeutic procedures are closely related to nursing and medical care to prevent abnormal movement patterns or serious complications.

In early rehabilitation after a stroke, you can distinguish the so-called bedside rehabilitation, which aims to reduce the risk of complications resulting from the lack of movement of the patient and not lead to the so-called unused team. Therefore, from the very beginning the stimulation of the patient's OUN to stimulate the brain's plasticity mechanism, which in consequence will be reproduced later in the rehabilitation period, is very important. First of all,

thanks to neurological rehabilitation, it reduces and prevents orthostatic disorders, it improves the mental and physical fitness of the patient [9].

Changes in position positions are one of the activities performed necessarily in the case of people with paresis or unconscious. If they are correct, they help prevent pressure ulcers, muscle contractures, joint pain and limb deformities. Changing these positions should be about every 2-3 hours, so that it is properly maintained, often many elements are needed to support this correct placement of the patient. Such aids include, among others, rollers, wedges, cushions, pads, towels, blankets, extra sheets [9].

Placing the patient after the stroke can be on the side healthier and significantly occupied by the disease, on the back as well as in the strength. In the acute phase, patient laying on the stomach is avoided, which is associated with respiratory failure of the patient.

Long-term use, lying supine position is not recommended due to the possibility of pressure ulcers especially in the region of the tail bone or the lateral shin bone. In addition, this position has little effect on stimulating the patient [3].

It should be remembered that prolonged resting in any of the listed positions is not recommended even if they are performed with great precision and accuracy. Frequent changes in positioning, turning from side to side, attempting to stand up, sit down, and sit down, give numerous signals to the CNS, respectively stimulating the patient and preparing for complete uprightness and gait. Many muscles are involved, especially postural and antigravity, which also improves deep feeling [3].

Prevention of cardio-respiratory complications is particularly important because in the first days it is for this reason that the highest number of deaths is recorded. Prophylaxis performed by physiotherapists to prevent these diseases involves the use of, among others, limb arrangements in drainage positions, especially inferior limbs. Engaging the patient to perform distal movements of the body parts of the less affected side, frequent change of position, higher position of the lower limbs, improves peripheral circulation and prevents edema. Also, lower limb massage in the ascending direction prevents these complications [10].

An important element to prevent these complications is to pat the area of the chest and back and learn the effective cough, that is, to introduce a treatment for bronchial tree cleansing, which helps the evacuation of the secretion that can contribute to the development of microbes and infections [10].

Exercises in the acute phase of the stroke should be performed gently, carefully. The movements should be multi-axis and performed passively by the therapist in case of a patient's severe condition. However, the patient is actively cooperating with the therapist through active

movements and then active exercises. Both the beginning and the end of the movement should be accentuated by the physiotherapist with a slight pressure on the surface where the given part of the patient's body lies. Even if the patient is unconscious, it is important to combine the conducted movement with visual and verbal contact [8].

At the moment when the muscle tone increases, it is apt to use the technique of spastic muscles trapping with quick movements, to perform a delicate segmental massage. With the start of the hypertonic phase, pain is increased, which may limit the process of rehabilitation. Non-steroidal anti-inflammatory drugs (NSAIDs) such as paracetamol are used to achieve analgesia, enabling further physiotherapeutic management [9]. No pain can be underestimated and it is helpful to distinguish the destructive pain from the discomfort felt by the patient and this is possible due to careful observation of the patient [8].

Hospital physiotherapy in early recovery

When the patient's body allows to maintain a stable position, the elements of uprightness are switched on and the therapy is introduced in higher positions, i.e. half-sitting down
in bed, with lower legs behind the bed, in a wheelchair. At the time of stable condition of the patient, it is possible to include elements of passive upright positioning using the tilting table, but it is worth noting that the implementation of this stage can only be done if the position of the neighbor is mastered. It is also possible to vertically orient the patient through so-called passive standing up using the therapeutic table, this is the recommended form of uprightness due to the involvement of a larger group of muscles, it is the closest to the natural way of taking a vertical position. When trying to stand up, it is necessary to help more people to ensure maximum patient safety, because stress reactions may increase the patient's repetition of abnormal movement patterns. Special care must be taken to ensure that the knee of the lower limb does not deflect, because it can put the patient out of balance and lead to a fall. The belaying should be from the infested side [10].

Elements that have a significant impact on maintaining a vertical body figure are activation of the abdominal muscles through exercises such as head bending, trunk rotation, lateral bending of the spine, forefoot, tilting and lifting of the pelvis, active backless seat, synergistic trunk exercises, attempts to tear off the buttocks from the couch with feet based on the Maja substrate to strengthen the muscular corset in this area [8].

Many patients regain control over the sphincter and bladder when the verticalization and the initial stages of walking, however, if these deficits are not returned, further categorization of the patient and introduction of pelvic floor exercises, abdominal press [9] is necessary.

After brain injury, gait problems are associated with: reduced torso control, abnormal voltage regulation, balance problems, sensory disturbances and abnormal lower limb extension pattern [8]. After stroke, the patient does not burden the affected lower limb, hence the support phase is significantly shortened [12]. Walking paving should start with preparing the foot for loading, mobilizing the triceps of the triceps muscle, stimulating the foot support points, stretching the transverse arch and longitudinal foot, and active foot exercises. It is worth implementing a therapy aimed at strengthening the strength of the lower limbs by introducing active and resistant exercises.

The support phase may be initiated by tilting the trunk forward and back without lifting the pelvis and with the stabilized feet on the ground. The phase of excrescence is practiced when the patient, as far as possible, controls the stability of the body and is able to sustain the weight of the body on the affected limb. A step forward performs as the first limb potentially more healthy to compensate for abnormal reflex patterns. (During these activities the therapist stabilizes and stimulates the pelvis and knee joint). Proper loading will allow you to apply an elevation during this exercise, on which the patient will have to set a healthy limb during the stroke. The paving of the transfer phase and stroke of the limb is difficult in the case of a large muscle weakness with a potentially healthy side of the body. Therefore, additional security is often needed.

Tracking of the patient's movement is performed by the therapist thanks to approximation and in sequence: during the transfer phase, the therapist's hand initially protects that the patient's pelvis will not rise and set in the forefoot, then make sure that the knee joint is bent with the dorsal flexion of the foot and in the final phase transfer to allow the extension of the knee joint and gradual weight transfer to the affected limb. It is worth noting that the first stages of walking reeducation require the use of a therapeutic table or ladder [3,8]. At the moment when the patient has more possibilities, it is worth encouraging to stand and move independently, it is also recommended that the patient tries to make corrections himself and eliminate problems while walking [11].

Physical help in the case of supporting the patient should provide a solid support. The therapist, with his hand in the supination position, puts the thumb into the space between the first and the second finger bent dorsi in the wrist of the ill hand. In this way, a natural environment is created for support, and while resting on the upper limb, the patient must be completely straight at the elbow joint and slightly at the front of the torso. It is worth from the beginning engage the upper limb with respect to the leg, in order to reproduce the natural way of moving [3]. Once the patient has already gained considerable control over the body, he will be able to pass a

significant section on a simple surface alone or with the help of a therapist, but with an independent, full support on a potentially healthy limb, it is possible to start walking reeducation up the stairs [8].

An important aspect during gait reeducation is a query in a history of the disease, whether previously there were no accidentally used various types of orthopedic aids and what was their use. Orthopedic aids are usually implemented when the patient is unable to achieve the goal of independent walking despite long therapy. Then the therapy should be conducted, based on the use of the skills already achieved by the patient and to consider the need to include orthopedic help to facilitate movement. The therapist should choose such equipment so that, if possible, the patient can move without the intervention of the caregiver and at the same time the patient must feel confident and stable [3, 8].

In-hospital and out-of-hospital physiotherapy in the period of late recovery

In order to restore basic functions in order to perform properly daily activities requires a lot of commitment, effort and professionalism from the physiotherapist. The functional approach is important from the first days of introducing therapy in people after stroke. Achieving maximum efficiency in the patient is possible only when I feel in the presence of the therapist safely. It enhances faster recovery and balance control. The basic activities that make us independent are, among others, the ability to change position, move around, use the toilet, take care of hygiene, dressing up, eating or wheelchair skills. Achieving the ability to perform these functions contributes to a better well-being of the patient [3].

The last stage in learning to cope with everyday activities is the use of specialized methods, devices made for patients with various types of deficits. They are introduced when it is not possible to perform a given task, despite many attempts, which may completely discourage the patient from continuing the therapy. Often this applies to movements requiring high precision, such as nail clippers, bra closure, unscrewing the jar. These devices significantly facilitate life in everyday conditions, however, they are an emergency exit, because they do not require greater concentration from the patient and do not increase the patient's functional capacity, but keep constant or sometimes even retract, trained under the supervision of the therapist.

It is worth knowing that patients focusing on the correct execution of the movement, consciously controlling the given activity, quickly get tired. This concentration requires a lot of commitment from them, hence there should not be many objects and people who could negatively affect the patient. It should be taken into account that in a situation of high fatigue,

propose a break in order to suppress the reflexes caused by stress, nervousness or exhaustion [3].

Conclusions

It is difficult to create a rehabilitation model with the specific tasks, exercises and goals listed, corresponding to the mentioned periods of recovery. Rehabilitation of the patient is adjusted individually and to his current and distant needs, living conditions, often also material. The holistic approach is important from the beginning of the rehabilitation and introduced as soon as possible and conducted with the use of specialized physiotherapeutic methods brings the desired results.

In achieving the main goal of rehabilitation, which is to bring the patient to maximum independence and functional ability, it should be remembered that many elements of therapy designated during the early disease period should be replicated in the next periods with the simultaneous striving to improve further aspects of functional deficits, undo the improvement process.

In addition, it is worth noting that in patients with neurological deficits, regularity and repeatability of therapy are desirable factors of rehabilitation. Therefore, in patients after a stroke incident, it is important to undertake rehabilitation as early as possible and to continue systematically until the maximum possible efficiency and independence of the patient is achieved.

Comprehensive rehabilitation is important in both the acute and chronic stages of the disease. At an early stage, it reduces mortality among patients and reduces the risk of life-threatening complications as well as minimizes negative factors that may hinder subsequent physiotherapy. In the late period of illness, the therapist enables learning and re-adaptation to life, in all conditions, thanks to special techniques facilitating the performance of difficult tasks even after long-term rehabilitation. This allows the patients to return to social life and professional activity.

List of references:

1. Błaszczyk B., Czernecki R., Prędota-Panecka H.: Profilaktyka pierwotna i wtórna udarów mózgu. Studia Medyczne 2008;9:71-75.
2. Grabowska-Fudala B., Jaracz K., Górna K.: Zapadalność, śmiertelność z powodu udarów mózgu- aktualne tendencje i prognozy na przyszłość. Przegląd epidemiologiczny, 2010;64:439-442.
3. Laidler P.: Rehabilitacja po udarze mózgu. Zasady i strategia. Wydaw. Lek. PZWL, Warszawa, 2014. ISBN 978-83-200-4734-9.
4. Ziejka K., Skrzypek-Czerko M., Karłowicz A.: Zznaczenie rehabilitacji poudarowej dla poprawy stanu funkcjonalnego chorych z udarem niedokrwiennym mózgu. *Pielęgniarstwo Neurologiczne i Neurochirurgiczne* 2015;4(4):178-183.
5. Mazurowski P., Knyszyńska A., Lubkowska A.: Metoda Proprioceptywnego Nerwowo-Mięśniowego Torowania Ruchem we wczesnej rehabilitacji po udarze mózgu. *Medical&Health Sciences Review* 2015;1(4):185-194.
6. Kniewski O., Suszyński K., Górka D., Kania D., Szefler J., Dudek J., Doroniewicz I., Opala G., Kwiek S.: Wpływ terapii PNF na proces poprawy motorycznej u pacjentów po niedokrwiennym udarze mózgu zlokalizowanym w lewej półkuli w okresie ostrym rehabilitacji. Praca oryginalna 2014.
7. Lorenzo C.: przekład Cieślar- Korfel A., Usprawnianie po udarze mózgu: poradnik dla terapeutów i pracowników podstawowej opieki zdrowotnej. Elipsa-Jaim, Kraków, 2007. ISBN 978-83-915185-4-0
8. Mikołajewska E.: Metoda NDT-Bobath w neurorehabilitacji osób dorosłych. Wydaw. Lekarskie PZWL, Warszawa 2012. ISBN 978-83-200-4563-5.
9. Piskorz J., Wójcik G., Iłzecka J., Kozak-Putowska D.: Wczesna rehabilitacja pacjentów po udarze niedokrwiennym mózgu. Medycyna Ogólna i Nauki o Zdrowiu 2014;20(4):351-355
10. Jaszak J., Ogrodnik J., Burak-Czapiuk B., Kukowska D.: Rola pielęgniarki we wczesnej rehabilitacji pacjenta po udarze mózgu. Zeszyty Naukowe Nr 49. Wyd. Wyższej Szkoły Agrobiznezu, Łomża, 2013. [przeglądany 27 kwietnia 2017]. Dostępny w: http://zeszyty-naukowe.wsa.edu.pl/download/zeszyty/ZN-49.pdf.
11. Strojek K., Janczak Ł., Radzimińska A., Kaźmierczak U., Piekorz Z., Strączkowska A., Zukow W.: Potrzeba reedukacji chodu po udarze niedokrwiennym mózgu. *Journal of Education, Health and Sport* 2016;6(10):79-89.
12. Józefowski P.: Diagnostyka czynnościowa narządu ruchu z elementami pionizacji i reedukacji chodu. Wyd. MedPharm Wrocław 2013. ISBN 978-83-7846-023-7.