Sagan Anna, Miler Adrian, Podhorecka Marta, Zukow Walery. Clinical evaluation of postural posture of patients with previous stroke subjected to early rehabilitation. Journal of Education, Health and Sport. 2018;8(2):71-84. eISSN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.1168690
http://ojs.ukw.edu.pl/index.php/johs/article/view/5256

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: 05.01.2018. Revised: 10.01.2018. Accepted: 04.02.2018.

Ocena klinometryczna postawy posturalnej pacjentów z przebytym udarem mózgu poddanych wczesnej rehabilitacji

Clinical evaluation of postural posture of patients with previous stroke subjected to early rehabilitation

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Streszczenie

Wprowadzenie: U chorych po udarze mózgu obok upośledzenia funkcji ruchowych i poznawczych występują często zaburzenia równowagi. Stanowi to bardzo poważne powikłanie, gdyż, nakładając się na upośledzenie ruchowe, pogłębia stan niesprawności i utrudnia prowadzenie rehabilitacji ruchowej.

Powstałe deficyty neurologiczne na skutek udaru mózgu determinują, do powstania zaburzeń funkcjonalnych. Możliwość lokomocji najczęściej zostaje upośledzona w związku z powyższym ryzyko upadków znacznie wzrasta. Celem pracy jest przedstawienie za pomocą skali oceny posturalnej po udarze mózgu Postural Assesment Scale for Strock PASS, wpływu wczesnej rehabilitacji pacjentów przebywających na oddziale neurologii.

Materiał i Metody: Badanie postawy posturalnej przeprowadzono wśród 17 osób, z czego 8 osób stanowiły kobiety, a 9 osób stanowili mężczyźni. Badanie zostało podzielone na dwa etapy. Pierwszy etap przypadł bezpośrednio po wystąpieniu udaru mózgu, drugi zaś przed wypisem pacjenta z oddziału. Przeprowadzono badania w Szpitalu Specjalistycznym im. dr Władysława Biegańskiego w Grudziądzu w Oddziale Neurologii i Neuroimmunologii Klinicznej i Oddziału Udarowego.

Wnioski: Wyniku przeprowadzonych badań postawy posturalnej u osób z przebytym udarem mózgu poddanych wczesnej fizjoterapii obserwuje się korzystny wpływ przeprowadzonej terapii. Uwidaczniają się pozytywne zmiany pomiędzy pierwszym i końcowym badaniem chorych.

Abstract

Introduction: Impairment disorders are often found in patients with stroke and impairment of motor and cognitive functions. This is a very serious complication because, by imposing a motor impairment, it aggravates the condition of disability and makes it difficult to conduct physical rehabilitation.
The resulting neurological deficits due to stroke determine functional disorders. The possibility of locomotion is usually compromised, therefore the risk of falls increases significantly. The aim of the work is to present Postural Assesment Scale for Strock PASS with the postural stroke assessment scale, the impact of early rehabilitation of patients staying in the neurology ward.
Material and methods: Postural examination was carried out among 17 people, of which 8 were women, and 9 were male. The study was divided into two stages. The first stage occurred immediately after the stroke and the second one before the patient was discharged from the ward. Research was carried out at the Biegański Specialist Hospital in Grudziądz in the Department of Neurology and Clinical Neuroimmunology and Impact Department.
Conclusions: The results of the postural studies carried out in people with previous stroke subjected to early physiotherapy have a beneficial effect of the conducted therapy. There are positive changes between the first and the final examination of the patients.

Słowa kluczowe: Udar mózgu, rehabilitacja, ocena posturalna, koncepcja Bobath,

Key words: Stroke, rehabilitation, postural evaluation, Bobath concept,

Stroke is a neurological syndrome caused by sudden abnormal blood supply to the brain. Arises when a large artery supplying blood to the brain or within the brain small

arteriole not close, a strong stenosis or break and does not involve blood with oxygen and nutrients in a specific area of the brain [1].

Nervous system diseases often affect cognitive upper layers of the cerebral cortex, stroke four times more likely to occur in the left hemisphere of the brain, its withdrawal from the rule interferes with the ability to create and understand speech. The term "stroke" refers to the number of problems associated with the transport of blood to the brain cells through the blood vessels. There are two main types of stroke: ischemic and hemorrhagic [2].

All patients in a stroke unit should be included in rehabilitation at an early stage of stroke. Active Rehabilitation after stroke should be started as soon as possible, as soon as the stabilization of the general condition of the patient. Rehabilitation care must be provided to the extent that is needed to recover the efficiency and return to a functional state before the onset or adapt and achieve an optimal level of independence. Post-stroke patient should start as soon as possible [3,4].

In order to maintain the appropriate position is used therapeutic pads, rolls, bags and various types of pads. Conscious patients due to paralysis of the muscles of the throat and larynx may have a problem swallowing food and secretions from the respiratory tract, it requires constant removal of mucus and extensive precautions for feeding - positions head [5,6].

Bobath concept is widely used in adults, particularly in those where diagnosed disorders of muscle tone, limits mobility and failures in the central nervous system.

It is a therapy where "the main goal of this concept is to restore the patient to optimal function. The therapy takes into account the expectations and needs of patients. Therapists working according to Bobath concept to achieve the goal, evaluate the patient for recovery of mobility. Procedure according to physiotherapy Bobath concept varies depending on the stage of the disease [7,8].

The primary purpose of education is improving neuro developmental correct antigravity mechanism, based on the correct posture reflexes, enabling first acquisition and development of normal postural and motor patterns, and then adapt them to appropriate functional activities of daily living [7,8].

The use of the concept of PNF in the rehabilitation of stroke patients, “indicating that this method is based on the movements of global sued based on the attitude to the patient and

his problems”. Assumptions ones include also act in accordance with nature and the daily rhythm of the day. One of the main objectives include intense exercise plan included residential, which is a fundamental element of their painless [8].

The authors indicate that the method of PNF is characterized by a variety of techniques that "allow not only the use of appropriate movement patterns for each patient on an individual basis, but also facilitate the implementation of specific at this stage assumed rehabilitation - therapeutic objective (to improve strength, mobility, endurance , coordination, stability). Regimen comprises the following elements: - the starting position - the principle main - Techniques - movement patterns [8].

The theoretical basis of the concept is based on the regularities of human physiology, motor development - development cephalic-caudal from the proximal to the distal part, taking into account the different phases of motor control, inextricably linked with the achievement of new positions and mobility in them "[9].

Objective

The purpose of this paper is to present changes in the attitude of the patient in patients after stroke, underwent early rehabilitation.

Material and methods

Postural attitude study was conducted among 17 persons, of which 8 persons were women and 9 persons were male. The mean age of women was 68.1 years, and among men 59.0 years, time gives us 63.3 years. Participants were selected among the patients in the ward.

The study was divided into two stages. The first stage, fixed immediately after a stroke, while the second patient before discharge branch.

The study took place at the Biegański Regional Specialist Hospital in Grudziadz on Department of Neurology and Clinical Neuroimmunology and stroke unit. The study "Assessment of postural wedge metric attitude patients with a history of stroke underwent early rehabilitation" has obtained the consent of the Bioethics Committee of the Higher School of Bydgoszcz in Bydgoszcz.

Method

The study Postural Assessment Scale was used after stroke (postural Assessment Scale for Strock PASS).

In the analysis of descriptive tables used, in which is shown by the number and percentage of responses to the question questionnaires. The graphic interpretation of these data is provided in the form of a vertical bar charts and box-and-whiskers.

Applied and the arithmetic mean and standard deviation and the nonparametric Test Mann-Whitney test to assess differences between one feature of the two populations (groups). Also used a nonparametric test Wilcoxon forming a nonparametric alternative to Student's t test for paired.

Adopted null hypothesis (H0) that there is no difference in the test groups. Adopted by the $p \leq 0.05$ level of significance as a level statistically significant.

All calculations and drawings made Statistica 10.0 and Microsoft Excel spreadsheet using the standard features of this program.

Characteristics of the material

Postural attitude study was conducted among 17 persons, of which 8 persons were women and 9 persons were male. The mean age of women was 68.1 years ,, and among men 59.0 years, time gives us 63.3 years. Participants were selected among the patients in the ward. For the most studied group and at the same time constitute the main criterion for inclusion in the study were patients with ischemic stroke. Exclusion criterion was a diagnosis of ailments that accompany the onset of stroke, ie. Including slurred speech aphasia, psychomotor impairment and dementia, impaired verbal and - logical, mood disorders, limited or lack of cooperation with the environment 25 people. Another group of exclusion were people with oncological diseases, mental diseases, facial muscle weakness, numbness, or diagnosed epilepsy representing a group of 27 people. Four people diagnosed with TIA - transient ischemic attack were also excluded from the study. The study does not acceded to 8 people, which remained without verbal and logical with numerous diseases, loads, people lying niewydolni completely self-service as a consequence of the death occurred.

The average age of respondents was 63.3 years less than. Standard Deviation accounted for 13.1% of the average, which indicates a slight differentiation of age. On average, older women turned out to be 68.1 years, for men 59 years. Minimum age varied lower in men (47 years), the maximum also varies, higher in women (81 years).

The largest group consisted of subjects with vocational - 7 patients (41.2%) or medium - 6 persons (35.3%). The smallest with higher - 1 person (5.9%).

Respondents answering the question about the disease Comorbidities exchanged a few statements. A total of 16 patients (one of the people did not indicate disease Comorbidities), reported 56 items. Most respondents indicated hypertension - 8 persons, which accounted for 14.3% of all these statements. Further pointed to atrial fibrillation, a total of 6 patients (10.7%) of which two in paroxysmal atrial fibrillation, diabetes - 5 patients (8.9%), hyperlipidemia, hypothyroidism, and the condition after angioplasty ZZA - 2 Type (after 3.6%). For one disease may coexist indicated - 2 persons on two diseases - 5 persons, three and four disease - 2 persons, five diseases - 3 persons and six and nine diseases - for 1 person.

Table 1. Seat, without being supported on the edge of a table of 50 cm height and feet touching the floor

Study	First		Second	
Description	Number	%	Number	%
Can not sit	4	23.5	0	0.0
You can sit lightweight support, eg. One hand	1	5.9	0	0.0
You can sit for longer than 10 seconds without assistance	1	5.9	1	5.9
5 minutes can sit without support	11	64.7	16	94.1
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, 5 minutes can sit without support- 11 people (64.7%). Least, You can sit lightweight support, eg. one hand or You can sit for more than 10 seconds without the aid of - the person 1 (5.9%). The second study, most patients achieved a result, five minutes can sit without support - 16 people (94.1%). Least, You can sit for longer than 10 seconds without assistance - 1 person (5.9%).

Table 2. Standing with support

Study	First		Second	
Description	Number	%	Number	%
Can not stand even with the help	4	23.5	0	0.0
It can become the strong support of two people	0	0.0	0	0.0
It may be a moderate one person outriggers	2	11.8	1	5.9
Can stand with support of one hand	11	64.7	16	94.1
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can stand with support of one hand- 11 people (64.7%). Least, can be moderately mountings per person - 2 persons (11.8%). The second study, most patients achieved a result, it can become the support of one hand - 16 people (94.1%). Least, can become a moderate outriggers one person - one person (5.9%).

Table 3. Without the help of the State

Study	First		Second	
Description	Number	%	Number	%
Can not stand without support	6	35.3	2	11.8
Can stand without support 10 seconds, or relies heavily on one leg	1	5.9	0	0.0
Can stand without support for 1 minute or is slightly asymmetrically	5	29.4	6	35.3
It can be no more than 1 minute's support and at the same time is able to perform the movements of the upper limbs above shoulder level	5	29.4	9	52.9
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can not stand without support- 6 persons (35.3%). Least, can stand without support 10 seconds, or relies heavily on one leg - 1 person (5.9%). The second study, most patients achieved result can be no more than 1 minute's support and at the same time is able to perform the movements of the upper limbs above the shoulder - 9 patients (52.9%). Least, can not stand without support - 2 persons (11.8%).

Table 4. Standing on the non-contaminated tab.4 leg

Study	First		Second	
Description	Number	%	Number	%
Can not stand on non-contaminated leg	5	29.4	2	11.8
Can stand on non-contaminated leg a few seconds	5	29.4	2	11.8
It can stand for non-contaminated leg longer than 5 seconds	2	11.8	4	23.5
It can stand for non-contaminated leg longer than 10 seconds	5	29.4	9	52.9
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can not stand on non-contaminated leg. can stand on non-contaminated leg a few seconds and can stand on non-contaminated leg longer than 10 seconds- 5 persons (by 29.4%). Least, It can stand for non-contaminated leg longer than 5 seconds - 2 persons (11.8%). The second study, most patients received the result, it can stand on non-contaminated leg longer than 10 seconds - 9 patients (52.9%). Least, can not stand on legs non-contaminated and non-contaminated can stand on the leg a few seconds - 2 persons (by 11.8%).

Table 5. Standing on the infected leg

Study	First		Second	
Description	Number	%	Number	%
Can not stand the infected leg	10	58.8	5	29.4
Can stand for a few seconds infected leg	2	11.8	2	11.8
May stand on the infected leg longer than 5 seconds	3	17.6	3	17.6
May stand on the infected leg longer than 10 seconds	2	11.8	7	41.2
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can not stand the infected leg - 10 people (58.8%). Least, may stand on the infected leg a few seconds, and can stand up on the leg infected for longer than 10 seconds - 2 persons (by 11.8%). The second study, most patients received the result, it can stand on infected leg longer than 10 seconds - 7 persons (41.2%). Least, may stand on the infected leg a few seconds - 2 persons (11.8%).

Table 6. Lifting with a lying or sitting on the edge of the table

Study	First		Second	
Description	Number	%	Number	%
Can not perform	4	23.5	0	0.0
Can be made from a large with	0	0.0	1	5.9
Can do with a little help	4	23.5	1	5.9
Can do without the help of	9	52.9	15	88.2
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can do without help - 9 people (52.9%). Least,can not execute and can perform with a little help - of 4 people (in

23.5%). The second study, most patients achieved a result, can do without help - 15 people (88.2%). Least, may be made of great help, and can perform with a little help - 1 person (5.9%).

Table 7. Rising from a sitting position on the edge of the table

Study	First		Second	
Description	Number	%	Number	%
Can not perform	4	23.5	0	0.0
Can be made from a large with	0	0.0	0	0.0
Can do with a little help	7	41.2	3	17.6
Can do without the help of	6	35.3	14	82.4
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved a result, can do with a little help - 7 people (41.2%). Least,can not perform - 4 persons (23.5%). The second study, most patients achieved a result, can do without help - 14 people (82.4%). Least, can perform with a little help - 3 persons (17.6%).

Table 8. Lifting the pencil from the floor

Study	First		Second	
Description	Number	%	Number	%
Can not perform	9	52.9	5	29.4
Can be made from a large with	1	5.9	2	11.8
Can do with a little help	3	17.6	2	11.8
Can do without the help of	4	23.5	8	47.1
Together	17	100.0	17	100.0

During the first survey, the majority of patients achieved the result, not can perform - 9 people (52.9%). Least, can perform with a high - one person (5.9%). The second study, most

patients achieved a result, can do without help - 8 people (47.1%). Least, may be made of great help, and can perform with a little help - 2 persons (by 11.8%).

Table 9. Difference in the results of the assessment of postural position between the first and second study

Position	N important	T	From	P
Seat without support on the edge of the chair with a height of 50 cm and feet touching the floor	6	0,000	2,201	0.028
Able with support (foot position free, without other restrictions)	5	0,000	2,023	0.043
Without state aid (foot position free, without other restrictions)	8	0,000	2,521	0.012
Non-contaminated state of the leg (without other restrictions)	8	0,000	2,521	0.012
State of the infected leg (without other restrictions)	10	0,000	2,803	0.005
Inverting the paralyzed side	2	0,000	1,342	0,180
Reversal on the healthy side	2	1,500	0,000	1,000
Rise from a lying or sitting on the edge of the table	8	2,500	2,170	0.030
Sit on the edge of the table	9	0,000	2,666	0,008
Rise from a sitting position on the edge of the table	8	0,000	2,521	0.012
Changing position from standing to sitting positions	7	0,000	2,366	0,018
Lifting pencil from the floor	8	0,000	2,521	0.012

The results obtained for the test of Wilcoxon provide information that the results for all groups differ significantly between the study of the first and second testing positions in each postural the evaluation of stroke with the exception of reversing the struck side or turning on the healthy side.

Discussion of the results

Due to the lack of opportunity to carry out studies to find a summary of the discussion I will base the work on discussing the results.

The aim of this work was to study the differences between the patients in the earlier phase of the stroke, and study after the stabilization of the disease state patients in the stroke unit. Analysis of the results suggests a significant improvement in the functional status of patients after stroke.

Given the combination between the first and second examination of the patient's age can be determined that patients under 65 years of age do better in getting the position of high ie. Easily improve your posture standing on a non-contaminated leg, standing on the infected leg as well as self-lifting pencil from the floor for this age group it was not an obstacle. On the other hand, research shows that people over the age of 65 compared two studies indicate significant improvement in the positions: standing without assistance (foot position free, without other limitations), standing on the edge of the table, rising from a sitting position no edge of the table and the position change from standing to sitting position in this age group confirms the positive effect of rehabilitation.

The subjects who initially interviewed indicated having three or more of concomitant diseases have higher growth rates except for the reversal of the results on the healthy side. A similar situation occurred in the group of three of concomitant diseases in reversing the healthy side is also not recorded higher growth rates in the survey results in the second compared to the first study.

Comparing the sex of respondents in the group of women in any position except for the reversal of the healthy side recorded higher growth rates in the survey results for the second compared to the first study. In the group of women reported a 0.13 point.

In the results, we can conclude that for the whole study group differ significantly between the study of the first and second study. In the various positions of the evaluation postural after stroke except for the reversal on the affected side and the reversal of the healthy side.

The conclusion that can be placed on the analysis of the study are as follows, the process of rehabilitation of patients after early rehabilitation in a stroke unit distances must be continued, so that the patient was the most capable of self-service. Only further individual, integrated and specialized therapist working with the patient can maintain what succeeded in obtaining. What is needed it is also widely available as a social campaign should take care of their health, to avoid future complications associated with stroke. As is clear from surveys on

average every 8 minutes in Poland, someone suffers a stroke which gives approx. 70,000 strokes a year.

The health system share should be adapted to the patient so that the way to improve as short as possible. The patient should not have to wait in line for admission to a rehabilitation unit. Access to rehabilitation, unfortunately, to a large extent is very limited. According to data provided by the regional branches of the National Health Fund in March 2016, the average waiting time for the actual adoption of the patient's neurological rehabilitation unit ranged from about 2 to 50 days in the case of urgent and up to about 140-200 days in cases of stable. As indicated by estimates about 30% of all stroke patients should go to the department of neurological rehabilitation. However, in practice it is only 15% of patients not waiting in line at the branch.

In summary, the work must also find the need to use zmianka klinometrycznych scales. Mikołajewska indicates that when selecting scales to work with patients after stroke should be paid attention to was "reliable in all cases, simple to manufacture, communicative, reproducible and sensitive enough to show significant changes during the various stages of therapy" [10]. Therefore, the study carried out by me give you objective information about the patient needed to continue the therapeutic process. It provides a basis to develop a treatment plan, in order to increase the effectiveness of planned therapy

Conclusions

1. During postural attitude studied in patients with previous stroke underwent early rehabilitation observed positive effect of the therapy performed. The changes are visible between the first and second examination of the patient.
2. The greatest difficulties between the first and the second study was observed in the case of a seat on the edge of the table, with the formation of a sitting position on the edge of the table and the state of the infected leg and position changes from upright sitting position no.
3. In contrast, patients have difficulty least during reversal on the affected side. The study noted that the reversal of the healthy side is an action that is not difficult patients

References

1. Wiszniewska M. *Czy istnieją różnice w udarach niedokrwiennych mózgu pomiędzy kobietami i mężczyznami?* Warszawa 2010.

2. Taylor J.B. *Udar i przebudzenie, moja podróż w głąb mózgu*, Łódź 2015.
3. Wnuk M., Słowik A. *Udar mózgu na dyżurze*, Poznań 2016.
4. Karwiwska A., Kossobudzka M., Moskal W., Staszak K., Tomkowska E., *Udar poradnik dla pacjentów i ich bliskich,* Warszawa 2016.
5. Wiszniewska M., Kobayashi A., Członkowska A., *Postępowanie w udarze mózgu.* Skrót Wytycznych Grupy Ekspertów Sekcji Chorób Naczyniowych Polskiego Towarzystwa Neurologicznego Warszawa 2012.
6. Pasek J., Much R., Opara J., Sieroń A., *Rehabilitacja i fizykoterapia po udarze niedokrwiennym mózgu* w Rehabilitacja w Praktyce 2/2007r.,
7. Walowska J., Wachacka K., *Zastosowanie koncepcji Bobath u osób po udarze niedokrwiennym mózgu,* Rehabil. Prakt.2012 (2).
8. Galasińska K., Buchalski P., Gajewska E., *Zastosowanie koncepcji PNF w rehabilitacji pacjentów po udarze mózgu* Poznań 2011.
9. Adler S., Beckers D., Buck M., *PNF w Praktyce* Opole 2014.
10. Mikołajewska E. *Klinimetria w fizjoterapii pacjentów po udarze mózgu* w Sztuka Leczenia, Bydgoszcz 2011.