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Assessment of a rehabilitation programme efficacy by patients after ischaemic cerebral stroke

Ocena skuteczności turnusu rehabilitacyjnego w opinii pacjentów po udarze niedokrwiennym mózgu

Summary

The quality of life of patients who suffered an ischaemic stroke increases with restoration of the lost functions, which is the consequence of skillfully adapted specialist kinesitherapeutic methods. This problem has a considerable social impact as, resulting from the sustained stroke, the patients' way of functioning in their environments changes dramatically. Ischaemic stroke sometimes makes a person give up their professional activity and social contacts. However, those patients' biggest problems are those associated with loss of big motor functions, mainly locomotion, as well as disturbances within small motor functions, which are connected with independent functioning on an everyday basis. The aim of the paper was to evaluate the efficacy of rehabilitation during a 3-week rehabilitation programme basing on the opinions of patients – survivors of an ischaemic stroke. The questionnaire survey conducted at the end of the rehabilitation programme during which the PNF and Bobath methods were used to work with patients showed an improvement in the subjects' quality of life. The therapy was tailored to individual needs and capabilities of patients, and it resulted in greater physical activity of the subjects, and subsequently, their greater independence in daily living. Success of physiotherapy is also conditioned by the patients' determination to fight disability and their desire to return to former social roles.

Key words: cerebral stroke, rehabilitation, specialist kinesitherapeutic methods, activities of daily living, orthopaedic aids

Streszczenie

Jakość życia pacjentów po przebytych udarach niedokrwiennym mózgu podnosi się wraz z przywróceniem utraconych funkcji, co następuje dzięki umiejętnemu wykorzystaniu dostępnych metod kinezyterapeutycznych. Problem ten ma duży aspekt społeczny, bowiem w wyniku doznanego udaru zmienia się sposób funkcjonowania w dotychczasowym otoczeniu. Niekiedy następstwem incydentu niedokrwiennego mózgu jest wręcz rezygnacja z życia zawodowego oraz kontaktów towarzyskich. Jednak największym problemem chorych po udarze mózgu jest utrata funkcji z zakresu dużej motoryki, głównie lokomocji, jak również zaburzenie małej motoryki, związanej z możliwością samodzielnego wykonywania czynności dnia codziennego. Celem pracy była ocena skuteczności usprawniania podczas 3-tygodniowego turnusu rehabilitacyjnego przez pacjentów po przebytych udarach niedokrwiennym mózgu.

Badania przeprowadzone po zakończeniu turnusu rehabilitacyjnego, w czasie któ-

regu do pracy z pacjentem wykorzystano metodę PNF oraz NDT Bobath, wykazały poprawę jakości życia usprawianych. Terapia była dobrana indywidualnie do potrzeb oraz możliwości pacjenta, a w jej wyniku nastąpiło zwiększenie aktywności fizycznej, a co za tym idzie osiągnięcie większej samodzielności przez badanych w zakresie wykonywania czynnościach samoobsługowych. Na powodzenie terapii ma również wpływ determinacja pacjentów do walki z pokonaniem niepełnosprawności oraz ich chęć powrotu do wykonywanych uprzednio ról społecznych.

Słowa kluczowe: udar mózgu, rehabilitacja, specjalistyczne metody kinezyterapiutyne, czynności dnia codziennego, pomoce ortopedyczne

Introduction

Cerebral stroke is a sudden disturbance of brain activity lasting longer than 24 hours and caused by vascular dysfunction. The most common type of stroke is ischaemic stroke (Pierzchała et al. 2006). Neurological deficit in an acute insufficiency of cerebral circulation manifests itself in the form of hemiparesis, speech disturbances like aphasia or agnosia, dementia, as well as impairment of body axis coordination. The symptoms of a neurological deficiency may wear off, increase, recur, or persist for a longer period (Mirowska 2001).

What is essential in the management of a stroke patient is to early introduce a rehabilitation regime into their treatment programme. In the rehabilitation of patients after an ischaemic incident brain plasticity is made advantage of. The most important objective of comprehensive rehabilitation at the time of stroke is to minimize disability and to improve the quality of the patient's life in general. At an early stage of stroke management rehabilitation is combined with an intensive medical treatment aiming at limiting inappropriate motor patterns. Members of the rehabilitation team aim to restore the patient's motor functions as soon as it is possible, so that they could function independently and successfully perform activities of daily living (Opara 1999).

The traditional rehabilitation methods initially include positioning of the body, passive motion exercises at the bed, active exercises, patient's assuming the erect position, passing from high to low positions and back again, learning and relearning how to walk (gait re-education), rehabilitation of the hand, and exercises in the universal rehabilitation facility (Opara 2002).

Physiotherapy uses specialist kinesitherapeutic methods, like PNF stretching, Bobath approach, and others. The concept of the PNF stretching method is to perform natural movements in three dimensions, which mimic tasks of daily living. Those movements are performed along slanting motion axes, which enables activation of a large number of muscles within the same muscle chain. Rotation is an important component of movement in this method as it conditions the force and coordination of the performed movement (Wolny et al. 2008). The PNF stretching method devotes a lot of attention to interactions between body stability and mobility, with special attention to concentric muscle contractions under gravity (Taub, Morris 2001). Theoretical assumptions of the Bobath approach focus on the brain's plasticity and an integrational function of the central nervous system. The basic principle of this method is to choose such exercise positions and movements which do not induce pathological spastic reflex reactions. Common elements of both methods include

balance training, improvement of hand-eye coordination, gait re-education, and functional rehabilitation of upper and lower limbs (Pasek et al. 2007).

The aim of the paper was to evaluate the efficacy of rehabilitation during a 3-week rehabilitation programme basing on the opinions of patients – survivors of an ischaemic stroke. During the course two specialist kinesitherapeutic methods were used for 50 patients, PNF stretching and Bobath approach. After completion of the programme the patients filled in a questionnaire, in which they answered questions concerning efficiency of the rehabilitation process.

Material and methods

The study was conducted in the year 2010 in Lublin physiotherapy centres. The study included a group of 50 individuals after ischaemic stroke, aged from 55 to 60 years, referred to take part in a rehabilitation programme during which specialist kinesitherapeutic methods were used (PNF stretching method in 58% of the patients and Bobath method in 48% of the pts).

The subjects had suffered their strokes from 3 to 6 months prior to the present study. Non-eligibility criteria included disability existing before the stroke, a high degree of aphasia, and dementia. The main eligibility criteria were complete independence in daily living activities before stroke, post stroke hemiparesis, and similar rehabilitation patterns during early hospitalization period, such as: passive exercises, assuming erect position, balance training, locomotion rehabilitation, exercise classes in a gym, exercises on a mat, and manual exercises.

The study tool in the form of a survey questionnaire was developed by the author of the present paper and consisted of 34 questions. The survey was conducted immediately after the end of the rehabilitation programme.

Results

Effects of the stroke in the study group

In the study group hemiparesis occurred a bit more often in the left side of the body (52%). Hemiparesis of the right side of the body occurred in 48% of the respondents (Tab. 1).

Tab. 1 Area of motor disability caused by the sustained stroke

Area of motor disability	Number of patients	% of patients
All left body half	18	36%
All right body half	12	24%
Left upper limb	8	16%
Right upper limb and/or right part of the face	12	24%

Patients most frequently reported problems with eye-hand coordination (76%) and with keeping their balance (70%). A relatively smallest group of patients reported problems with communication (32%) and vision problems (20%) (Tab. 2).

Tab. 2 Problems reported by ischaemic stroke patients

Problems	Number of patients	% of patients
Balance disturbance	35	70%
Eye-hand coordination disturbance	38	76%
Problems with communication	16	32%
Vision problems	10	20%
Sensation problems	21	42%
Problems with memory	20	40%
Depression	26	52%

The stroke patients associated the most difficulty in the activities of daily living with self-care during the morning routine (taking a shower or bath, tooth brushing, or using the toilet) and changing clothing/shoes (Tab. 3).

Tab. 3 Difficulties with activities of daily living in stroke patients

Activities causing difficulty	Number of patients	% of patients
Getting up from bed	19	38%
Walking	13	26%
Climbing up the stairs	21	42%
Climbing down the stairs	21	42%
Preparing and consuming one's own meals	19	38%
Writing	16	32%
Reading	11	22%
Morning beauty/grooming routine	34	68%
Dressing/putting on shoes	33	66%

Before the rehabilitation programme the highest percentage of patients in both study groups had problems with keeping their own balance, morning routine, preparing and consuming their own meals, and climbing stairs. After the programme patients rehabilitated by means of both methods noticed a significant improvement in their ability to perform those tasks (Tab. 4).

Tab. 4 Movement difficulties and daily living problems reported by stroke patients before and after a rehabilitation programme according to the rehabilitation method

Daily living activities causing problems	Patients rehabilitated by means of PNF stretching				Patients rehabilitated by means of Bobath approach			
	Before rehabilitation		After rehabilitation		Before rehabilitation		After rehabilitation	
	No. of patients	%	No. of patients	%	No. of patients	%	No. of patients	%
Getting up of bed	9	31.05	6	20.70	10	52.6	6	31.56
Walking	8	27.60	4	13.80	5	26.30	2	10.52
Climbing stairs	13	44.85	7	24.15	8	42.08	3	15.78
Descending stairs	12	21.90	5	17.29	9	47.34	2	10.52
Keeping one's balance	23	79.39	11	37.95	12	63.12	7	36.82
Preparing and consuming one's own meals	13	44.85	5	17.25	6	31.56	2	10.52
Writing	7	24.15	3	10.35	9	47.34	4	21.04
Reading	6	20.70	2	6.90	5	26.30	2	10.52
Morning routine	21	72.45	11	37.95	13	68.38	7	36.82

The patients reported the fewest problems with using the telephone (98% of the respondents) and managing their own money resources (56%), and the most problems were associated with leaving home on their own (24%) and shopping (24%).

A reduction of interpersonal contacts occurred in 55% of the subjects. Nearly 64% of the subjects had to give up their previous jobs.

Both groups of patients rehabilitated by means of specialist kinezitherapeutic methods benefited from the therapy. Patients were able to substitute or completely give up the orthopaedic aid they had used. In the case of subjects rehabilitated by means of the PNF stretching method, the percentage of individuals using a cane was 37.95% before the rehabilitation programme and it decreased to 24.45% after completion of the programme. The percentage of patients using canes and rehabilitated with the use of Bobath approach also dropped after the rehabilitation programme from 47.34% before the programme to 31.57% afterwards. A decrease in the number of subjects using wheelchairs in both groups was also noted after the rehabilitation programme (Tab. 5).

Tab. 5 Orthopaedic aids used by stroke patients before and after the rehabilitation programme according to the rehabilitation method

Type of orthopaedic aid used	Patients rehabilitated by means of PNF stretching				Patients rehabilitated by means of Bobath approach			
	Before Rehabilitation		After rehabilitation		Before rehabilitation		After rehabilitation	
	No. of patients	%	No. of patients	%	No. of patients	%	No. of patients	%
Cane	11	37.95	7	24.45	9	47.34	6	31.57
Walking frame	5	17.25	2	6.90	3	15.78	1	5.26
Stabilizer	3	10.35	1	3.45	-	-	-	-
Wheelchair	2	6.90	0	-	3	15.78	1	5.26

94% of the respondents confirmed a remarkable improvement of their health status resulting from the rehabilitation programme they went through, and 78% declared they would like to benefit from that kind of rehabilitation again in near future.

Discussion

The quality of life of patients after ischaemic stroke improves with restoration of the lost body functions, which is the consequence of the use of kinesitherapeutic methods. The success of rehabilitation is also conditioned by the patients' determination to fight disability and their willingness to return to previously performed social functions (Jaracz, Kozbuski 2006b). Moreover, rehabilitation administered in the first hospital phase of the disease beneficially influences further prognosis (Trochimiuk et al. 2009).

Important problems of those patients which affect their daily functioning include difficulties connected with focusing attention, communication and locomotion, which was confirmed in the results of the present study. The inconvenience of particular importance was connected with limited mobility, with a number of subjects having to resort to an orthopaedic aid. This problem was especially significant for those patients' professional activities and social roles (Jaracz, Kozbuski 2006a). Cerebral stroke is often associated with a decrease in the social status, a necessity to give up professional activity, a loss of ability to earn a living and worsening of living conditions (Daszkowska 2006).

Not infrequently, people who have suffered a stroke, despite having preserved their intellectual ability, find it difficult to move about and require the help of another person, which adversely affects their mental state (Vestling et al. 2005). Regaining the possibility of moving on one's own is a factor which positively affects the patient's mental status. They can see thereof measurable good results achieved thanks to the rehabilitation

programme they have undergone. Those benefits motivate the patient to further seek how to restore the lost functions. The patient who notices actual improvement in their daily functioning actively engages into therapy, which guarantees further improvement of body function (Członkowska, Mirowska 2001). The present study confirmed this assumption. It is important to consider low self-esteem concerning own social position that characterizes people who have undergone a stroke, which contributes to their limiting of interpersonal contacts (Krawczyk, Sidaway 2002).

The results of the present survey conducted at the end of a rehabilitation programme show that rehabilitation carried out by means of specialist kinesitherapeutic methods brought about improvement within small and large motor functions, which positively affected the patients' daily functioning.

A lot of authors point out that the task of entire team caring for the patient after ischaemic stroke is to lead them through the initial period of the disease and to simultaneously prepare them for restoration or compensation of the lost functions (Ryglewicz, 2001). Rehabilitation process of an individual after cerebral stroke has become a multi-disciplinary issue and it is now possible not only to restore the lost functions, but also, when it is not entirely possible, to decrease patient's inconvenience through appropriate arrangement of the individual's living space and the use of facilities designed to aid the patient (Tasiemski et al. 2010). The respondents of the present study used various aids such as a cane, a walking frame, stabilizers of different kinds, and, in more severe cases, wheelchairs. As a result of the rehabilitation process there occurred a replacement or elimination of the aid used heretofore, which reveals higher degrees of independence within big motor functions attained by the patients.

Universal priorities are followed during a complex rehabilitation of stroke patients: the rehabilitation aims at developing maximum independence of the patient in their daily living activities and locomotion, with daily living activities featuring self-care, i.e. consuming one's own meals, everyday hygiene and dressing (Opara 2006). Those aspects of life after stroke were also stressed by the patients. A lot of them declared that difficulties that they encounter concern those particular tasks. Methods which are most frequently used in order to achieve the most possible independence are the PNF method and the Bobath method. Therapists using specialist kinesitherapeutic methods very often pointed out in conversations that it was possible to achieve a significant improvement within small and big motor functions during a relatively short period of time (the programme lasted for 21 days). They also stressed the fact that neglecting further rehabilitation after completion of the programme may result in reduction of the achieved results.

In order to preserve the newly acquired fitness and further improvement herein, it is indispensable to continue the rehabilitation process by means of actively engaging in an exercise programme over a long period of time (Kwakkel et al. 2004). Moreover, it is recommendable to use consecutive forms of specialist physiotherapy. No less than 78% of the respondents perceived such a need and declared willingness to take part in such exercise classes again. This result shows the patients' satisfaction with therapy heretofore.

Conclusions

1. Ischaemic stroke of the brain negatively affected the subjects quality of life. They encountered the most problems with maintaining balance and independent locomotion, as well as with performing certain activities of daily living.
2. In the social sphere, the stroke contributed to a limitation in social contacts in 55% of the patients, whereas 64% of the patients gave up their professional activity because of the stroke.
3. Specialist kinesitherapeutic methods used during the rehabilitation programme, such as PNF stretching method and Bobath method, positively influenced the patients' quality of life, mainly within independent performance of daily living activities.
4. Rehabilitation conducted by means of both mentioned specialist methods brought about improvement of mobility, mainly due to balance training. As a consequence, the need for orthopaedic aids also dropped. Thus, acquiring a higher degree of mobility was motivating for patients in the respect of further rehabilitation.
5. Accompanying acquisition of a greater independence by the patients rehabilitated with specialist kinesitherapeutic methods was improved quality of life in all the physical, mental, and social spheres.
6. When the physiotherapy programme was over, the subjects appreciated the efficacy of therapy with specialist kinesitherapeutic methods and declared willingness to take part in another such programme in the future.

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