
BARTHEL INDEX AND FUNCTIONAL STATUS OF PATIENTS AFTER STROKE IN A PHYSICAL THERAPY PROGRAM

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ABSTRACT

Stroke is one of the major causes of neurological disturbances. Efforts have been made in order to reestablish of patients' lives. Functional assessment can help Physical Therapists on their practice for neurological cases, giving guidance for the patient's evolution after stroke. The aim of this study was to apply two functional assessments: Barthel Index and Functional Status on thirty patients who suffered from stroke and were sent to Physical Therapy at University of Sacred Heart. These indexes to check on the changes were applied before and after eighteen Physical Therapy sessions. The results obtained from Barthel Index demonstrated that patients's score went from M1 (pre-therapy) to M2 (post-therapy), indicating improvement. For functional status the lower the score received, the better is the performance, and there was a decrease on the scores from M1 to M2, representing better performance of patients. Lower scoring demonstrated more functional independence performing daily dutis. By using and analysing these assessments it was possible to detect loss of functions and to conduct the therapy sessions based on patients' real difficulties. Functional assessments must be used to help Physical Therapists to think about therapy, and also to offer

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measurable aids important to visualize and systematize a follow-up of patients.

KEY WORDS: physical therapy; stroke; functional status; Everyday activities

INTRODUCTION

There is a need for a systematic follow-up of patients that suffered cerebral stroke by use of indexes of daily activities (DA) while being treated in Physical Therapy services.

According to the World Health Organization, cerebral stroke is a “clinical sign of rapid development of a focal perturbation of the cerebral function with supposed vascular origin and with more than 24 hours of duration” (STOKES, 2000).

Cerebral stroke is one of the main causes of neurologic sequelae, presenting motor deficit – hemiplegia (complete loss of motor function in a hemi-body) or hemiparesia (partial loss of motor function). These can be associated to other sequelae such as aphasia, praxical and visual-spatial alterations. There are consequences in the physical, social and economical aspects that are difficult to solve. It is also an important cause of death – 4.6 million/year – and three quarters of these cases occur in developing countries (BONITA; BEAGLEHOLE, 1995).

The prevalence of cerebral stroke is close to 2/1.000 with a 30% death rate result in the first three weeks, full recovery in 30% of the cases and residual disability in 40% (STOKES, 2000).

Mahoney and Barthel (1965) created the Barthel Index to measure the dependence of patients with chronic disabilities, such as stroke, in everyday life.

The Barthel index is widely used to measure the capacity of an individual to perform ten basic activities of the daily life resulting in a quantitative estimation of the level of dependence of the individual. It has been used since it was first suggest inducing different versions, and can be used in comparison with other scales. It is an instrument of easy application, with a high degree of reliability and validity, and it is able to detect alteration, is easy to interpret and its application is harmless (CID-RUZAFÁ, 2000). Later, Loewen and Anderson (1988) tested and proved the reliability of the application of the Barthel Index.

Jette (1980b) introduced the Functional Status Index as a table of scores. This index aims to evaluate five variables: mobility, self-care, house chores, manual activities and social activities.

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Everyday activities (DLA) are basic physical activities necessary to live, such as walking, personal care and transfer. Individuals carrying hemiplegia or hemiparesia may present several disabilities that make difficult the DLA. Therefore, it was necessary a complementary evaluation to verify and quantify these activities and to follow-up the functional status of these patients. The performance of these activities by someone with hemiplegia or hemiparesia is very important once they are related to the functional dependence and the improvement of the quality of life (GAIAD et al., 1998).

Functional evaluations such as the Barthel index and the Functional Status index are used to measure the daily life activities and they should be used to assist the physical therapy program in order to focus the program in motor function abilities. In this regard, it is possible to show the improvement of the function in cases of stroke as well as the effects of the intervention in the rehabilitation process.

The aim of the present study was to evaluate the use of two functional indexes before and after 18 session of physical therapy (in a period of 2 to 3 months) in patients with cerebral stroke.

MATERIAL AND METHODS

The group included 30 cases of cerebral stroke patients with average age of 50 years, that were referred to treatment in the Clinic of Physical Therapy of the University of the Sacred Heart.

After identification of cases an informed consent was signed, which was previously approved by the Committee of Ethics in Research of the University of the Sacred Heart. Afterwards, the first evaluation was done using the Barthel Index and the Functional State Index.

After the study of the functional situation, the physical therapy program started. It included manoeuvres of normalization of the muscular tonus, positioning and stretching of the trunk, upper and lower limbs, facilitation of the voluntary motion of the paralyzed or paretic upper and lower limb, training of the equilibrium and of the body alignment reaction, postural retification, training of functional abilities showing to patients that the movements done at the sessions would be useful for their own activities of teeth brushing, hair combing, holding a glass, a fork, a spoon or a knife. Besides that, it was given orientation to family members and to the patients. After 18 sessions patients were

evaluated against the same indexes (Barthel and Functional Status). One of them, (Barthel), was analyzed by the sum of scores obtained before (M1) and after (M2) treatment. It could vary from 2 to 100 points, that is, 2% to 100%. Cases of complete dependency for DLA were awarded 2 points and were awarded 100 points were considered as able to perform all activities for that index.

The study of the variables of Barthel Index, mobility, self-care, house chores, manual and social activities in the two moments of observation was done with the non-parametric test of Wilcoxon. The result of the test with the respective measures of position and variable were presented in tables and boxplot graphics (CAMPANA et al., 2001) and discussed at a level of 5% of significance (CURI, 1998).

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RESULTS

TABLE 1 shows results of the pre (M1) and post (M2) moments of 30 cases with cerebral stroke.

TABLE 1 – Median, interquartile semi-amplitude interquartile and minimal and maximal values with the respective results for non-parametric test in the comparison of the two moments.

Variable	Moment		Result of the statistical test
	M ₁	M ₂	
IB	66.50 ± 17.00 (12.00; 95.00)	90.00 ± 12.00 (47.00; 100.00)	4.78 (p< 0,0001)
MOB	55.10 ± 16.65 (25.60; 100.00)	30.80 ± 12.80 (23.10; 100.00)	3.56 (p< 0,0001)
CP	47.10 ± 15.35 (30.80; 100.00)	29.80 ± 7.70 (23.10; 63.50)	4.16 (p< 0,0001)
TD	76.90 ± 5.10 (23.10; 100.00)	40.40 ± 26.90 (23.10; 100.00)	3.74 (p< 0,0001)
AM	47.40 ± 20.50 (23.10; 100.00)	30.80 ± 7.70 (23.10; 100.00)	4.29 (p< 0,0001)
AS	76.90 ± 5.75 (48.70; 100.00)	50.60 ± 14.10 (23.10; 94.20)	4.29 (p< 0,0001)

BI= Barthel index; MOB= Mobility; PC= personal care; HC= home chores; MA= manual activities; SA= social activities.

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FIGURE 1 shows the scoring of the two moments of the Barthel Index and an increase from M1 to M2.

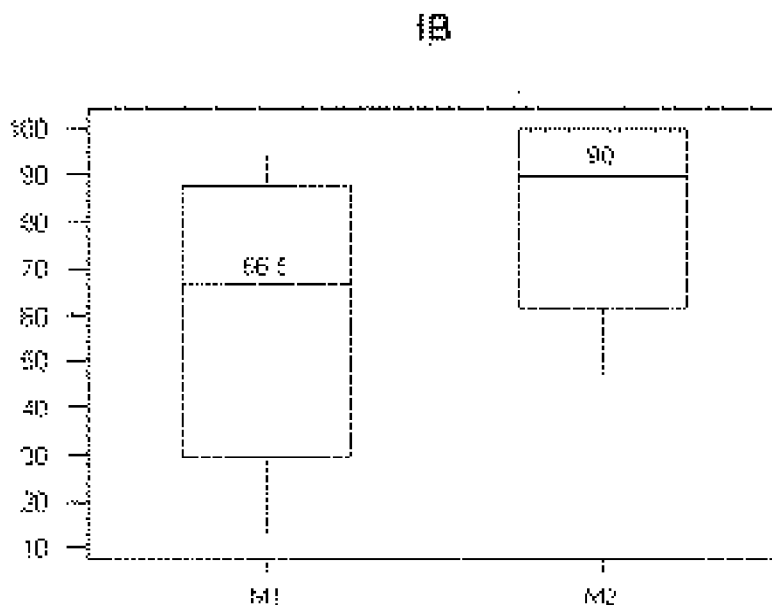


FIGURE 1 – Boxplot of the Barthel index (BI) according to the moment of evaluation.

The variable mobility can be seen in FIGURE 2. This variable together with Personal Care (FIGURE 3) showed the most marked modification when compared to the other.

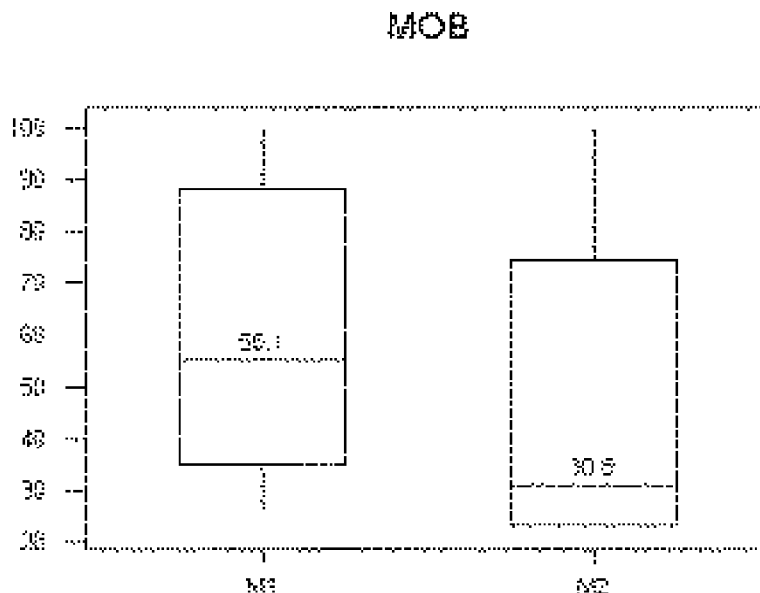


FIGURE 2 – Boxplot for Mobility (MOB) according to the moment of evaluation.

CP

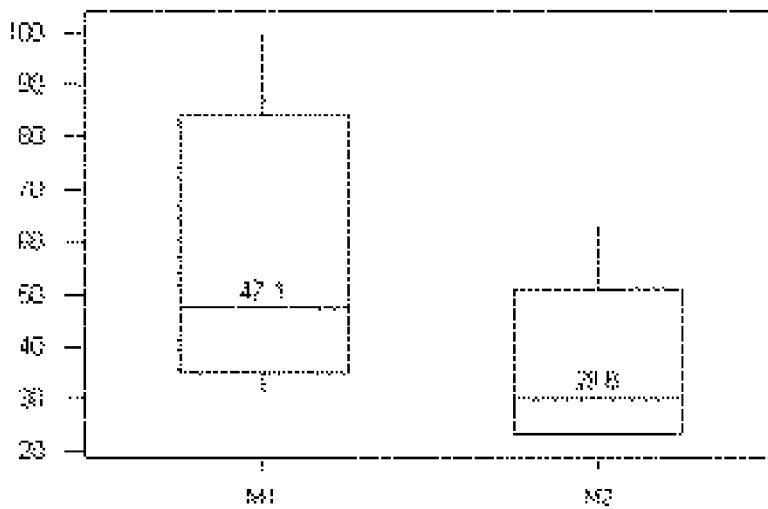


FIGURE 3 – Boxplot for Personal Care (PC) according to the moment of evaluation.

DISCUSSION

According to the results in TABLE 1 for the Barthel Index the score obtained in M2 is greater than in M1. However, for mobility, personal care, house chores, manual and social activities the score at M2 was less than in M1. This shows that some modification was obtained despite the difference among the modification, since some of these did not improve in some of the variables.

Although the index is commonly used due to the reliability and easiness of application, there is scarce graduation of points in the different items, what leads to a less refined evaluation of the status of dependence of the patient (CID-RUZAFÁ, 2000).

On the other hand, the use of the Functional Status Index shows more refinement in what regards the functional behavior of patients. This index includes five variables that are analyzed in three aspects: assistance (dependency showed by the patient), pain and difficulty. Assistance can vary from 1 to 5 points, from independent to disabled and the other two are classified from 1 to 4 taking into consideration different degrees of pain and difficulty.

Hemiplegia due to cerebral stroke is considered as a recoverable neurologic disease (CARR; SHEPHERD, 1989; BOBATH, 1978). Although the recovery process is not yet clear, there are evidences that the training of methods designed to stimulate the motor learning can have a positive effect in the brain reorganization after a neural lesion (SHEPHERD, 2001).

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There are many studies on the rehabilitation after a cerebral stroke but just few of them include physical therapy in the rehabilitation program. The therapeutic methods, as the nervous system development treatment (NDT) introduced by Bobath, the method of proprioceptive neuromuscular facilitation, based on Kabat, and the motor relearning introduced by Carr and Shepherd are methods that aim to improve the functional capacity almost into normality if possible (PICKLES et al., 2000).

In the present study it was used principles of this latter technique of physical therapy in order to allow patients to relearn their basic capacities and functional abilities.

The performance of the physical therapy maneuvers aiming to improve the performance in the DLA, such as transference, feeding, bath, personal hygiene, contributed to improvement of patients.

In the transferences it was emphasized the modification of position from the bed to the chair during physical therapy. During feeding it was used the movements of the upper limbs related to the ones used to feed. In bath and hygiene the control of the concentric and eccentric contraction of the quadriceps was worked on.

Contrasting to the Barthe Index which holds that the greater the score better the status of the patients, in the Functional Status Index the decrease in points obtained by patients represents a modification towards improvement in each variable.

There was a better result in the performance of patients of the variables mobility and personal care. In mobility the movements are less complex and more global, using greater muscular groups, making the rehabilitation easier. Besides that, the performance of functional movements depend, in a great extent, on an adequate mobility of the trunk. However, to the variable Personal Care the movements are more precise and the involved muscles may show not enough neural control to accomplish the task. The repetition of functional movements is emphasized during the physical therapy program and even if there is not enough neural control to perform personal care the patient can become independent with the offered training and able to take care of his/her own personal hygiene (UMPHRED, 1994).

In what concerns domestic tasks, despite the evolution showed by most patients, some of them were not as successful due both to the physical condition and to the family, which, sometimes, fail to support patients to perform by themselves domestic tasks such as laundry or sweeping.

In the field of manual activities, physical therapy has always aimed to stimulate the movement of prehension with the best possible support of objects in the hand of patients, which is a basic and important ability to anyone and is used in a large variety of functions, from simple ones to very complex tasks (CARR; SHEPHERD, 1988).

For the variable Social Activities there was an evolution in what regards the socialization of patients after the stroke. Physical therapy could improve the physical condition of patients together with the orientation, both to patients and family members, about the importance of social activities. However, some cases did not show improvement in this variable due to situation such as resistance of family members to bring patients to public places, architectural barriers or, even, the embarrassment felt by patient to visit such places (DAVIES, 1996a).

For adults, to be independent is the first vital step to regain the previous life style. Independence means not to be disabled, depending on other people to perform all the daily life activities (DAVIES, 1996 a).

Even though the effects of physical therapy, during the rehabilitation, are uncertain, there is some increasing evidence that early physical therapy can maximize the physical recovery (ERNST, 1990; ASHBURN et al., 1993).

However, rehabilitation services demand much work, involve a large team of health professionals and are expensive in the short run. This puts rehabilitation services in the very beginning of a list of cuts in the budget of health services, unless an objective documentation of the cost-benefit of these services are provided (CLARK; GRANGER, 2000). In this regard, the instruments used in the present study are important to show and to register the improvement in the function of patients from treatment.

CONCLUSION

The use of functional indexes contributes to detect the basic needs of patients with cerebral stroke as well some of their many difficulties in daily life. Therefore, it was possible to orientate the treatment and to perform therapeutic actions that meet the needs of the deficits of these patients. In addition, the indexes proved useful to register the improvement in the function as related to the treatment.

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