

EVALUATION OF THE EFFECTS OF CEREBROLYSINE ON MOTOR DEFICIENCY OF PATIENTS POST STROKE

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Abstract

Stroke continues to represent a severe neurological disease, which annually kills thousands of people, being the main cause of mortality in the world. Stroke is an etiologic factor, with installation of long-term disabilities, patients often remain with unpleasant symptoms which often must be treated throughout life.

In the present paper it was attempted to demonstrate the efficiency of Cerebrolysine along with recovery procedures for rehabilitating post Stroke.

Neurotrophic factors are defined as being a component of the endogenous defense system with the role of adjusting it. Due to the action in multiple directions, the neurotrophic factors have a therapeutic potency of higher level involved in the most important neurological disorders.

Post Stroke recovery is made by introducing the patient in a complex and individualized recovery plan, which begins in ICU department and is continued in a recovery clinic.

The present study was conducted over a period of 12 months, with a total of 139 patients evaluated at 6 months and 12 months. The study was conducted on two groups as follows: a group receiving Cerebrolysine + medical recovery, and a second group that did just the medical recovery procedures in specialized clinic.

The results of the study show that the association between the neurotrophic factor, in the present case Cerebrolysine, along with physical recovery procedures, give better results than in the group of patients who appealed only to the motor recovery from the rehabilitation centers.

Key words: Stroke, Cerebrolysine, nervous system, medical recovery,

INTRODUCTION

Stroke is the third leading cause of death worldwide, the damage caused by it having frightening proportions, being characterized by a sudden onset of a neurological deficiency (Marcovici H., 2004).

The devastating impact that stroke produces to the patient, family and medical resources is doubled by significant complications, with long term, with serious consequences on the physical and mental capacities and with an increased possibility of recurrence (Cinteză M. et al, 2007; Lincolon NB. et al, 2000; Mauritzk K. et al, 2002; Băjenaru O, 2010; WHO, 2001; Bernhardt J. et al, 2004).).

Many extrinsic and intrinsic factors can modulate the ability to adapt of the nervous system. Intensive recovery programs seem to stimulate the

brain mechanisms of recovery, with good functional results. Given that the central nervous system is damaged, it reacts spontaneously by optimizing the functioning of the organism. Lesions at the brain level are a real problem, not a simple incident, with consequences of the most serious, including: chronic disability, decreased quality of life and high costs (Walker N., et al, 2009; Hache W., 2004)

Neurotrophic and neuroprotective agents have opened new horizons in the treatment of stroke, determining an increase of the degree of survival and recovery potential even in the case of patients who have been to the doctor far too late after the occurrence of the cerebral event (Young J. et al, 2007; Ladurner G. Et al, 2005).

Lately it was tried more and more, through numerous clinical trials, a correct approach for neuroprotection and recovery because the nature of the pathophysiological mechanisms and the link between these two categories are not fully elucidated.

Neurotrophic factors are modulating molecules with pleiotropic immediate neuroprotective activity and long multimodal effect. Because of the unique therapeutic effect, the principle for the treatment is based on, in addition to acute administration, also periodical repetition, at fixed time intervals. This produces an endogenous stimulation on long term neurorecovery. Pharmacological neuroprotection and neurorecovery are processes of which approach is beneficial to be done together (Ladurner G. et al, 2005).

The aim of this study is to demonstrate the benefit of the association of the neurotrophic factor - Cerebrolysine with the recovery procedures for rehabilitation post Stroke.

MATERIAL AND METHOD

In the present study were enrolled a number of 139 patients post Stroke. The study was conducted over a period of 12 months, patients were evaluated initially at 6 months respectively at 12 months. For this analysis, patients were divided into 2 groups:

- lot BFT + Cerebrolysine - 71 patients who performed balneophysiotherapy, and received Cerebrolysine
- lot BFT- 68 patients who performed balneophysiotherapy and did not receive Cerebrolysine

Inclusion criteria: ischemic or hemorrhagic stroke, duration of stroke at the beginning of the treatment less than or equal 6 months

Exclusion criteria: stroke in antecedents, recovery program in antecedents, stroke recurrence during the study.

Treatment with Cerebrolysin began immediately after the initial assessment, it was administered 10 ml. / day as a single dose for 10 days per month, infusional solution, i.v. slowly after dilution with physiological serum to a volume of 100 ml., for one year.

The recovery treatment with established procedures was carried out for 14 days every 6 months. Therapeutic means used were kinetotherapy, hydrokinetotherapy, massage therapy, electrotherapy, thermotherapy occupational therapy, cryotherapy, contrasting therapy, psychotherapy.

To assess the motor deficit Barthel Index was determined that tests 10 functions for the use of the 10 ADL for self-care. The index has a score that is applied to each of the 10 functions investigated.

To compare the effects of the therapy in the two studied groups was used, ES - a method of standardization of a variable change magnitude after a period of time. ES represents the average change for a variable expressed in standard deviation units. This standardization allows comparison of the change of a variable in a study.

RESULTS AND DISCUSSIONS

In terms of the distribution according to gender, male / female ratio was approximately 1:1. Data from the literature show a higher frequency of hemorrhagic stroke in men, and the percentages of the ischemic one are close in both sexes (Cinteză M. et al, 2007; Engelter S.T. et al, 2006). The average age of the patients under study was about 64 years, data close to those from specialty studies (Popescu I., 1990). A study from UK shows that about half of the stroke, of first episode, occurs in people over 65 years (Shaper AG. et al, 1991).

Duration after disease onset to the beginning of the recovery treatment was the for most patients between 3-6 months (57.75%, respectively 60.29%) Animal studies show that the period of the mild heart attack is the best time to start the recovery (Barbay S. et al, 2001; Biernaskie J. et al, 2004). Other studies have reported the improvement of prognosis if recovery is established at 24-48 hours in ischemic stroke also in 20-30 days in case of hemorrhagic stroke (Paolucci S. et al, 2000; Salter K. et al, 2006).

At the initial assessment, the predominant form of the motor deficiency was the hemiparesis in 67.61% of patients of the group BFT + Cerebrolysin and 70.59% in group BFT, without significant differences between the 2 groups ($p = 0.524$) (table 1).

Table 1

Form of the motor deficiency	Form of the motor deficiency			
	Group BFT+ Cerebrolysin (n=71)		Group BFT (n=68)	
	No.	%	No.	%
Hemiparesis	48	67,61	48	70,59
Hemiplegia	23	32,39	20	29,41

Evaluation of the motor deficiency during the study was appreciated by determining the Barthel Index (table 2)

Table 2

	Evolution of the Barthel index					
	Group BFT+Cerebrolysin (n=71)					
	Initially		At 6 months		At 12 months	
	No.	%	No.	%	No.	%
Very severe deficiency	12	16,90	10	14,08	9	12,68
Severe deficiency	19	26,76	14	19,72	12	16,90
Moderate deficiency	38	53,52	30	42,25	24	33,80
Slightly deficiency	2	2,82	13	18,31	14	19,72
Without deficiency	0	0,00	4	5,63	12	16,90
The average	48,05±5,78		57,13±6,02		63,10±7,17	
	Group BFT (n=68)					
	Initially		At 6 months		At 12 months	
	No.	%	No.	%	No.	%
Very severe deficiency	11	16,18	10	14,71	9	13,24
Severe deficiency	18	26,47	15	22,06	14	20,59
Moderate deficiency	35	51,47	28	41,18	25	36,76
Slightly deficiency	4	5,88	12	17,65	10	14,71
Without deficiency	0	0,00	3	4,41	10	14,71
The average	49,23±5,25		55,61±6,37		59,85±6,91	

Initially very severe and severe motor deficiency was encountered in 43.66% of patients from the group with BFT + Cerebrolysin and 42.65% from the BFT group, and moderate and slightly motor deficiency in 56.34% respectively 57.35% ($p=0,639$).

After six months the percentage of the patients with severe and very severe deficiency was reduced to moderate deficiency with 9.86% in the group BFT + Cerebrolysin and with 5.89% in the group BFT, while among those with moderate or slightly motor deficiency at 5.63% respectively 4.41%, motor deficiency disappeared.

Compared to the assessment from 6 months, at 12 months, the percentage of patients with very severe and severe motor deficiency was

reduced to moderate motor deficiency at 4.22% in the group BFT + Cerebrolysin, respectively 2.94% in the BFT group .

At the final evaluation, motor deficiency disappeared at 16.90% from the group BFT + Cerebrolysin and 14.71% from the BFT group.

Evolution of the motor deficiency assessed with the Barthel index is better at patients with Cerebrolysin compared to those who did not receive Cerebrolysin, even if from statistical viewpoint the difference is not significant ($p=0,122$) (figure 1 a, b).

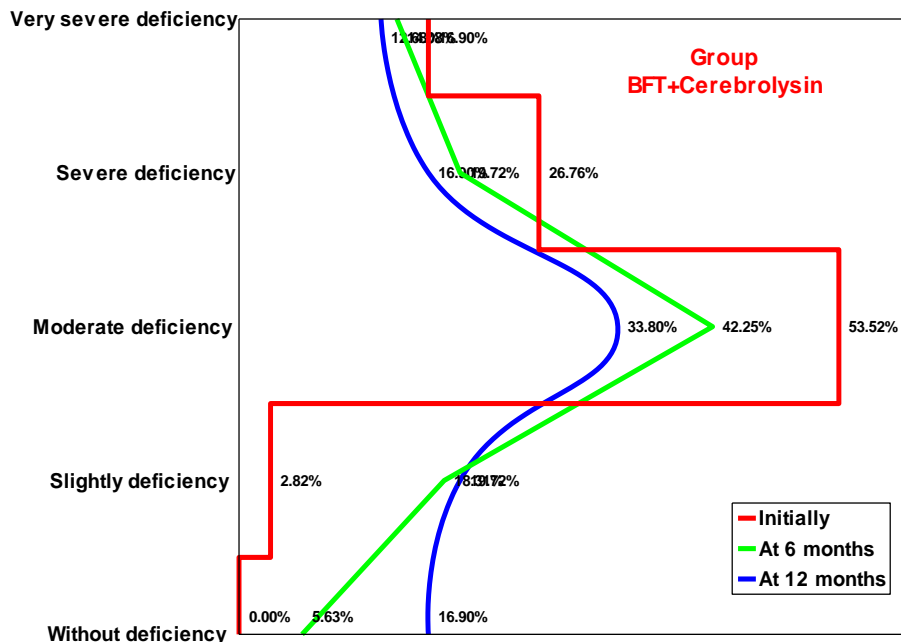


Fig. 1a The evolution of the motor deficiency assessed with Barthel index in the BFT+ Cerebrolysin Group

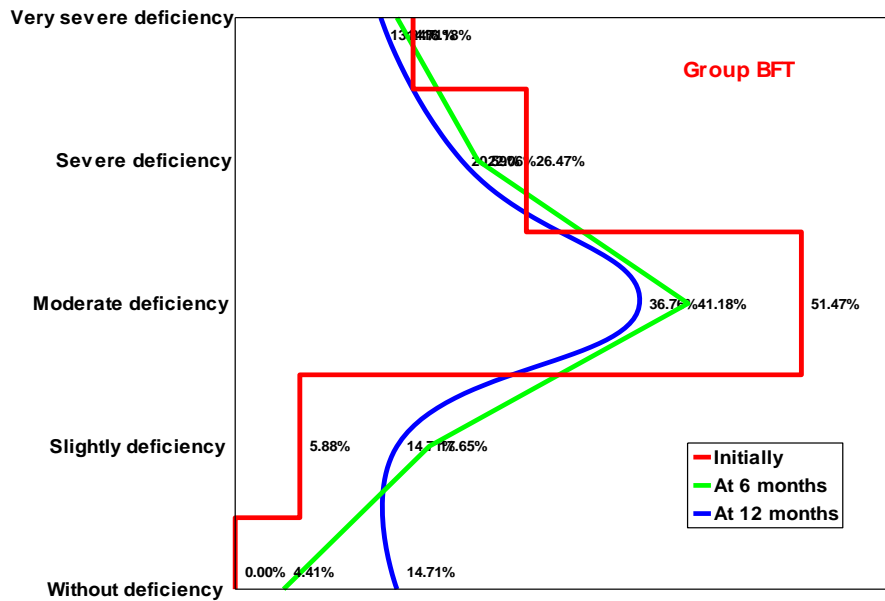


Fig. 1b The evolution of the motor deficiency assessed with Barthel index in the BFT Group

The effect of the therapy on Barthel index assessed through the statistical indicator effect size (effect size - ES) shows a very good effect in both groups but greater at patients in group BFT + Cerebrolysin (ES=2,60 vs ES=2,02). This fact can also be observed in the evolution of the average value of the Barthel index (figure 2)

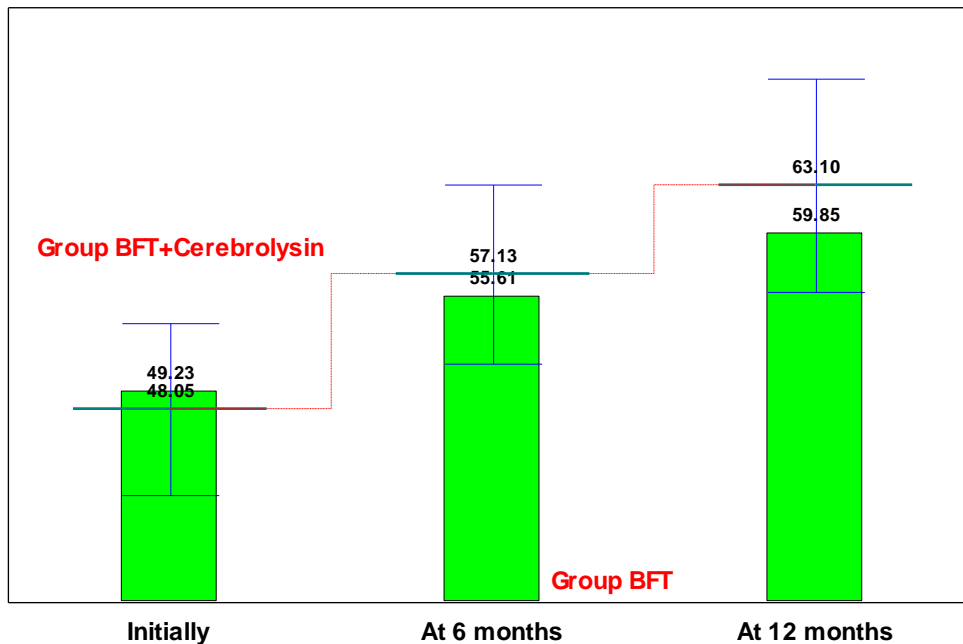


Fig. 2. The evolution of average Barthel index

In a study on 146 patients treated with Cerebrolysin was highlighted the significant improvement of Barthel index at the end of treatment, with maintenance of the effect at 3 months after the initiation of treatment ([Ladurner G. et al. 2005) and a significant improvement of cognitive performance. A meta-analysis has shown that a good recovery immediately after hospital discharge, reduces the deterioration of vital functions and improves the quality of life (Legg L. et al, 2004)

CONCLUSIONS

The effect on motor deficiency assessed with Barthel index was good in both groups, without statistically significant differences ($p=0,122$).

ES statistical indicator shows better effect of therapy in the BFT + Cerebrolysin group ($ES=2,60$ vs $ES=2,02$).

The results of this study indicate that the combination of the neurotrophic factor - Cerebrolysin with recovery procedures is beneficial in rehabilitation of patients after stroke

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