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THE REHABILITATION OF HEMIPARESIS AFTER STROKE

DANTES ELENA¹, DOCU AXELERAD SILVIU², STROE ALINA ZORINA³, DOCU AXELERAD DANIEL⁴,
DOCU AXELERAD ANY⁵

Abstract

Aim. The aim of this study is to demonstrate progresses both motor and non-motor of rehabilitation of hemiparesis after stroke.

Methods. A lot of 5 patients with hemiparesis was evaluated before and after practicing both active and passive physical exercises at home. Patients were evaluated using the subsequent functional assessment scales: Berg Balance Scale, Lawton IADL Scale, Modified Rankin Scale, Stroke Specific Quality of Life Measure. Patients were evaluated using the following outcome assessment scales: Barthel Index, Functional Independence Measure and Glasgow Outcome Scale. Patients were evaluated using the following diagnostic and screening tests: Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Orpington Prognostic Scale and Mini-Mental State Examination.

Results. From the point of view of the improvements, the most favorable results were in the case of the non-motor perspective, the patients having favorable results from the point of view of increasing the quality of life and decreasing the degree of depression and anxiety. But favorable motor responses were also obtained by modifying the measured results according to Medical Research Council Grading for Power.

Conclusions. The rehabilitation in the patients with hemiparesis after a stroke is multidisciplinary and multifocused both physically and mentally, because the physical, but also the mental results influence one another.

Keywords: stroke, rehabilitation, physical exercise.

Introduction

Stroke represents the principal source of death and the main cause of persisting disability in adults globally. Approximately 400 people per 100,000 population past the age of 45 years develop a first stroke every year in the United States, Europe, and Australia. This cerebrovascular disease can be the origin of a category of symptoms and in stringent cases might cause death. One of the principal disabilities correlated with stroke is the motor impairment, and accordingly the patient might need different environmental accommodations and the cost of accompanying care is between the fastest-growing costs for medical care.

The probability of amelioration following stroke differs being compatible to the type and severity of the primary deficit. Relatively 35 percent of the patients with original paralysis of the lower limb do not reach again effective capacity, and 20 to 25 percent of all patients are incapable to walk without full physical support.

Half of the year subsequently of stroke, almost 65 percent of patients do not have the capacity to integrate the afflicted hand in their current routine. Mediocre upper member results are presumed after a hemispheric stroke when the lower limb is not able to

move in the time of two weeks and the upper limb has no movement or merely insignificant finger flexion with no opening in the time of four weeks, compatible with appreciable destruction of the pyramidal tract.

Therefore, enhancing the healing treatment management of stroke patients shall represent great attention. The most prevalent research first concern applied to life after stroke is to examine the benefit of advantages and fitness practicing at advancing the capacity and prevent the quality of life and preventing a consequent stroke.

In animal models it has been demonstrated that aerobic exercise decreases the diameter of the lesion and preserves the tissue adjacent of the lesion against oxidative stress and inflammation which is correlated with a better coordination.

Various trials on the subject established that encouraging motor rehabilitation after a stroke has occurred after repeated aerobic physical exercise. A methodical review reveals that aerobic exercises enhances equilibrium and lower limb coordination being undependable to the type of the exercise. In contrast, the upper limb recovery is weak after the aerobic sessions. So accordingly, the physical exercise mediates the brain repair processes immediately consequent the stroke. Elementary physiological and

¹Pneumology Department, Faculty of General Medicine, "Ovidius" University, Clinical Pneumology Hospital of Constanta, Constanta, Romania.

²Faculty of General Medicine, "Vasile Goldis" University, Arad, Romania.

³Neurology Department, County Clinical Emergency Hospital of Constanta, Constanta, Romania.

⁴Faculty of Physical Education and Sport, "Ovidius" University, Constanta, Romania.

⁵Neurology Department, Faculty of General Medicine, "Ovidius" University, County Clinical Emergency Hospital of Constanta, Constanta, Romania.
Email: docuaxi@yahoo.com

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organic resilience are important actions that determine considerable achievements in motor activity after stroke and the synthesis of task-dependent exercise and unspecific aerobic training represents the specific treatment for the rehabilitation after the stroke.

Nonetheless, additional standardized review and determinations illustrates mediation-dependent enhancement of stroke-dependent deficits in non-ambulatory stroke patients.

Supported walking guidance substantially upgraded walking competence, equilibrium, flexibility as well as health related physiological markers (fat mass, pulse, oxygen uptakepeak). In the opposite, cycle ergometer exercises principally enhanced health related physiological markers (heart pulse, work load, ventilationpeak, carbon dioxide production, high density lipoprotein cholesterol, insulin and glucose) and independence.

Accordingly, ergometer exercise appears to powerfully affect the cardiorespiratory fitness and the metabolic processes, whom represent important components in stroke recovery. The acutal information displays that cardiorespiratory exercise is highly diminished in subacute stroke.

Spasticity is usually considered the cause for unefficient hand function for patients with minimal wrist and finger extension but with some movements of flexion. Contracture and modifications in the morphologic characteristics of muscle are partly responsible for a flexed posture, but poor motor control with weakness is the main source of disability, not hypertonia.

Methods

The subject consisted of a lot of five patients with subacute ischemic stroke and subsequent hemiparesis. The patients were in evidence of doctor Docu Axelerad Any in the doctor's private clinic. The selection criteria followed: no clear signs of dementia (Mini-Mental State Examination [MMSE] score > 23) and had the acute NIH Stroke Scale score between 10-15 points. All patients signed the informed consent. Patients were evaluated before and after the six months period of exercises performed at home. Patients were evaluated using the subsequent functional assessment scales: Berg Balance Scale, Lawton IADL Scale, Modified Rankin Scale, Stroke Specific Quality of Life Measure. Patients were evaluated using the following outcome assessment scales: Barthel Index, Functional Independence Measure and Glasgow Outcome Scale. Patients were evaluated using the following diagnostic and screening tests: Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Orpington Prognostic Scale and Mini-Mental State Examination. The specialists in physiotherapy instructed the patients and the caregivers for the application of the physical movements at the affected limbs, following patterns for each muscle affected, with special techniques for flexors and extensors. The patients were advised how to learn to transfer from a bed into a wheelchair for mobility and self-care was accomplished with one-

handed techniques with the use of the unaltered arm. During some hours in the night splinting maintaining the wrist and the finger's extension were used.

The first patient, O.D., female, 64 years old, had a stroke 1 month ago, her deficit is on the left side, according to Medical Research Council Grading for Power, her deficit on the left upper limb was 3/5 - movement against gravity and her deficit on the left lower limb was 2/5 - movement with gravity eliminated. At the Berg Balance Scale test she obtained 18 points. At the Instrumental Activities Of Daily Living Scale test, she obtained 2 points. At the Modified Rankin Scale test the patient obtained 4 points. At the Stroke Specific Quality of Life Measure test the patient obtained 89 points. At the Barthel Index test, the patient obtained 40 points. At the Functional Independence Measure test, the patient had level 2 with complete dependence with maximal assist. At the Glasgow Outcome Scale test, the patient was classified for score 4 with moderate dissability. The patient obtained 28 points at Hamilton Depression Rating Scale test, classifying her for very severe depression. The patient obtained 25 points at the Hamilton Anxiety Scale test, being classified for moderate to severe anxiety. At the Orpington Prognostic Score test the patient obtained 3,6 points score. At the Mini-Mental State Examination test the patient obtined 23 points before and after the six months. After the six months of physical exercises the patient improved her motor outcome, her deficit on the upper limb was 4/5 with diminished power. At the Instrumental Activities Of Daily Living Scale test, she obtained 3 points after the six months, being responsible for taking her medication in correct dosages at correct time. At the Modified Rankin Scale test the patient obtained the same score after the six months. After six months, at the Stroke Specific Quality of Life Measure test the patient obtained 83 points, with improvements in the following areas: upper extremity function, mood, personality, self care, thinking and energy. After the six months, at the Barthel Index test, the patient obtained 45 points, with the improvement of the dressing area, now being almost independent. After the six months, at the Functional Independence Measure test, the patient improved his level to modified dependence moderate assist. After the six months, at the Glasgow Outcome Scale test, the patient was classified with the same score 4 with moderate dissability. After the six months, the Hamilton Depression Rating scale test result was 25 points with the improvement of the feeling of guilt, sadness and insomnia and at the Hamilton Anxiety Scale test, the patient obtained 22 points with the improvement of the tension and insomnia. At the Orpington Prognostic Score test the patient obtained 3,2 points score after the six months.

The second patient, M.G., male, 66 years old, had a stroke 5 weeks ago, her deficit is on the right side, according to Medical Research Council Grading for Power, her deficit on the left upper limb is 3/5 - movement against gravity and her deficit on the left

lower limb is 3/5 – movement against gravity. At the Berg Balance Scale test he obtained 17 points. At the Instrumental Activities Of Daily Living Scale test, she obtained 2 points. At the Instrumental Activities Of Daily Living Scale test, he obtained 2 points. At the Modified Rankin Scale test the patient obtained 4 points. At the Stroke Specific Quality of Life Measure test the patient obtained 87 points. At the Barthel Index test, the patient obtained 40 points. At the Functional Independence Measure test, the patient had level 2 with complete dependence with maximal assist. At the Glasgow Outcome Scale test, the patient was classified for score 4 with moderate disability. The patient obtained 25 points at Hamilton Depression Rating Scale test, classifying him for very severe depression. The patient obtained 27 points at the Hamilton Anxiety Scale test, being classified for moderate to severe anxiety. At the Orpington Prognostic Score the patient obtained 3,6 points score. At the Mini-Mental State Examination test the patient obtained 24 points before and after the six months. After the six months of physical exercises the patient's deficit was unchanged. At the Instrumental Activities Of Daily Living Scale test his result remained the same after the six months. At the Modified Rankin Scale test the patient obtained the same score after the six months. After six months, at the Stroke Specific Quality of Life Measure test the patient obtained 80 points, with improvements in the following areas: mood, personality and energy. After the six months, at the Barthel Index test, the patient obtained the same score. After the six months, at the Functional Independence Measure test, the patient remained at the same level. After the six months, at the Glasgow Outcome Scale test, the patient was classified with the same score. After the six months, the Hamilton Depression Rating scale test result was 21 points, now being moderately depressed with the improvement of the anxiety, agitation and insomnia and at the Hamilton Anxiety Scale test, the patient obtained 23 points with the improvement of the agitation and insomnia. At the Orpington Prognostic Score test the patient obtained the same score after the six months.

The third patient, L.N., female, 64 years old, had a stroke 3 weeks ago, her deficit is on the left side, according to Medical Research Council Grading for Power, her deficit on the left upper limb is 2/5 - movement with gravity eliminated and her deficit on the left lower limb is 1/5 - flicker when attempting movement. At the Berg Balance Scale test she obtained 17 points. At the Instrumental Activities Of Daily Living Scale test, she obtained 2 points. At the Modified Rankin Scale test the patient obtained 4 points. At the Stroke Specific Quality of Life Measure test the patient obtained 90 points. At the Barthel Index test, the patient obtained 40 points. At the Functional Independence Measure, the patient had level 2 with complete dependence with maximal assist. At the Glasgow Outcome Scale test, the patient was classified for score 3 with severe disability. The patient obtained

30 points at Hamilton Depression Rating Scale test, classifying her for very severe depression. The patient obtained 32 points at the Hamilton Anxiety Scale test, being classified for severe anxiety. At the Orpington Prognostic Score the patient obtained 4,4 points score. At the Mini-Mental State Examination test the patient obtained 24 points before and after the six months. After the six months of physical exercises the patient improved her motor outcome, her deficit on the lower limb was 2/5 with movement with gravity eliminated. At the Instrumental Activities Of Daily Living Scale test her result was the same after the six months. At the Modified Rankin Scale test the patient obtained the same score after the six months. After six months, at the Stroke Specific Quality of Life Measure test the patient obtained 85 points, with improvements in the following areas: mood, personality, thinking and energy. After the six months, at the Barthel Index test, the patient obtained the same score. After the six months, at the Functional Independence Measure test, the patient remained at the same level. After the six months, at the Glasgow Outcome Scale test, the patient was classified with the same score. After the six months, the Hamilton Depression Rating scale test result was 26 points with the improvement of the insight, intellectual and mood; and at the Hamilton Anxiety Scale test, the patient obtained 27 points with the improvement of the tension and insomnia. At the Orpington Prognostic Score test the patient obtained the same score after the six months.

The fourth patient, N.S., male, 62 years old, had a stroke 5 weeks ago, his deficit is on the right side, according to Medical Research Council Grading for Power, his deficit on the right upper limb is 3/5 - movement against gravity and his deficit on the right lower limb is 1/5 - flicker when attempting movement. At the Berg Balance Scale test he obtained 18 points. At the Instrumental Activities Of Daily Living Scale test, he obtained 2 points. At the Modified Rankin Scale test the patient obtained 4 points. At the Stroke Specific Quality of Life Measure test the patient obtained 92 points. At the Barthel Index test, the patient obtained 40 points. At the Functional Independence Measure, the patient had level 2 with complete dependence with maximal assist. At the Glasgow Outcome Scale test, the patient was classified for score 3 with severe disability. The patient obtained 32 points at Hamilton Depression Rating Scale test, classifying him for very severe depression. The patient obtained 31 points at the Hamilton Anxiety Scale test, being classified for severe anxiety. At the Orpington Prognostic Score the patient obtained 4,4 points score. At the Mini-Mental State Examination test the patient obtained 26 points before and after the six months. After the six months of physical exercises the patient improved his motor outcome, his deficit on the lower limb was 2/5 with movement with gravity eliminated. At the Instrumental Activities Of Daily Living Scale test his result remained unchanged after the six months. At the Modified Rankin Scale test the patient obtained the

same score after the six months. After six months, at the Stroke Specific Quality of Life Measure test the patient obtained 85 points, with improvements in the following areas: mood, personality, thinking and energy. After the six months, at the Barthel Index test, the patient obtained the same score. After the six months, at the Functional Independence Measure test, the patient remained at the same level. After the six months, at the Glasgow Outcome Scale test, the patient was classified with the same score. After the six months, the Hamilton Depression Rating scale test result was 26 points with the improvement of the feeling of guilt, sadness, agitation, anxiety and insomnia and at the Hamilton Anxiety Scale test, the patient obtained 26 points with the improvement of the tension and insomnia. At the Orpington Prognostic Score test the patient obtained the same score after the six months.

The fifth patient, S.T., female, 62 years old, had a stroke 4 weeks ago, her deficit is on the left side, according to Medical Research Council Grading for Power, her deficit on the left upper limb is 3/5 - movement against gravity and her deficit on the left lower limb is 3/5 - movement against gravity. At the Berg Balance Scale test she obtained 19 points. At the Instrumental Activities Of Daily Living Scale test, she obtained 2 points. At the Modified Rankin Scale test the patient obtained 4 points. At the Stroke Specific Quality of Life Measure test the patient obtained 91 points. At the Barthel Index test, the patient obtained 40 points. At the Functional Independence Measure, the patient had level 2 with complete dependence with maximal assist. At the Glasgow Outcome Scale test, the patient was classified for score 4 with moderate disability. The patient obtained 29 points at Hamilton Depression Rating Scale test, classifying her for very severe depression. The patient obtained 26 points at the Hamilton Anxiety Scale test, being classified for moderate to severe anxiety. At the Orpington Prognostic Score the patient obtained 4 points score. At the Mini-Mental State Examination test the patient obtained 27 points before and after the six months. After the six months of physical exercises the patient improved her motor outcome, her deficit on the lower limb was 4/5 with diminished power. At the Instrumental Activities Of Daily Living Scale test after the six months her result was 3 points, now being responsible for taking medication in correct dosages at correct time. At the Modified Rankin Scale test the patient obtained the same score after the six months. After six months, at the Stroke Specific Quality of Life Measure test the patient obtained 83 points, with improvements in the following areas: mood, personality, self care, thinking and energy. After the six months, at the Barthel Index test, the patient obtained the same score. After the six months, at the Functional Independence Measure test, the patient remained at the same level. After the six months, at the Glasgow Outcome Scale test, the patient was classified with the same score. After the six months, the Hamilton

Depression Rating scale test result was 24 points with the improvement of the feeling of sadness, anxiety and insomnia and at the Hamilton Anxiety Scale test, the patient obtained 22 points with the improvement of the tension and insomnia. At the Orpington Prognostic Score test the patient obtained the same score after the six months.

Discussion

The direction of stroke rehabilitation is assist the reestablishment of movement, using the stimulation of recent motor projections areas and inactive synapses. Pascual-Leone A. et al. in the study "The plastic human brain cortex" revealed that stimuli of sensorial type and excitants of distinct standards for example mental planning of the motor movement and action guide physically to the reorganization of the central nervous system in durable organical, biological and discernible areas.

The mobility associated with recurrent motor activity in the muscles affected, appears as a result of durable persistence in practicing the activities. The structural correspondent of it is the corticomotor reorganization. Even though the result of this study are positive in the area of motor action, the coordination and the muscle strength are undeveloped, needing a longer period of habitual practice.

Physical therapy and speech therapy were needed in the subacute period of the stroke should aim the practice of special assignments essential in the growth of the independence for activities at home and in the community.

Conclusions

Significant benefit was achieved for the patients with moderate levels of disability decided through functional scales, but not between those with the major disability and for lower limb rather for upper limb. For the patients with hemiparesis after stroke, the amount of management of muscle force, power, speed of consecutive movements and resistance to tiredness are changed. Even though the neural factors that affect motor control are the cause of the deficiency, adjustments in muscle fibers and atrophy produced through inaction might be partly responsible.

The non-motor factors that were influenced by the physical rehabilitation of hemiparesis after the stroke include sleep disorders, pain, impaired concentration, mood disorders, depression and anxiety. Depression is important in prevalence, being present in 25 to 40 percent of patients within the first year after a stroke. Our patients responded very vividly with non-motor encouraging progresses that enhanced their quality of life.

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