HOME REHABILITATION MANAGEMENT IN CHRONIC STROKE: PILOT STUDY

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ABSTRACT
We made a population-based study in subjects with chronic stroke, undergoing home rehabilitation, to assess the overall psychological and physical outcome, increase in residual abilities, nutritional intake and social reintegration. 41 patients undergoing home rehabilitation at a frequency of 2 sessions per week for 40 days a year were assessed by FIM, Mini Mental State Examination, Stroke Impact Scale, Tinetti Balance Scale, Hamilton Depression Scale, Ashworth Scale, Motricity Index, 10-Meter Walking Test, 6-Minutes Walking Test, 5 Repetitions Sit-To-Stand Test. The home rehabilitation treatment consisted of: passive mobilization of the limbs, postural changes, exercise relearning of motor tasks by executing specific tasks congruent with the residual abilities, assisted gait in gravitational environment, education for self-repeating of the re-learned motor task, training of the caregiver. Patients were evaluated at T0 (beginning of the rehabilitation program), T1 (4 months after twice a week therapy), T2 (one year follow-up). The results showed a statistically significant improvement only in the treatment period and a decrease of results after 16 months from the initial assessment. This applies to all parameters taken into account, except for the emotional factor, assessed with the Hamilton Depression Scale, the only parameter statistically significantly improved one year after the first assessment; In fact, it was found an improvement in mood during the whole measurement period; that, in line with what is stated in literature may be indicative of the importance and necessity of adequate family and social relationships in the management of patients with stroke in chronic phase. The pilot study described is still under further enrollment in order to collect a larger series.

INTRODUCTION: Stroke is the major cause of acquired disability in adulthood. The progressive aging of the population and the consideration that the incidence of stroke is strongly age-related, suggest that the incidence of ictal events will increase in the next years. This requires a change in the policies of health planning and the arrangement of specific interventions to prevent serious effects in terms of social costs and to provide technical assistance services (homecare or residential) to a growing number of individuals unable to perform their normal daily activities in adequate autonomy. As a result of the epidemiological, social and economic impact, stroke is one of the most important health problems in industrialized countries, leading cause of permanent disability and the second leading cause of dementia; the health and social policies should ensure an adequate management of the patient even in the chronic phase; most of patients go home after discharge. The promptness and specificity of rehabilitation in acute and post-acute phases, psychosocial aspects, nutritional status and characteristics of the the discharge destination are currently subject of study in international literature; all studies agree in the evidence that the rehabilitation approaches in the chronic phase are not yet adequately standardized. Hillier in his 2010 systematic review highlights the importance of creating a network to support home rehabilitation through the integration of services with hospital and local structures, enhancing the access to Day Hospital and ambulatory rehabilitation centers and invest on staff training, to create a High Quality home rehabilitation service, by programming specific and adequate clinical pathways in mode, timing and intensity. Some studies have therefore analyzed separately the outcome in specific motor tasks and psycho-emotional skills in institutionalized and home patients. There are no studies evaluating these factors together, or comparing these factors in relation to hematochemical and nutritional parameters. This population-based study was conducted in subjects with chronic stroke, undergoing home rehabilitation, to assess the overall psychological and physical outcome, increase in residual abilities, nutritional intake and social reintegration.

METHODS: 41 patients (18F - 23M, mean age 72 years) undergoing home rehabilitation at a frequency of 2 sessions per week for 40 days a year, that met the following inclusion criteria, were evaluated: Ischemic or hemorrhagic stroke with residual hemiplegic gait; stroke from at least 6 months; min age 40 - max 80; Mini-Mental State Examination score ≥ 24; no concomitant severe comorbidities with fatal prognosis at 6 months. The assessment was done by: FIM,
Mini Mental State Examination, Stroke Impact Scale, Tinetti Balance Scale, Hamilton Depression Scale, Ashworth Scale, Motricity Index, 10-Meter Walking Test, 6-Minutes Walking Test, 5 Repetitions Sit-To-Stand Test. The home rehabilitation treatment consisted of: passive mobilization of the limbs, postural changes, exercise relearning of motor tasks by executing specific tasks congruent with the residual abilities, assisted gait in gravitary environment, education for self-repeating of the re-learned motor task, training of the caregiver. Patients were evaluated at T0 (beginning of the rehabilitation program), T1 (4 months after twice a week therapy), T2 (one year follow-up). Statistical analysis was performed with One-way Anova; the minimum level of significance was set by p <0.05 for all data.

RESULTS: In relation to comorbidities we found: 22 subjects with type II diabetes, 2 subjects with type I diabetes; 5 patients which undergone at least an amputation of the lower limbs; 7 patients with venous vascular insufficiency of the lower limbs. In relation to stroke deficits was observed: hemiplegia in all subjects with severe spasticity in 29 subjects; risk of malnutrition in 16 subjects by severe difficulty in swallowing; impairment of symbolic functions in 14 subjects; conductive hearing loss in 23 patients; impairment of ocular motility in 9 subjects; deficits in trunk control in 8 subjects; mild cognitive impairment in 5 subjects; sleep disturbances associated with anxiety-depressive syndrome in 28 subjects, deficit in short-term memory in 14 subjects; all subjects were cooperating. They all needed help with personal hygiene and moving; 22 subjects couldn’t eat autonomously; all subjects were able to ambulate with arrangements and adaptations for at least a few meters.

At T0 was found: independence of 78 ± 11.0 at FIM scale; score equal to 151 ± 22.13 at Stroke Impact Scale; score equal to 26.1 ± 17:13 at Motricity Index; score equal to 14.9 ± 4:27 at Tinetti Balance Scale; spasticity of the lower limb equal to 3.75 ± 1:12; walking speed estimated at 25.5 ± 6:15 sec to 10-meter walking test; resistance in walking quantified in 88 ± 7.91m at 6-Minutes Walking Test; coordination ability of 24 ± 2.70 at 5 Repetitions Sit-To-Stand Test; a score of 22.1. ± 5:25 at Hamilton depression Scale.

One patient died during the 16-month study, therefore, the final evaluation was performed on 40 subjects.

At T1 was found: independence of 81 ± 12.7 at FIM scale; score equal to 157 ± 22.27 at Stroke Impact Scale; score equal to 32.4 ± 19.95 at Motricity Index; score equal to 17.8±4.31 at Tinetti Balance Scale; spasticity of the lower limb equal to 3.35±0.91; walking speed estimated at 25.31±5.87 sec to 10-meter walking test; resistance in walking quantified in 94±8.45 m at 6-Minutes Walking Test; coordination ability of 22±1.98 at 5 Repetitions Sit-To-Stand Test; a score of 20.7±4.05 at Hamilton depression Scale.

At T2 we found: independence of 79.5 ± 11.23 at FIM scale; score equal to 153 ± 21.09 at Stroke Impact Scale; score equal to 29.7 ± 21.72 at Motricity Index; score equal to 15.7±4.14 at Tinetti Balance Scale; spasticity of the lower limb equal to 3.5±0.98; walking speed estimated at 25.39±5.92 sec to 10-meter walking test; resistance in walking quantified in 91±8.14 m at 6-Minutes Walking Test; coordination ability of 23±2.23 at 5 Repetitions Sit-To-Stand Test; a score of 20.3±3.68 at Hamilton depression Scale.

CONSIDERATION: The results showed a statistically significant improvement only in the treatment period and a decrease of results after 16 months from the initial assessment. This applies to all parameters taken into account, except for the emotional factor, assessed with the Hamilton Depression Scale, the only parameter statistically significantly improved one year after the first assessment; In fact, it was found an improvement in mood during the whole measurement period; that, in line with what is stated in literature may be indicative of the importance and necessity of adequate family and social relationships in the management of patients with stroke in chronic phase. The home rehabilitation should enhance the resources of the territorial rehabilitation and create a network which could be effective and appropriate to the needs of the population. The lack of adequate standardization of rehabilitation treatment, and the inadequacy of financial resources within the health and social assistance does not seem to guarantee a satisfactory level of disability in the management of patients with chronic phase, such as those in the aftermath of a stroke, from the point of both qualitatively and quantitatively. The pilot study described is still under further enrollment in order to collect a larger series.