

## Hemiplegy and Physiotherapeutic Rehabilitation in Albania in Comparison with International Statistics



### Healthcare

**Keywords:** Hemiplegy, QSUT, WHO, Rehabilitation, Cerebral Stroke.

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### Abstract

**Objective:** In this thesis I will explain in details the therapeutic plans, evaluation tabs, measurement problems, wich must be definitely applied in all the patients who suffer from hemiplegy. The most important is that this phenomenon in Albania is known just in recent years as compared to other countries, where rehabilitation has almost been applied for 50 years now. The goal of this thesis is to show how important is the patient's rehabilitation and reintegration in his previous life. We have some statistic results which show than the patients treated improve better the disability, in comparison with 65% of not treated patients. **Design:** Physiotherapy for the hemiplegic patients. **Setting:** Neurology, Tirana City, Scientific statistics by "World Health Organization" **Subjects:** Knowledge increase on the effect of rehabilitation therapy for hemiplegic patients. **Outcome:** Prevalence of hemiplegy is a great health and social – economic problem. For this reason, the social and hospital structures should do more for the sensibilization of the population with regard to prevention, treatment, rehabilitation or putting the patient in a suitable family, environmental and employment context. **Conclusions:** International studies in this thesis made possible to phisiotherapists to have a new perception on hemiplegy. I think that these studies can help phisiotherapists in Albania in order to make possible the reintegration of the patient in the social life, supported by the hospital and social structures.

## INTRODUCTION

Hemiplegy is a vasculopatie syndrome caused by cerebral trauma, inflammations, tumors and demyelinations. There are also transitional forms with rapid and spontaneous recovery or otherwise called TIA (ischemic attack with a duration of less than 24 hours), there are also transitional forms but with a recovery of a duration of several weeks, otherwise called RIND. There exist good rehabilitative works for patients suffering with Hemiplegy. Hemiplegy has a therapeutic path that requires complex and costly assistance.

## DEFINITION

It has not yet been demonstrated that rehabilitative techniques have direct effect on the disease, but in the absence of specific evidence "WHO" recommends mobility physiotherapy, logopedia and occupational therapy, which make it possible for the patient to reintegrate in the family, social and work environment. Also the theme is based on basic concepts of the "World Health Organisation" which provides three keywords: 1. Empairment-concerns in the level of non-process organs and functions. 2. Disability - In terms of autonomy of daily life, for example in terms of dressing. 3. Handicap- patient disadvantages caused by disability and architectonic barriers. Although we lack this specific evidence regarding total recovery of hemiplegy after rehabilitation, we have some statistical results, which say that the treated patient is integrated and recovered to disability much better as compared to 65% of patients who are not treated, thus, so far we have no scientific evidence that a treatment does not work, contrary, the only scientific statistics we have are those mentioned above. So all treatments until proof to the contrary, have been identified as very important and equivalent to each other, we can not say that one type of treatment is better than another type of treatment, also important is the premature treatment. Treatment should begin as soon as possible while its duration depends on its cost-benefit ratio and the basic rule is: "WE MUST NOT MAKE MISTAKES".

## TREATMENT

### Measurements Concerns as Compared to Normal Data on Hemiplegic Patients

Measurement should be:

1. Valid which means that patient data should be compared with normal data.
2. Reliable, evaluation scales must be those used worldwide.
3. Sensitive, it should inform even the slightest progress and regress.
4. Simple, the event is a certain measure as well, but only some specialties may have it.

A therapist always pays attention to disability, independence, possibility to move, speed of action and force resistance of the patient. The measurement scales are separated and focus on:

1. Measurement of reducing the disability or handicap.
2. Measurement of the patient's skills or dependencies.

Scales that measure the reduction of disability or handicap are:

1. Mathew Scale.
2. Orgogozo Scale.
3. Scandinavian Storke Scale.
4. National Institute of Health Scale.
5. Canadian Neurological Scale.
6. HSS.
7. Barthel Index.
8. Northwestern University Disability Scale.
9. FIM. 10. Rankin V.

Scales that measure skills on patient are: 1. Albert Scale. 2. Fugl Meyer Scale. 3. Rivermead Index. FIM evaluation scale is very important for the global functional independence measurement. This methodology was developed during a "Congress of the American Physical-Medical and Rehabilitative Academy" in search of a measurement instrument for unifying the operating level achieved at rehabilitation. The aim was to create a simple, simple to use, multidisciplinary, trusted and valid instrument in helping to quantify the rehabilitation work. This evaluation scale is composed of six categories: 1. The capacity to care for oneself. 2. Sphincteric Control. 3. Transfers or postural changes. 4. Locomotion. 5. Communication. 6. Social Relations. FIM can be used that at the time of admission in rehabilitative pavilion after 1 or 2 weeks of stay in this unit, in dehospitalization, also after 3-6 months, 1 year onwards (follow-up). FIM codes start from no. 1, which is the total dependence and to no. 7 which is total independence. The therapists who are interested, according to the clinical case, to details of the conjunctive function or other deficits associated with it, should use another specific measurement instrument, which is created especially for a problem they want to assess. An example of such a scale is that which assesses the rehabilitation of patients affected by stroke. This scale is structured in a way to assist in the evaluation of different and more detailed aspects for patients stricken with cerebral lesions of vascular origin. This rating scale is divided into 3 parts: the first section is devoted to a detailed clinical evaluation and necessary at the patient's bedside, evaluating the time-space orientation, visual perception, visual-motor coordination, the capacity of concentration, memory, mood and speech. The second section deals with basic functions, tactile superficial and deep sensitivity, motor function of superior and inferior extremities as well as conditions of cutaneous trophism. The third section refers to integrated functions, all included in ADL (Activity of Daily Living), then the balance, postural changes, transfer to the wheelchair, walking, ability to be dressed, fed and sphincteric control.

### **Hypothesis in Neurobiological Mechanisms on Adaptation and Recovery of Patients Functions**

Two opposite hypothesis exist on the problem of the recovery after stroke, which leave space to discussions :

1. One hypothesis says that the CNS has a rigid organization and therefore recovery depends on the activity of the sound part, intact from stroke .

2. The second hypothesis says that the CNS is plastic and can be rearranged. Recovery is a slow process which requires continuous treatment until achievement of some functions which affect directly the daily life of the patient. Each function restored through rehabilitation is an achievement and great satisfaction for the life and the possibilities of the patient.

**Plasticity** : It is not just the ability of reorganization after injury and recovery of function, because spasticity interferes in the adoption, development, benefit and memory. Plasticity is the ability to adapt to life, to adapt to life and to confront the risks. Plasticity is a concept that expands from the molecular level to the social one, and is also social changes complex that lasts in activity and in function, defined by permanent modifications to connections due to external forces.

**Redundancy**: is another mechanism used many times to explain the recovery or compensation after stroke. We have redundancy when the damage is not followed by consequences, as if the damaged part had been unnecessary in the economy of the central nervous system (CNS). Americans use the expression "too much brain"! Redundancy in the history of development may have substituted regeneration. In other terms, the destroyed parts of the human brain do not regenerate, but the human brain is endowed by nature with a very large number of neurons, which within certain limits can replace the lost centers. Considering that the patient is treated with rehabilitation therapy after 6 months or even earlier, he manages to reinvigorate the functions lost by cerebral lesion, certainly not as normal as they could have been before the lesion, and also given the fact that we do not have statistical and scientific data to reject this, then, I can say that I strongly support this thesis.

### **BUT WHAT DO WE UNDERSTAND BY RECOVERY?**

After stroke we often use the word "recovery" as retrieval of specific activities after a lesion. Therefore we can say that are only a few cases with deep post -iktus recovery. Thus, we should talk about "saving" the specific concerns after brain lesion, or a reduction of them. Removing the edema and full return to previous capabilities is not "recovery" but is "saving". Well in this case this is the success of rehabilitation, to reduce as much as it can the specific damages caused by cerebral lesion. The most frequent post-stroke case is that of "compensation" which becomes possible giving way to new receptors or effectors, through new strategies attempted to adapt to the damages caused by cerebral lesion.

### **PROGRESS OF HEMIPLEGIC PATIENTS**

Performance of patients with hemiplegy is divided starting from the shock of the stroke. If the lesion of the patient is on the right side, performance and problems are different from patients who had lesion on the left side but still the hemispheric role is not clear. The lesion on the left side generally brings deterioration in speech, while lesion on the right side brings motor problems and as a consequence, changes in your daily life. Improvements of these patients with lesions of the right hemisphere begin after 3 months of rehabilitation but are more difficult in improvement than those patients who have the lesion on the left side, this relates to the difficulties they have in space orientation. It is verified that patients under 75 years old show a better recovery as compared to those patients aged over 75 years, but all this can be realized only if patients undergo rehabilitation treatment.

### **KENNARD EFFECT**

As I wrote above, with the growth of age, plastic phenomena are reduced but they do not disappear, the famous Kennard effect states that lesions in the first stages of life are better compensated. It is apparent the lack of problems in speaking to children under 3 years old with left hemispheric lesion. With regard to space functions performed by these hemispheres, they are damaged and unable to return to fully normal state.

### **POST-STROKE DEPRESSION.**

In neurorehabilitation is very important the study of depression. In fact, depression influences the opportunity to survive, in an international and national average, after 10 years, after stroke we lose 53% of patients, but those suffering with depression are 3.4 times more in number, independently of age, gender, social grade, the type of stroke and the location. Depression may become chronic and therefore it is important to intervene in the patient and his family.

### **LUCK OF HEMIPLEGIC PATIENT**

Almost half of patients exiting from the Department of Rehabilitation may need for continuous support during the first year after stroke. Although the relatives of these patients attempt to reintegrate the patient in his social life, he will continue to have problems in relation to interpersonal relations. The return of the patient at home is often difficult and very demanding as a result of a series of negative transformations: patients understand that there is a change of family and social roles, as well as to his work position, at an average 70% of their opportunities in everyday life. So we can say that the patients afflicted by stroke should be treated not only on motor issues, but also on conjunctive, psychological, ethical and social issues. Also, for a real functional recovery it is very important the acceptance of hemiplegics in their field of work because they can be returned to their place of work and this can happen only if they can have a welcoming working environment and favorable according to the hemiplegic skills. Above all, more important is the typology of the human environment that surrounds the patient.

### **REHABILITATION THERAPY**

The effect of rehabilitation therapy is very clear. Rehabilitative therapies have an experience of 50 years, responding to the concept of "test" and "error". In general there are some rules for the rehabilitation therapy:

1. Achieved functional recovery is closely linked with the wilderness of the stroke lesion from the moment of hospitalization and, given the age of the patient.
2. In Albania, by scientific statistics, all patients under the age of 55 years, generally do not need assistance when they are sent home, whichever the initial deterioration.
3. With regard to elderly patients, of 75 years age or more, after emerging from the rehabilitation unit and sent home, they need assistance.

Given the scientific evidence it was seen that patients with premature treatment of stroke, almost 8 days and 2 hours a day, in two shifts, have been able to earn more functions than those who have undergone late therapy.

#### **1. Stimulation of equilibrium**

After cerebral lesion it is very difficult for the patient to oppose the force of gravity. They have difficulties to orient the head and trunk in space, and shifting the body weight and regaining balance despite every setback. The patient has difficulties in standing, walking or when sitting and standing up, as he has difficulties in adapting his body to reach a certain action and so the patient needs to expand the base of support, trying always not weigh on the part of the body hit by stroke. He tries to compensate the actions with alternative strategies also standing rigid, he does not move his legs and trunk, keeps breathing, walks more laterally than before.

Considering all these problems, the therapist must teach and make exercises to the patient in order for the later not to use these strategies, which he feels safer. To be effective, the treatment of postures should be practiced with the patient standing in a narrow support base with closed legs.

## **2. Stimulation of the hand function:**

The function of the hand, even in severe cases of patients with hemiplegy, should be treated even if there is lack of movement, the therapist makes it possible to stimulate the sense of hand capturing with the hand placed at different positions in order to prevent contractures, wrist and finger flexion.

## **3. Pressure and percussion:**

These two terms describe two methods used by therapists to provide sensory information, to increase the muscle tone and to stimulate movement. All pressure and percussion exercises are immediately accompanied with walking exercises. So it is very important the pressure on the heel and the percussion on the dorsal part of the foot as it helps the patient to "learn" to walk again.

## **4. Facilitation of walking.**

Facilitation of walking is an example of the technique that produces semiautomatic movement. The therapist transfers weight laterally and before the patient laying his weight on the shoulders of the patient and the trunk with this action is rotated on the opposite of the lesioned part.

## **5. TENS (Transcutaneous Electrical Neurostimulation)**

This therapy is initially being used as an analgesic for the pains, but it is already established that TENS is a technique that brings antalgic action stimulating with electrodes the points of hyperalgesia and pain radiation areas, also it is recommended for some features between pain and spasticity.

## **6. Reeducation techniques by BOBATH , KABAT, PERFETTI, GRIMALDI.**

**BOBATH:** The correction technique conceived by Bobath is addressed mainly to problems of postures, its variations, as well as coordination of movement as a reflection of activity. According to Bobath, a normal mechanism of postural reflex is the basis of voluntary and possible movements. Bobath provides 3 groups of automatic postural reactions:

- a. Body direction reactions: are automatic movements that serve to maintain and restabilize normal head position in space, its normal connection with the body and the normal direction of the trunk and limbs.
- b. Balance reactions: are automatic movements that serve to maintain and restabilize balance during all our activities (the parachute reflex) .
- c. Muscular and tonic adjustments: as protection against the force of gravity. The normal postural reflex mechanism is activated during the entire movement of a limb. Hemiplegic patient has lost the preceding postural reactions on the side hit by stroke.

The therapist who applies this method through requests for patient moves and manipulation determines the lesion evaluating the effects on postural reflex mechanism. Another important concern is the deficit of motor coordination related to loss of postural mechanisms, evaluation of which is of great importance. Spasticity that over time can appear as a result of stroke is also one of the factors of limiting the normal muscular coordination. Evaluation is done to the patient when he is in the sitting position and on foot, and tests PATTERNS MOTOR represent the treatment procedures to be used.

These tests are divided into three modes in which the following are developed:

- a. Test for postural reactions, normal or abnormal, in response to passive movement
- b. Test for voluntary movements on request
- c. Test for balance reactions and other automatic protective reactions

Tests in themselves are divided into 3 grades (grades 1,2,3), starting from the easiest to the most difficult and allow a differentiated progress of the patient under treatment. It is important to emphasize the role of the therapist who manipulates one or several body segments in key points in order to facilitate the patient in making motors requirements. Bobath conviction consists in the fact that the hemiplegic patient has still its muscular integrity but has lost the possibility of active motion control and that all his movements are compromised by spasticity.

**KABAT:** Among re-education techniques, a certain importance regarding expansion is taken by the KABAT methodology. The basic principles can be found simultaneously with the most important discoveries of the neurophysiology, in the first half of the century, on reflected mechanisms which regulate the spinal activity and on the other side the acute analysis of kinetic catenas that appear during the execution of sports practices. Kinetic catenas used in the trajectories of movement taken into examination are modalities with which the therapist can guide the contracting as well as the increased strength in the muscles, which are subjected to manipulation.

The external stimulus: this stimulus and the received response make it possible for this method to be part of neuro motor inlet realizing the exercise in an area wherein occurs only the execution of repeated trajectories out of finalized contexts. The technique, although it seems applicable to damages of the locomotor apparatus with peripheral genesis (origin), faces more limits on the stereotype of files used in the exercises that are badly adapted with the clinical conditions that change in the hemiplegic syndrome. If the recipient capability is regarded as the most important way of the nervous system to modify its organization, both in normal conditions as well as in pathological conditions and considering the needs of this process, there can be found tools which can be taken as referrals to rehabilitation practices for the organizing of therapeutic exercises affected efficiently and exactly on the system organization.

**PERFETTI:** The ability for reception is regarded PERFETTI as conscious experience storage and deposition: short- and long-end memory processes will be needed in practice in order to arrive at a collection of motoric sequences organized during the exercise. Until it becomes a means of reorganization of a motoric gesture, the movement must be meaningful, namely it must develop a precise relationship with the objective world. What may give the movement its significance are the context, movement parameters, space and intensity. Information retrieved inside the relationship between the patient and the object, which according to Perfetti materializes such a relationship, allows the rehabilitator to program within the exercise which information allows us to develop such a relationship, and what behavioral significance this information indicates. When this information is collected, it makes such a relationship valid one. Due to the total lack of upper limbs of the hemiplegic person, or the evolution to a hypertension condition monitoring the fluid execution, the patient perceives beyond the presence or non-presence of sensitivity problems verified through neurological examination, correct relationship existing between the movement and the result of the expressed action. The task of the therapist, following this method, is to analyze the obstacles in order to receive the desired motor behavior, guiding his research on the specific and pathological components of hemiplegia. Abnormal reaction to withdrawal, - abnormal in the sense of increased distribution, is a physiological phenomenon manifested at an abnormal threshold, since just a minimal activation is enough to make this phenomenon visible and because the muscles themselves are involved. Basic schemes, which constitute the only motoric capacities available to the hemiplegic person, are

often represented by early non-developed reflexes, elaborated at the level of backbone marrow. Irradiation and the basic scheme are two correlated concepts up to the point that they can interpret as basic scheme of the “poor” functional performance of irradiation. Recruitment deficit means the quantitative and qualitative capacity needed to activate the available of motoric units. It is important to clarify that not only nonactivable muscles but also those forming part of the basic scheme show an alteration ability of action’s performance and intensity. Finally, the entire set of issues on the patient’s low collaborative potential shown as lack of attention, memory and verbal communication, constitute additional obstacles, which the rehabilitator need to take into consideration when selecting a possible operational strategy. In short, inside a significant concept several features of the upper trunk and bottom limbs movement can be defined. The trunk takes up the role of the crossroads engine crossroads between the various functional segments of the upper, bottom and head limbs, whose mobility depends on the task carried out by the patient. The patient uses tactile information, namely touching, in order to recognize the object (i.e. he explores the surface, the shape and the weight). To conclude, remind again the above-mentioned globalization concept, until the patient will be able to adapt the entire body system at the completion of the action.

**GRIMALDI:** The Grimaldi rehabilitation and clinical observation is a dynamic maneuver that induces a reduction and an attraction power on certain muscle units which brings about the subsequent ability to be expressed voluntarily by the patient. Therapeutic Exercise is reached on the basis of this maneuver and based on the recognition duty of the metric type requested to the patient.

## SCOPE OF THESIS

1. To get acquainted with the problems of measurement as compared to normal data of hemiplegic patients.
2. The hypothesis in neurobiological mechanisms for adaptation and recovery of patient functions.
3. What should we mean by recovery?
4. Define the performance of patients with hemiplegy.
5. To get acquainted with post-stroke depression.
6. Talking about the fate of hemiplegic patients.
7. Increasing knowledge about the effects of rehabilitation therapy.

## OUTCOME

Upon analysis of the results obtained and their comparison with similar results of international statistics, we draw up the following conclusions:

Prevalence of hemiplegy is a major health and socioeconomic problem, therefore social structures and hospitals should do more work to raise awareness with regard to prevention, treatment, rehabilitation or put the patient in a suitable family, environmental and employment context.

## CONCLUSIONS

Based on the statistical data of the WHO, which clearly demonstrate the importance of initiating the rehabilitation and extension thereof, based on age and gender of patients, it is very important that as in international countries and in Albania this fact should be emphasized in particular, in order for the patient to manage in this way to reintegrate in his social life, and also relying on the hospital and social structures. Many international studies, brought in this thesis, have made it possible for the physiotherapist to consider hemiplegy in a new point of view. We can say that these studies may also help the Albanian physiotherapists, in order for them to propose new rehabilitating plans to encourage post lezional neuronal reorganization. Use of therapeutic treatments has resulted in the reduction of physical and motor disability as well as in the life improvement of

hemiplegic patients. But we can say that based on my study statistics, in the recent years the management of hemiplegia has significantly improved in our country.

## SUGGESTIONS

A great work should be carried out towards giving proper information especially by the health and social institutions, seeking also the support of printed and the visual media, organizing information and media programs with appropriate information to raise awareness and the importance of continuous controls on diseases prevention.

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