

THE IMPORTANCE OF KINETOTHERAPY IN RECOVERY FLAPY PARAPLEGIA IN YOUNG ADULTS

Silviu Gabriel CIOROIU ¹

Abstract: *Each affected person wants to reach the stage in which to perform daily activities through physical therapy without depending on the help of another person. However, this depends on the motivation of the subject in question and the evolution of the body. In the case of this research, flaccid paraplegia was diagnosed as congenital, as a result of which the joints and muscles of the lower limbs were affected, so maintaining the position of orthostatism and walking could not be achieved. Loss of sensitivity was in turn another effect of the disease that affected the patient both psycho-emotionally and socially.*

Key words: *flaccid paraplegia, physical therapy, young adult, motor skills.*

1. Introduction

Physical exercise represents "the repeated and conscious motor act in order to achieve the objectives for the purpose of physical development and motor capacity of people" [1].

With the help of physical exercises, physiotherapy aims to regain the patient's health, which has been changed due to various causes [3].

Paraplegia is the decrease or loss of motor and / or sensory function of the spinal cord in the thoracic, lumbar or sacral region, secondary to altered spinal elements [2].

Paraplegia is based on several causes

and effects: it can be congenital, or acquired during life, at any age following trauma.

Flaccid paraplegia is highlighted by the speed of its installation and its intensity, in a lumbar injury. It is accompanied by damage to the pelvic girdle muscles, with muscular hypotonia, flaccidity and swaying legs [7].

Movement therapy is a very good method that can contribute both prophylactically and therapeutically in maintaining the health of the individual [4, 5, 6].

The most important role in this case has the doctor who tries to determine the pathogenic mechanisms that led to the disease, identifying the emotional factors

¹ Department of Physical Education and Special Motricity, *Transilvania* University of Braşov.

that lead to its aggravation, establishing early treatment.

After flaccid paraplegia has been diagnosed, the next step in treating people is to bring them to a new lifestyle, this goal being achieved through physical therapy.

The role of physical therapy has increased greatly in recent years, due to its advantages over conventional methods of control, which can have many side effects and complications, especially on the body.

Recovery through physical therapy develops muscles and improves all general body functions, being recommended for a harmonious development of the body and optimal maintenance of vital functions for both young and old people.

2. The Pathophysiology of Flaccid Paraplegia

By paraplegia we mean the neuro-motor deficit of the lower limbs, which occurs by the bilateral touch of the medullary pyramidal pathway, following a peripheral or central motor neuron injury. Following injury to the peripheral motor neuron, paraplegia occurs due to arousal of the pericarion, either the peripheral nerves or the anterior roots corresponding to the parts of the lower limbs.

Paraplegia following the injury of the central motor neuron can have a spinal cause, but also due to brain injuries.

Usually, paraplegia has minimal chances of recovery, except in situations where the suspension of nerve conduction in the spinal cord was only functional, the anatomical parts not being affected.

2.1. Topographic diagnosis

Flaccid paraplegia is defined as a clinical syndrome, which is characterized by a rapid evolution affecting the lower limbs in just a few days or weeks [8].

Spinal paraplegia is characterized by spinal cord injuries that reach the pyramidal bundles. Spinal cord compression will trigger the suffering of the pyramidal bundle before the sensitive symptoms appear. This is due to the sensitivity of the corticospinal fibers.

The level of spinal cord injury can be determined taking into account the level of changes in sensitivity and reflexes.

According to Babinski's law, the lower level of the lesion corresponds to the higher level of sensitivity changes.

This test is applied by specialists in the field, only in advanced cases of spinal cord injuries. Usually, the level of the lesion is determined according to the paraclinical examinations, such as: radiography, cerebrospinal fluid, manometry, etc.

Pontine paraplegia is triggered by paramedic artery thrombosis, bilateral damage to the protruding leg, or pontine myolysis.

Paracentral paraplegia is caused by bilateral injury to the paracentral lobe. Active motor disorders can be followed or accompanied by Jacksonian seizures and sphincter disorders.

Paraplegia due to multiple injuries is characterized by the sum of the injuries that cause motor deficit. This process is due to the fact that the corticospinal fibers in the lower limbs are easier to affect compared to the corticospinal fibers in the upper limb and due to the length of its path which is longer, the probability of injury increases.

Following the differential diagnosis,

peripheral paralysis should be eliminated with amyotrophs and electrical changes. Amyotrophies set in with remarkable rapidity, along with abdominal phenomena and uroporphyrinuria.

Hypokalaemia causes paralysis through dyskalemia, which must be eliminated by transferring extracellular potassium to the cells.

Rapidly evolving paraplegias affect the root of the limbs, so muscle hypotonia occurs which leads to decreased osteotendinous reflexes. The emotional state and the low temperature accentuate the disease.

2.2. Clinical signs and symptoms

Flaccid paraplegia is highlighted by the speed and hardness of its installation. In a lumbar region, paralysis is accompanied by injury to the pelvic girdle muscles, muscle hypotonia, sagging and swaying legs.

Osteotendinous, cutaneous, abdominal reflexes, even cremaster reflexes are diminished. The presence of the Babinski sign is due to a central lesion. Sensitive changes affect both superficial and deep sensitivity.

Another clinical sign is both the retention of urine with a bladder and urination after overflow. Bones can also be affected by soft declining edema and necrotic ulcers.

2.3. Complications of flaccid paraplegia

The restoration of the functions of the patient with flaccid paraplegia consists in the appearance of complications from different phases of his convalescence. Like other treatments, the one with flaccid paraplegia must be performed with the necessary care, so that the associated

diseases can appear at any time.

The complications of flaccid paraplegia have been analyzed for a long time and thus two categories have been formed:

- immediate;
- late.

Immediate complications are closely related to stage I and II of the disease, when the patient is immobilized in bed and can cause urinary tract infections.

In a patient lying on his back, the most requested areas are the heels, buttocks, shoulder blades and the occipital part, because these areas represent the parts of the body that support the weight of the body.

A bed immobilization for a long period of time can lead to disorders of the venous and lymphatic circulation, because the buttocks are crossed by the musculocutaneous arteries and irrigate the adipose tissues.

The adipose tissue undergoes a hypovascularization, this being done on a larger surface than the surface of the skin.

The epidermis and dermis degrade as a result of these skin trophic disorders, most of which occur in the sacrum and are characterized by the appearance of a red spot, which can reach in a few days in the flictic stage, surrounded by black spots.

Specifically, the position of the immobilized patient in bed should be changed quite frequently: from dorsal decubitus to ventral or lateral decubitus and vice versa.

Late complications appear in a relatively short time from the onset of paraplegia, 40-60 days after its onset. They express deformities of the spine, affected limbs, but also disorders of the excretory system.

While deformities of body segments occur due to vicious positions, atrophy of the pelvic girdle muscles, back, limbs,

excretory system disorders occur due to reno-bladder changes.

Deformations of human body segments can exist both in the spine, such as kyphosis, scoliosis, kyphoscoliosis, lordosis, etc., as well as in the lower limbs such as genu valgum, genu varum, equine varus, hip rotation, etc. So, a kinetotherapeutic means in preventing deformities is the patient's posture.

3. Treatment of Flaccid Paraplegia

Patients diagnosed with flaccid paraplegia depend on recovery treatment through physical therapy and its means, but also on the necessary medication.

Flaccid paraplegia is the most complex examination for a physiotherapist in front of the patient, because he must show not only theoretical and practical training, but also a great deal of patience, dedication and goodwill.

If physiotherapy treatment and its means are to be presented in that subchapter, I want to object that antibiotics are not always needed, because they do not always act beneficial to health, healing occurs in reversible lesions without a spinal cord section.

At the beginning of each recovery session, the patient under the guidance of the physiotherapist or student in question began with general joint warm-up, which includes the following exercises:

- flexions, extensions, twists, rotations of the head;
- flexions, extensions, rotations forwards / backwards from the scapulo-humeral joint;
- flexions, extensions of the elbow joint,
- pelvic rotations,
- flexions, extensions of the knee joint
- circumscisions of the ankle joint.

Due to the difficulty of maintaining balance, for the beginning the warm-up exercises were performed from sitting on the Bobath ball or from sitting on the chair.

3.1. Posture in paraplegic recovery

Posture is very important and necessary in the direction of obtaining a corrective attitude, as a result of which the joints obtain the appropriate amplitude, and the muscles regain their muscle-tendon retractions [1].

Posture should be applied immediately, from the acute stage, and postural treatment aims to place the paraplegic in a good and functional position.

The duration of the posture is variable, but it must be repeated until the expected result is obtained.

Job application requirements:

- must be performed only with the patient's consent;
- the patient must be informed that the positions are not comfortable, but must be accepted, because they have important beneficial effects;
- when the posture has an analgesic role, the patient must cooperate with the physiotherapist;
- the patient must be convinced of the importance of postures in his neuromotor recovery.

Objectives of postures in kinetotherapeutic treatment:

- sedative: analgesic positions with a role in combating pain;
- morphological: positions aimed at preventing the disease.

Analgesic postures are passive positions with the role of preventing or reducing pain, the posture being chosen depending on the place and nature of the pain.

Corrective positions are performed on the soft parts with a role in regaining

mobility. Depending on the mode of operation, they can be self-correcting, supported, fixed or immobilized.

Facilitation posts are a very effective treatment in recovering from the condition.

Diagonal I, bottom-up movement:

Patient position: Dorsal decubitus at the edge of the bed, with the lower limb extended in slight abduction, with slight internal rotation of the hip, extended leg.

Physiotherapist's position: On the side of the plegic lower limb. The physiotherapist's hand wraps the foot over his dorsal face so that the 4 toes sit over the inner edge of the foot. The other hand sits on the inside of the thigh.

Movement: It is performed with the knee extended and takes place gradually. Toe extension, foot flexion, knee extension, extension, abduction and internal rotation of the thigh.

Diagonal I, top-down movement:

From the end of the bottom-up movement are performed: flexion of the fingers, flexion of the foot, and extension of the knee, extension, abduction and internal rotation of the thigh.

Diagonal II, bottom-up movement:

Patient's position: Dorsal decubitus with the lower limb brought beyond the midline in a slight external rotation, leg extended, toes bent.

Physiotherapist's position: On the side of the plegic lower limb. The grip applied by the physiotherapist at the level of the foot is identical to the one in diagonal I, except that the other hand includes the thigh on the external face.

Movement: Perform the extension of the toes, flexion of the foot, extension of the knee, flexion, abduction and internal rotation of the thigh. Also, within this program, the knee variants of the 2 diagonals can be applied.

Diagonal II, top-down movement:

From the end of the movement from the bottom up, the following are performed: flexion of the toes, extension and supination of the foot, extension of the knee and extension, adduction and external rotation of the thigh.

Also, after the movement has been initialized, we can combine diagonals with proprioceptive neuromuscular facilitation techniques by applying progressive resistance.

Following the recovery program, the subject has made countless progress:

- Changing the circular dimensions to the level of the left lower limb, figure 1;

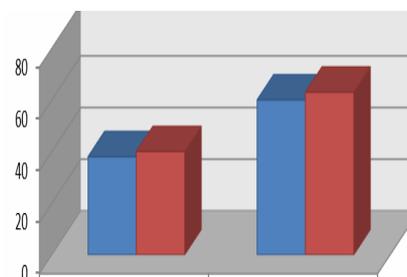


Fig. 1. *Perimeter of the leg and thigh, left lower limb*

- Changing circular dimensions to the level of the right lower limb, figure 2;
- Walking evaluation, figure 3.

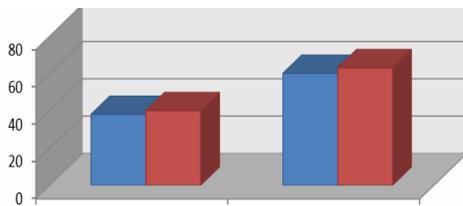


Fig. 2. Perimeter of the leg and thigh, right lower limb

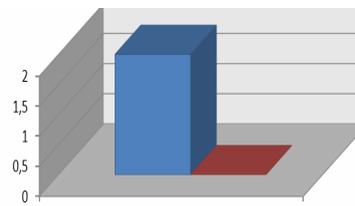


Fig.3. Walking evaluation

4. Discussions

The circular dimensions at the level of the left limb have acquired considerable progress, so that following the kinetotherapeutic exercises the patient in question has reduced the adipose tissue and developed muscular strength.

Thus, the perimeter of the calf increased from an initial value from 38 cm to 40 cm, and the perimeter of the calf from 60 cm to 63 cm. In the right lower limb, the patient in question reduced the adipose tissue and developed muscle strength.

At the beginning of the physiotherapy sessions, the subject in question presented a very difficult gait, which requires support at every step (rated at 2), so that at the end of the period the patient could get normal gait without support (rated at normal value - 0).

Specific techniques and methods have been applied in the physiotherapy treatment for flaccid paraplegia in young adults, which have resulted in significant results.

The means and methods of application of the rehabilitation program by physiotherapy have a favourable cause on the sensitive and motor recovery of the lower limbs affected by flaccid paraplegia.

References

1. Cioroiu, S.G.: *Physical therapy from theory to practice*. Brasov, University of Braşov Publishing House, 2012, p. 14, ISBN 978-606-19-0061-9.

2. Cotoman, R.: *Physical therapy - Methodology of carrying out the practical activity*. Bucureşti, Romania of Tomorrow Foundation Publishing House, 2006, p.27, ISBN 973-725-481-3.
3. Engrich, E.: *Physical therapy for everyone to understand*. Bucureşti, Medical Publishing House, 2011, p.11, ISBN 973-39-0722-9.
4. Mijaică, R.: *Motor games, social learning alternative content in physical education lesson*. In: *Procedia Social and Behavioral Sciences*, 2014, p. 1289-1296. Piteşti.
5. Nechita, F.: *Study on the development of therapeutic protocol in knee arthrosis*. In: *Bulletin of the Transilvania University of Braşov*, Vol. 13(62) No. 1, 2020, p. 237-242.
6. Tohănean, D.I.: *Motric activity – the main factor in preventing sedentary schooling in 12-14 year-old*. In: *Bulletin of the Transilvania University of Braşov*, Vol. 11 (60) No. 2, 2018, p. 124.
7. <https://www.scribd.com/doc/116060022/Paraplegia>. Accessed: 22.10.2020.
8. https://ac.els-cdn.com/S2221618914600731/1-s2.0-S2221618914600731-main.pdf?_tid=52af8fae-c6bf-11e7-9495-00000aab0f02&acdnat=1510391248_8477d409b188ed73ae91c058377d7aea, Accessed: 11.11.2020.