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STUDY ON THE ROLE AND EFFECTIVENESS OF PHYSIOTHERAPY IN CERVICAL BRACHIAL SYNDROME

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Abstract. *Cervicobrachial syndrome is defined as a common condition characterized by pain in the cervical and shoulder region occurring in the C5-C8 cervical root distribution territory with the main symptom being pain. The present study focuses on the need for physical therapy in the management of the pain and functional disorders present in a 46-year-old female patient diagnosed with cervicobrachial syndrome. The research was carried out over a period of 3 months, during which time the patient underwent a complex treatment programme involving both kinetic and electrotherapy techniques and aids. The results obtained were highlighted by applying evaluation tests (muscle balance, joint balance and cervical disability index) in 3 successive stages: initial, intermediate and final evaluation. Analysis of the scores obtained in the 3 tests allowed us to identify an improvement in the patient's quality of life, sleep, concentration and daily activities not disturbed by the algesic phenomena and functional disorders generated by the cervicobrachial syndrome.*

Key words: *kinesiotherapy, cervical spine, pain, cervical-brachial syndrome*

1. Introduction

Cervicobrachial syndrome is defined as a relatively common condition in medical practice [5] characterized by pain in the cervical and shoulder region occurring in the C5-C8 cervical root distribution territory, the most common cause being a herniated disc. [9] Unlike other diseases whose incidence has fallen, the incidence of spinal pain is rising [4]. The most common causes of this syndrome are cervical arthrosis, herniated discs, tumour lesions pressing on the nerve lesion, inflammatory processes of the meninges, cervical trauma, and vicious callus following a clavicle fracture [6].

Clinically, signs of C7 vertebral lesion are seen in about half of patients with paresthesias in the extremities [2].

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Cervicobrachialgia usually occurs with advancing age due to degeneration of the cervical spine [10].

In the literature there are 3 stages: the irritative stage which appears transient with little chance of recurrence, the compressive stage which can last up to 20 weeks and the paretic stage [3].

The aetiology of these disorders is multifactorial, which requires a rapid and correct diagnosis and a rigorous management of treatment in order to improve symptoms [8].

The diagnosis is established both on the basis of clinical examination and on the basis of imaging examinations, the cervical spine X-ray being indispensable [1].

An important element that implies a more targeted therapy is the differential diagnosis that is made with shoulder-hand syndrome, scapulo-humeral periarthritis, carpal tunnel syndrome, epicondylitis, breast neoplasm, leukoencephalitis, spondylodiscitis, intramedullary tumours, metastases, cervical rib syndrome, sd. Pancoast-Tobias (with C8-T1 root involvement) [14].

Clinical examination may detect disorders of spinal statics: scoliosis, forward head projection, tilting of the head towards the painful shoulder and mobility limitations in the cervical spine [12].

Regardless of the etiology of acute or subacute cervicalgia, in all these cases, the first therapeutic gesture is to block segmental mobility with an orthosis (neck brace), thus eliminating the main source of pain.

Specialists believe that in addition to drug treatment, both classical kinesiotherapy and spinal manipulation techniques are beneficial for patients with cervicobrachialgia [7].

Therapy in these patients with cervicobrachial syndrome should aim at conservative techniques [11] which are focused on physical exercises specific to the joints concerned, massage, electrotherapy, etc. and cases that do not respond to conservative treatment are directed towards the application of radiofrequency neurotomy, with pain relief of at least 40% [11].

The prognosis is different depending on the age of the patients, so that in young patients only 15-20% are indicated for surgery, while in elderly patients the percentage of patients treated by neurosurgery increases to 30-35%. [13]

2. Objectives – The **objectives** of this study is to highlight the benefits, role and means of kinesiotherapy in the recovery of patients with cervicobrachial syndrome.

3. Material and Methods

The hypothesis from which the research started was that: applying a well-designed and structured kinesiotherapy program over a period of 6 months, using the most up-to-date techniques and methods of rehabilitation, we will achieve optimal results in terms of prevention of complications, functional recovery and quality of life of patients with cervical-brachial syndrome.

The study was carried out on a 48-year-old female patient diagnosed with cervicobrachial neuralgia.

The anamnesis revealed the following aspects: pain in the back of the head radiating to the right shoulder and on the external face of the arm up to the elbow, which is felt when moving the head, grasping certain objects, even disturbing sleep. There is also stiffness in the cervical

spine (especially when twisting the head from right to left) and a feeling of muscle weakness and tingling in the arm.

Palpation revealed contractures in the neck, extending to the shoulder blades. Stimulation of the trigger points triggers a violent local pain.

From a somatoscopic point of view, in addition to the reported symptoms, it was found that the patient had, due to pain, adopted an antalgic position with a slight lateral tilt of the head towards the painful shoulder.

The following tests were used in the assessment of the female patient: joint balance, muscle balance, cervical disability index.

The objectives of the recovery programme were to:

1. Fight pain;
2. Combat muscle contractures;
3. Achieve increased mobility of the spine and scapulohumeral joint
4. Improve tone of the cervical and upper limb muscles;
5. Correct the static and dynamic disorders of the cervical spine;
6. Develop strength and muscular endurance in the cervical spine and upper limb;
7. Improve coordination;
8. Prevent upper limb tenderness disorders;

Prevent complications from setting in;

The recovery programme was carried out 3 times a week for 6 months, with an average session lasting 40-50 minutes, following the three specific steps:

1. Warm-up period for 10-minute effort;
2. The actual effort lasting 20-25 minutes;
3. Recovery period after exercise lasting 10-15 minutes.

The kinetic programme was also based on the Hippocratic principle of progressive exercises, moving in stages from easy to hard, from simple to complex and from known exercises to unknown ones.

The therapeutic means used were varied and included: massage, passive mobilisation, passive-active mobilisation, active and active mobilisation with resistance, stretching, exercises with objects (elastic bands, ball, stick, sandbags).

Throughout the kinesiotherapy sessions there was constant communication between the kinesiotherapist and the patient, who performed the exercises motivated, actively and consciously participating in the recovery process.

3. Results

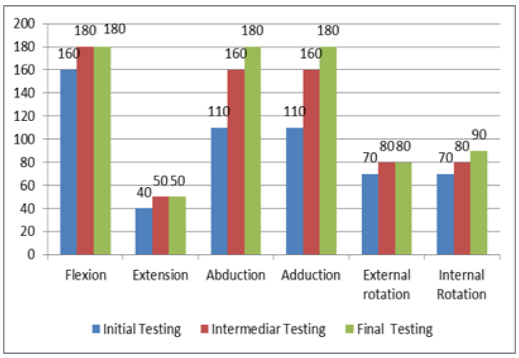

Fig. 1. *Evolution range of motion at the shoulder level*

Figure 1 shows a considerable improvement in range of motion at the scapulohumeral joint since the kinetic programme was applied. The patient's main deficit concerns the abduction movement of the shoulder, which after the recovery programme showed an increase in mobility from 110^0 in the initial stage to 180^0 in the final stage.

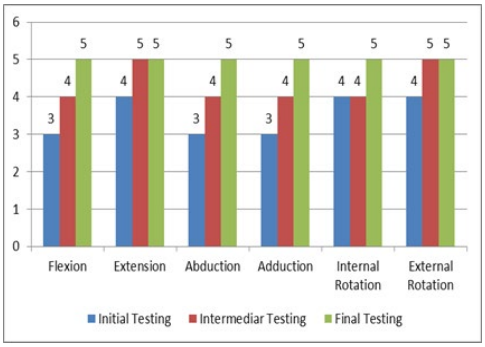

Fig. 2. *Evolution of muscle strength at the shoulder level*

The data presented in figure 2 show a progressive improvement in the patient's muscle strength. Thus, on the flexion, abduction and adduction movement, the patient recorded the lowest values of muscle strength, and by following a well-organized program and individualized to the patient's needs, the values of 3 and 4 increased to 5, which represents normal muscle strength.

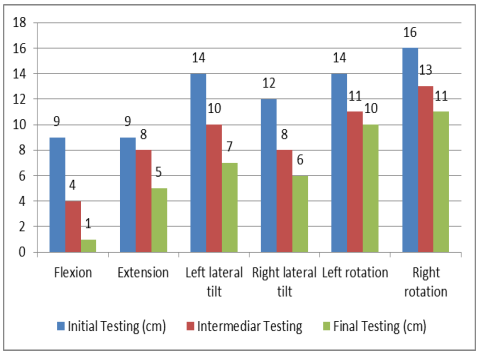

Fig. 3. *Evolution range of motion at the cervical spine level*

In terms of spinal mobility, an improvement is observed (figure 3) by decreasing the representative values of range of motion. Thus, on the flexion movement the initial test indicates a value of 9 cm following the measurement of the chin-sternum distance. Physical exercise is the basis for perfecting all the elements contributing to spinal mobility. So, as we can see the flexion value in the initial test improves to 1 cm in the final test, with a decrease of 8 cm.

The success of the recovery programme is also remarkable among the other movements. Thus, the best results are observed for the head twisting movements, where both the low mobility and the pain felt at the nape of the neck prevented the performance of this movement, reaching values of 14 and 16 cm respectively after the initial testing of the chin-acromion distance. The distance was considerably reduced during the application of the kinetic programme, reaching a value of 10 cm and 11 cm respectively in the final evaluation, thus demonstrating that the proposed objectives were achieved.

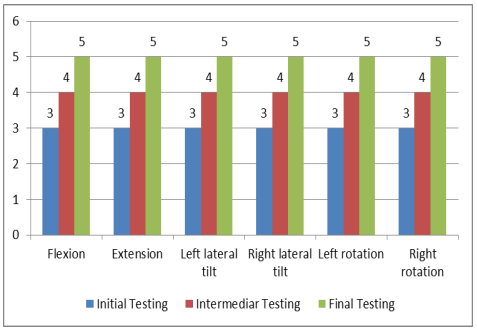

Fig. 4. *Evolution of muscle strength at the cervical spine level*

Following the muscle balance's evaluation, a favourable evolution is observed (figure 4) starting from the initial test where the result recorded was muscle strength of only 3, reaching muscle strength of 4 at the intermediate evaluation. Following the application of the physical therapy methods and techniques, the results of the final evaluation show an improvement in muscle strength in the muscles performing the movements, with values reaching 5.

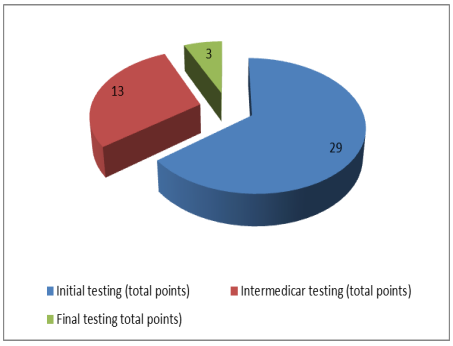

Fig. 5. *Evaluation of cervical pain through the Cervical Disability Index during the 3 assessments*

Analysing the scores obtained on the pain assessment index (figure 5) we can conclude that following the application of orthopaedic, medication and physical therapy treatment the pain phenomena were improved, allowing the patient to carry out activities such as personal care, lifting weights, reading, work and driving, recreational activities much easier. The quality of life has improved considerably and sleep and concentration are no longer disturbed by pain, which is kept under control by various means of treatment.

4. Discussions

In the course of this scientific approach, it was concluded that the success of therapy depends on several factors: a generally optimistic attitude, the degree of progression of the condition, age, environmental factors, social factors, daily activities, daily nutrition (how nutritious it is), cell hydration (quantity and quality of water), frequency of kinesiotherapy sessions and their quality. But the greatest value is represented by patients' goals and their desire for recovery.

5. Conclusions

Following the application of the kinetic programme, an improvement in the physical and mental state as well as in the patient's quality of life was noted.

The effectiveness of the recovery programme is remarkable both on all movements performed on the spine and on the movements of the right upper limb. The best results were recorded on the head twisting movement where the initial values of 14 and 16 respectively decreased considerably reaching values of 10 and 11 cm respectively in the final evaluation. The main deficit in the upper limb was in the shoulder abduction movement, and following the programme the amplitude gained 70 degrees.

The recoveries of muscle strength, resistance to effort, as well as the speed of postural adaptation, are the objectives of physical therapy, and their achievement ensures a reduction in the risk of relapse. Thus, through the use of well-individualized exercises, muscle strength is improved in the muscles that perform flexion, extension, lateral tilt and head twisting, as well as in the muscles that perform flexion, extension, abduction, adduction, internal rotation and external rotation of the scapulohumeral joint.

In terms of mental improvement, the rehabilitation program used had the effect of regaining confidence in their own strength, and in terms of quality of life, kinesiotherapy helped to reduce and even combat the main problem factor in carrying out daily activities, namely pain. Thus, physical exercise together with kinetic physical aids in the form of low and medium frequency currents, ultrasound and sedative and relaxing massage have contributed to the success of the recovery programme and to the reduction of recovery time.

Untreated cervicobrachial neuralgia can last for months or even years, which is why starting treatment as soon as possible is necessary for a positive prognosis of the condition.

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