THE INFLUENCE OF ELECTRO-PHYSIOTHERAPY TECHNIQUES IN POST-TRAUMATIC DISEASES OF THE ACROMIOCLAVICULAR JOINT

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Abstract

The acromioclavicular joint can be damaged by various traumas, thus greatly diminishing the functional capacity of the entire superior member. Post-traumatic sequelae of the acromioclavicular joint greatly diminish the quality of patients' lives.

This study aims at optimizing the choice of both physical therapy techniques and physiotherapy procedures in order to alleviate pain, increase joint mobility and muscle strength, and to reintegrate patients into early socio-professional activity.

All of the 23 patients included in the study were given massage, physiotherapy and electrotherapy. Therapeutic recovery programs and their goals have been tailored to the individual lifestyle of each patient. At the end of the study it was concluded that by identifying the most effective physiokinetoterapeutical techniques we achieved long-term positive results, the risk of relapse of diseases decreasing drastically.

Introduction

The acromioclavicular joint is a flat synovial joint between the acromial extremity of the clavicle and the medial edge of the acromion of the scapula. On this joint, the articular capsule is strengthened by the acromioclavicular ligament, which is located on the top of the capsule, attaching the acromion to the clavicle.

The possible moves at this level are:

- The anterior projection (abduction of the scapula) - the sternum extremity of the clavicle moves back and the acromial forward;
- Rear projection (scapula adduction) - the acromial extremity of the clavicle moves back, and the anterior one forward;
- Lifting - the sternum of the clavicle descends and the acromial one rises;

- Lowering - the acromial extremity of the clavicle descends, and the sternum rises;
- Rotation - occurs within the extension shoulder movements over 30°, flexion over 100°, abduction over 70°.

The functions of the entire superior member are drastically reduced or even abolished in some cases by traumas injuring the acromioclavicular joint, which leads to a significant decrease in the quality of life of the patients. Treatment should be applied as early as possible to achieve maximum efficiency, focusing not only on calming pain, increasing joint mobility and muscle strength, but also on functional re-education of the affected limb.

Material and methods

The study included 23 patients, of which 13 were male and 10 female, all of whom were elected on the basis of both clinical and paraclinical manifestations. Subjects are ages 18 to 52, coming from various professional backgrounds. Of these, 5 patients are between 18 and 25 years, 8 patients between 26 and 35 years, 7 between 36 and 45 and 3 between 46 and 52 years.

Table 1. Distribution of patients by gender. Distribution of patients by age category.

Distribution of patients by gender		Distribution of patients by age category			
Female	10	18 – 25 years	26 – 35 years	36 – 45 years	46 – 52 years
Male	13	5	8	7	3
Total number of patients		23			

The study was spread over a period of 8 weeks (40 working days) within the Complex of Swimming and Physical Therapy at Ștefan cel Mare University in Suceava. Patients were initially and ultimately tested for their progress, all data being quantified, and a baseline physiochemistry recovery program was built.

To evaluate the pain parameter, we used the VAS scale to evaluate muscle strength, we used the manual method (palpation), and for the

assessment of the joint amplitude we used the goniometric method, more precisely on flexion, extension, abduction, adduction, internal rotation and external rotation.

The results of the initial evaluations revealed increased values of the pain parameter index (VAS), averaging the VAS 8, a factor indicating a major algal limitation of the functional capacity of the shoulder. In the case of articular amplitude, there were values indicating that the movements were very limited; more precisely, we recorded on average the following values:

- shoulder flexion: 149 °
- shoulder extension: 45 °
- shoulder abduction: 136 °
- shoulder adhesion: 136 °
- internal shoulder rotation: 73 °
- external shoulder rotation: 67 °.

The values presented above were measured actively.

By measuring muscle strength, we obtained F3 value for flexion movement, F4 for extension, F4 for abduction, F3 for adduction, as well as for internal and external rotation.

Prior to the electro-physiotherapeutic recovery program, patients were advised to rest and both myorelaxant and antithalgic medication was prescribed by the physician.

Initially, to combat local pain, we chose to use local thermo therapy using warm packs and paraffin.

As massage techniques, we used some of the main procedures, namely: smoothing, for the purpose of improving blood circulation, friction to reduce pain sensitivity and lowering the hypertonus (in needed cases) and kneaded to increase muscle elasticity and stimulate biological tissue activity. The main goals of the massage were to improve the joint amplitude, reduce contraction, relieve pain, reduce edema and reduce joint pressure.

From the electrotherapeutic point of view, patients were given medium frequency currents, namely interferential currents, with analgesic, decontracturant and vasculotrophic effect on the striated muscles, as well as low-frequency currents: TENS, Trabert, with hypereremant and analgesic effect. The intensity of the procedures varied according to the physiological limits, possibilities and sensitivity of each individual patient.

Physiotherapeutic, it was aimed at regaining muscle strength, joint amplitude, and facilitating the reintegration of subjects into socio-

professional backgrounds. The recovery program lasted for 40 days, with patients having a home plan and exercise plan.

As a therapeutic program, we chose to intervene initially by isometric contraction and muscle relaxation techniques. Then we applied dynamic kinetic techniques, namely the voluntary (initially) non-resilient active movement, the resistance being applied progressively. To increase joint mobility, we chose to use neuroproprioceptive facilitation techniques, rhythmic stabilization and rhythmic initiation, and hold-relax technique. In the case of increased muscle strength, we applied therapeutic exercise.

Results and discussions

The goals initially set were tailored to the individual lifestyle of each patient. The aim was to improve the quality of life, combat pain, increase joint mobility and muscle strength, but also to reintegrate subjects into socio-professional activity as early as possible.

The final evaluations revealed the efficacy of the electro-physiotherapeutic program through low values of the pain parameter, more accurately reaching the VAS 2 and increased values of the joint amplitude, obtaining:

- shoulder flexion: 179 °
- shoulder extension: 48 °
- shoulder abduction: 180 °
- shoulder adduction: 180 °
- internal shoulder rotation: 94 °
- external shoulder rotation: 94 °.

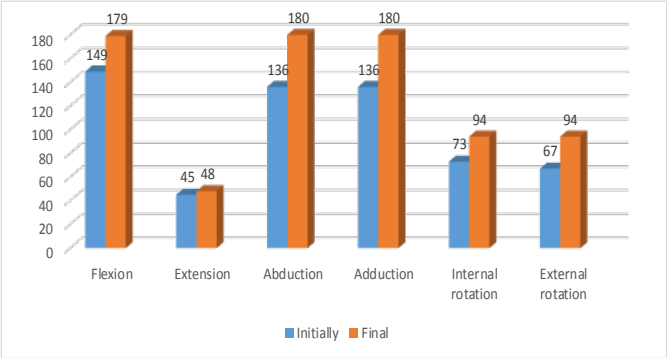
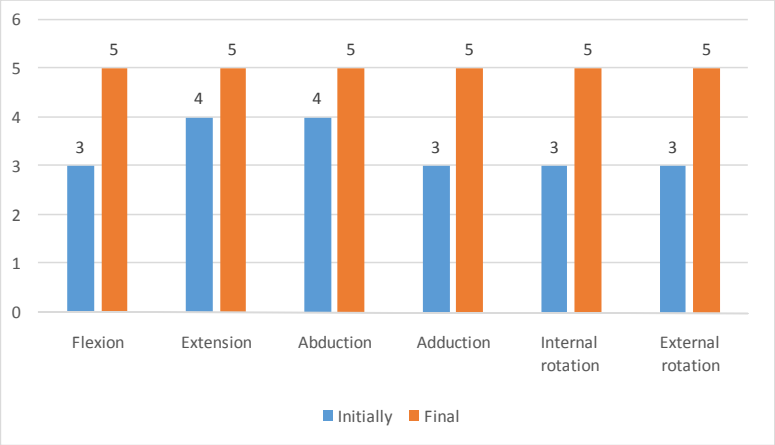


Figure 1. Joint Amplitude Values

In the case of muscle strength, a significant improvement was observed, thus demonstrating the effectiveness of therapeutic physical

exercise, values reaching F5 for all movements (flexion, extension, abduction, adduction, internal rotation and external rotation).

Figure 2. Muscle force values



After the applied electro-physiotherapy program, the subjects were evaluated, and for the interpretation of the obtained results, we used as a way of exposure and explanation, the graphic method. The values compared are those outlined in the initial and final evaluations, thus comparing the average of each recorded parameter.

Conclusions

The effectiveness of the applied electro-physiotherapeutic program is demonstrated by the results obtained and represented graphically; so a considerable improvement in joint amplitude and muscle strength has been observed.

The applied electro-physiotherapeutic techniques have been aimed at combating pain, increasing muscle strength, muscle tone and joint amplitude of each patient, helping to regain the ability to put into practice the activities of everyday life.

The therapeutic program applied had a positive impact on the quality of life of the patients, which improved considerably by decreasing the functional rest, which proved to be effective in fighting pain, the latter being the main factor in limiting functional capacity.

At the end of the study, there were radical improvements in the evaluated parameters, and we can conclude that the kinetic therapy elements used in conjunction with the physiotherapy considerably reduce

the risk of recurrence in the pain experienced by the trauma of the shoulder joint.

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Influența procedeelor de fiziokinetoterapie în afecțiuni de tip posttraumatic ale articulației acromioclaviculare

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Cuvinte cheie: **acromioclaviculară, kinetoterapie, pacienți, calitatea vieții.**

Abstract

Articulația acromioclaviculară poate fi lezată de diverse traumatisme, astfel diminuându-se mult capacitatea funcțională a întregului membru superior. Sechelele posttraumatice ale articulației acromioclaviculare scad mult calitatea vieții pacienților.

Studiul de față urmărește alegerea optimă a atât unor tehnici de kinetoterapie cât și a procedurilor de fizioterapie, în scopul calmării durerii, creșterii mobilității articulare și a forței musculare, dar și reintegrarea pacienților în activitatea socio-profesională cât mai precoce.

Tuturor celor 23 de pacienți incluși în studiu li s-a aplicat masaj, kinetoterapie și electroterapie. Programele terapeutice de recuperare și obiectivele acestora au fost personalizate în funcție de stilul de viață zilnic al fiecărui pacient în parte. La finalul studiului s-a ajuns la concluzia că identificând cele mai eficiente tehnici fiziokinetoterapeutice am obținut rezultate pozitive pe termen lung, riscul de recidivă al afecțiunilor scăzând considerabil.