

## THERAPEUTIC ORIENTATIONS REGARDING THE NEURO-MUSCULAR COMPONENT IN THE DYSFUNCTIONAL SYNDROME

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### ABSTRACT

The treatment of the stomatognathic system dysfunction is a complex one and depends on the diagnosis and symptomatology to each case. **The aim** of this study is to identify the clinical signs of muscle in the dysfunctional syndrome and also the type of treatment applied successfully or failure. **Materials and methods.** This study includes 952 patients treated, 462 men and 490 women between 18 and 80 years old. The results obtained after the clinical and paraclinical examinations were processed with the special statistical programs.\* Microsoft Excel and Statistic 2000. **Results. Discussions.** One of the dysfunctional syndrome factor is the stress. The results of this study showed that only 11% of patients recognize the presence of the stress in their lives. The muscle relaxation is another stage of treatment by applying occlusal interceptors. Our study revealed that the application of relaxation splints for 15% of cases had good results. Other patients have benefited symptomatic therapy : 18% of cases hydrothermotherapy, 9% of cases phototherapy, 14% of cases ultrasonotherapy and 31% of cases medicinal therapy with miorelaxants. **Conclusions.** The treatment of neuromuscular component is associated in most of the cases with specific therapy of the other component of the stomatognathic system.

**Keywords :** *neuromuscular factor, dysfunctional syndrome, symptomatic therapy.*

### INTRODUCTION

“The dysfunctional syndrome of the stomatognathic system is a complex and multifactor condition, just like our patients” [14,15,16,17] By analogy, it can be stated that the clinical form represented by the cranio-mandibular malrelation is a complex condition whose management involves knowledge in multiple fields and a vast experience. While on the etiology, pathogeny, clinical manifestations and the diagnosis of cranio-mandibular malrelations entire volumes have been written, the treatment of

#### THE PURPOSE OF THE RESEARCH

In this study we aimed at identifying the muscular clinical signs

this clinical entity is still a subject of continuous research [18,19,20]

The neuro-muscular component definitely plays a part in case of the perturbation of fundamental cranio-mandibular relations, regardless of the nature of the existing malrelation, the degree of extension being in proportion to the predominance of dysfunctional signs and symptoms [21,22,23].

within the cranio-mandibular malrelations, as well as the type of treatment applied,

with its success or failure rate, respectively.

**MATERIAL AND METHOD**

The identification of the signs and symptoms with muscular preponderance and of neuro-muscular rebalancing treatments was conducted on a lot of 952 subjects, 462 men and 490 women, aged between 16 and 80 years old.

We gathered the necessary data from the patients' charts, which provided the results of the clinical exam, paraclinical exams, performed treatments, as well as the final diagnosis.

We then created a database that we analyzed by means of special statistics programs.

**RESULTS AND DISCUSSION**

Being able to rely on so many therapeutic possibilities, we need to decide on a very accurate working algorithm whose final target should be rebalancing the stomatognathic system. The most efficient methods are selected and applied for the same patient, without indicating the entire range of treatments. That is why this study also aimed at demonstrating the importance of choosing and applying the best treatment.

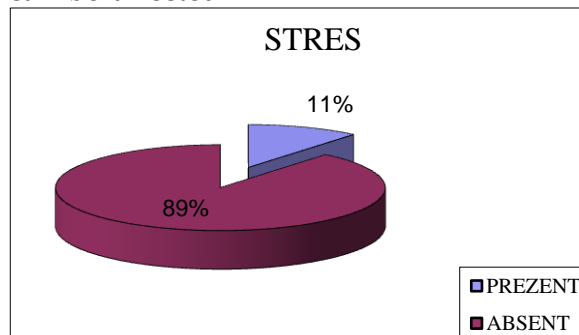
The therapy targeting the neuro-muscular component is of a both etiological and symptomatic nature. The neuro-muscular component of the stomatognathic system can be affected in

various degrees, which may determine, by itself or in corroboration with other causes, a certain type of craniomandibular malrelation. The approach of this neuro-muscular factor should not be regarded unidirectionally, but in combination with any other type of therapy, be it articular, occlusal or periodontal, etc.

The clinical muscular signs that can occur in the dysfunctional syndrome are represented by: muscular pain, muscular hypertonia, muscular spasm, muscular fatigue, muscular hypertrophy, limitation of mandibular movements and the modification of mandible dynamics trajectories.

Muscular activity can also be influenced by stress, which can be found among the etiological factors of muscular dysfunction. It can affect the function of the muscles through an increase of the muscular tonus, the installation of bruxism, the activation of the sympathetic nervous system.

With regard to the presence of stress in the family and social climate for the patients under investigation, the results showed the following distribution: only 11% of the subjects admitted the presence of stress in their lives.



Graphic no.1

In many cases, the patients experience a high level of stress, even due to daily routine and that is why all the patients should follow a destressing therapy. (2,3,11,14)

However, an important role in achieving muscular relaxation is played by the occlusal interception, which shows and leads to very good results.

Relaxation splints ensure the muscles the opportunity to return to functional parameters [24,25,26]. These splints are made in centric relation and can be with a total or partial covering of the arch, usually

maxillary. The patient needs to be trained concerning the use, insertion and removal of the gutter, as well as its hygiene and maintenance during the day[27,28,29].



Fig. 1. Muscular relaxation splint

A particular relaxation splint is represented by the Lucia jig [12,30,31] and is indicated mostly in the muscular spasm

whose treatment cannot allow the patient to wait for the manufacturing of a muscular relaxation splint in the laboratory.



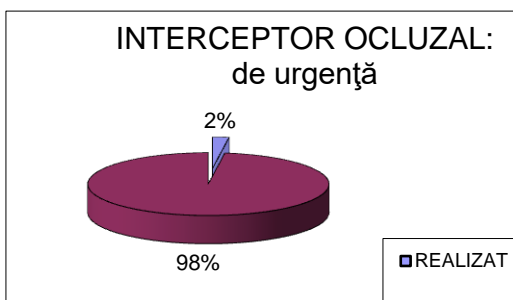
Fig.2. The Lucia jig



Fig. 3. The Lucia jig

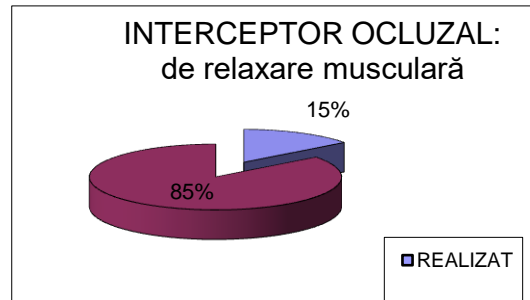
The emergency splint is applied at the level of the central maxillary incisors, the occlusal side of the jig being placed perpendicularly on the incisal margin of the mandibular incisors.

Using the databases, we extracted the results concerning the use of emergency and relaxation splints and the conclusion is expressed under the form of the graphics below:



Graphic no 2

The symptomatic therapy can represent, in certain cases, the only way to perform a treatment. It can be medicinal or physical and in both cases it can be efficient, but the patient needs to be made aware that it is not a healing solution, given that sometimes, even



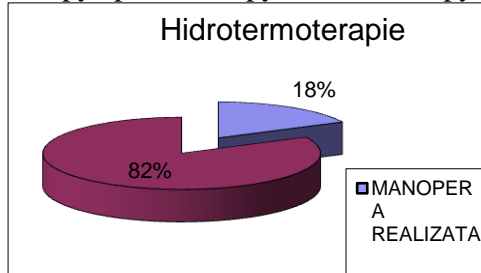
Graphic no 3

in the case of an etiological therapy, the long-term success chances reach 70-85% [1,2,3,4]

The medicinal therapy is based on the following active substances: pain medication, anti-inflammatory drugs, anxiolytic drugs, muscular relaxants, anti-depressants and local

anesthetics [5,6,7,8]

With regard to the physical therapy, it is used in association with the etiological treatment and contributes in a fairly large proportion to the success of the treatment. The modalities of physical therapy or balneophysiotherapy are divided into: hydrotherapy, thermotherapy, phototherapy, electrotherapy,



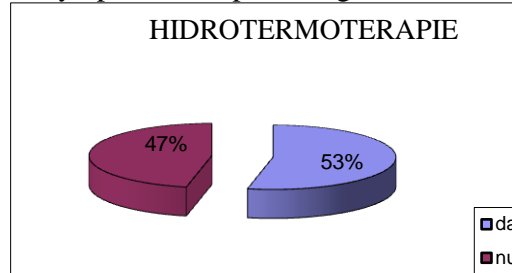
Graphic no 4

**Thermotherapy:** it comprises procedures that develop a large or, on the contrary, a small quantity of heat. It is recommended for muscular painful symptoms, with the use of a wet towel pressed against a hot bottle for 10-15 minutes, or, on the contrary, the use of ice for 5-7 minutes, with circular movements, which feel like burning at the beginning, followed by numbness, when the procedure is stopped. Regardless of the method of choice (hot or cold), after the area returns to the normal temperature, the procedure is repeated.

Phototherapy, regardless of the form used

ultrasound, mud therapy, acupuncture, massage, etc.

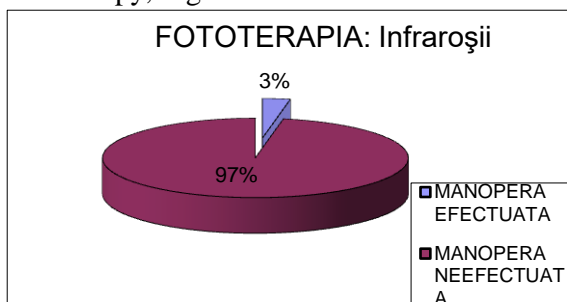
From the group of patients in the study lot, 18% received hydrotherapy maneuvers, a relatively low percentage in relation to the entire lot, but comparing it with the number of patients showing signs of muscular symptoms, the percentage reaches 53%.



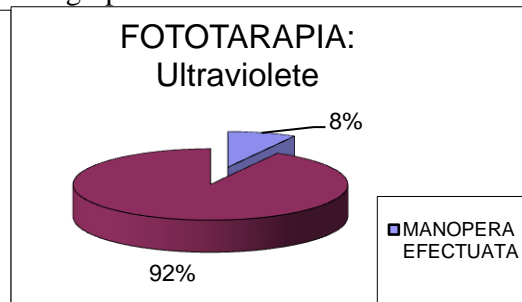
Graphic no 5

(ultraviolet, infrared) is recommended and shows very good results in the case of muscular pain by accelerating circulation, by freeing the chemical mediators, such as histamine, activation of the proteolytic ferments, the decrease of the sympathetic tonus, etc. The results of the phototherapy treatment have been encouraging in comparison to those who were not administered this treatment, the sessions being set at every 2-3 days, for a total of 10-12 sessions.

For the study lot, we obtained the results in the graphics below:

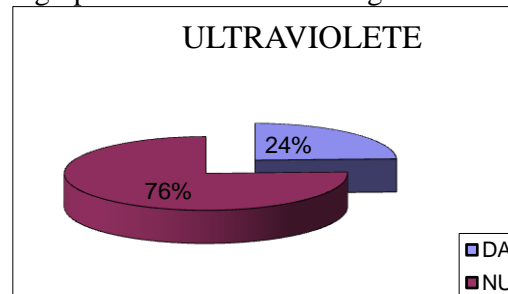
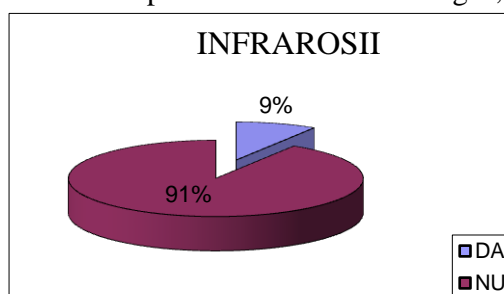


Graphic no. 6.



Graphic no.7

In relation to the patients with muscular signs, the graphics show the following modifications:

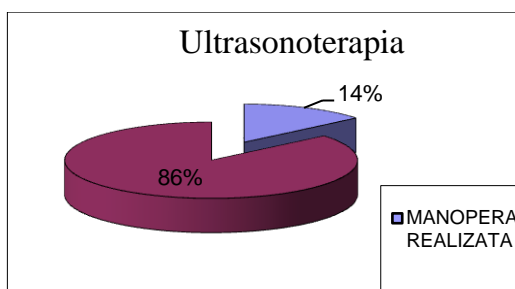


Graphic no. 8. The lot of patients with muscular signs and symptoms

Ultrasound therapy is used for its thermal effects (hyperemia, hyper-lymphia, activation of local metabolism) (7,10,19), mechanical effects (muscle in-depth micro-massage), physico-chemical effects (stimulation of oxidative and reducing processes, the pH alkalization). The administration of a number of 10 sessions of 5 minutes every day led to a

detectible muscular relaxation immediately, at palpation.

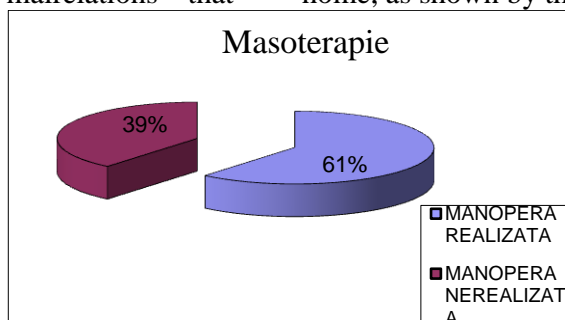
The graphic of the distribution of the use of symptomatic treatment by means of ultrasound therapy has the following design for the entire lot, namely for the patients with muscular signs:



Graphic no. 9. General lot

The massage of muscular groups consists in superficial and profound massage. Patients with cranio-mandibular malrelations that

affect the muscles were administered massage, both in the dental cabinet and at home, as shown by the graphics below:



Graphic no. 10

The drug treatment includes antalgic, anti-inflammatory, anti-spastic and muscle relaxant drugs.

Pain medication is used to restore the psychic comfort of the patient and helps during difficult periods until the removal of the triggering cause. (5,6, 8 ). The most common drugs used are: aspirin, Fasconal, phenylbutazone, indomethacin (20). The analgesia of painful points through Boicil forte infiltration in the case of muscular pain is an original, Romanian contribution to the therapy of painful arteriopathies. In view of

removing the referred pain and reflexes with a peripheral starting point, Bell, Travell and Kraus, Krough-Poulsen practice the use of ethyl chloride on the trigger areas, suppressing the exciting associations[12,13,14]

Travell and Rinzler recommend Novocain injection, while Bell the lidocaine injection, of the spasmatic and painful muscles in view of interrupting the nociceptive reflexes with a muscular starting point [9,10,11]

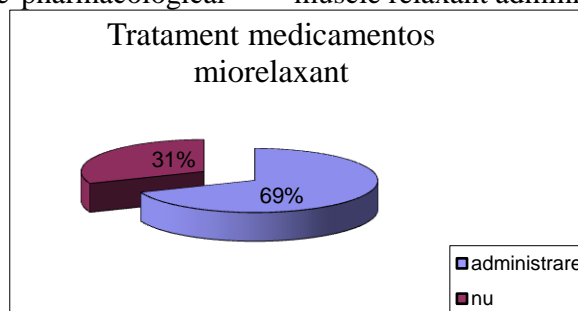


Fig.2. Infiltration of muscular mass of the masseter muscle

The muscle relaxant drug treatment aims at inhibiting the activity of the neuronal motor chain, starting with the motor cortical neuron and ending with the neuro-muscular junction. The indication of election refers to central muscle relaxants that induce muscular relaxation and decrease muscular tonus by their inhibiting action of the mesencephalic intercalary neuron, with the pharmacological

blocking of polysynaptic reflexes. They have a slight sedative and analgesic effect.

Among the central action muscle relaxants we mention: mephenesin, chlorzoxazone, methocarbamol, etc. The most used muscle relaxant which shows the lowest side effects and fastest results is Mydocalm. At the level of the lot, the distribution of muscle relaxant administration is as follows:



Graphic no. 11. Patients lot with muscular signs and symptoms

In addition, for the new patterns of mandible dynamics to last, a physiotherapeutic treatment is also applied. The number of sessions is determined depending on the patient's age and degree of muscular deterioration. Physiotherapy is made using exercises that focus on the functional movements (mastication, phonation,

deglutition), the opening – closing movements, laterality with or without dental contact, etc.

Physiotherapy also includes muscle toning or relaxation, respectively, as presented above.

### CONCLUSIONS

1. The treatment should be etiological first of all, which implies a profound knowledge of the pathologies of the neuro-muscular component of the stomatognathic system.
2. The etiological treatment of the neuro-muscular component consists in methods of substitutive, active relaxation, BFB-EMG, occlusal interception for muscular relaxation. The conclusion we made was that

ideally, the muscular relaxation splints should be used on all patients with cranio-mandibular malrelations, because only under the conditions of a muscular relaxation can one speak about a high-quality dental therapy.

3. The symptomatic therapies can sometimes represent the only (non-radical) modality to apply a treatment, consisting of balneo-

- physiotherapeutic and medicinal procedures, with incontestable results.
4. The treatment of the neuro-muscular component will be associated, in most cases, with specific therapies for the other elements of the stomatognathic system.

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