NEURO-PROPRIOCEPTIVE FACILITATION IN THE RE-EDUCATION OF FUNCTIONAL PROBLEMS IN FACIAL PARALYSIS. A PRACTICAL APPROACH

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NEURO-PROPRIOCEPTIVE FACILITATION IN THE FUNCTIONAL RE-EDUCATION OF IN FACIAL PARALYSIS. A PRACTICAL APPROACH (Abstract): Facial paralysis, in the form of Bell’s syndrome, is an acute paralysis of idiopathic origin. Disability in patients with this medical condition is the result of impairment or loss of complex and multidimensional functions of the face like emotion expression through facial mimics, facial identity and communication. **Aim:** This study aimed to present new and improved practical manual techniques in the area of facial neuromuscular facilitations and to review the literature for disability indexes and facial nerve grading. **Material and methods:** We present the practical modality of using neuro-proprioceptive facilitation techniques, such as rhythmic initiation, repeated stretch (repeated contractions), combination of isotonics and percussion, and also report the effects of these techniques in three Bell’s syndrome patients which were previously evaluated. **Conclusions:** Recovery from facial paralysis can be a difficult and long lasting process and the utilization of a grading system may help the physical therapist. The effects of this type of therapy may help benefit the patient if the therapist is well trained and familiar with the neurophysiological background. **Keywords:** FACIAL PARALYSIS, PROPRIOCEPTIVE FACILITATION, BELL’S SYNDROM, HAUSE-BRAUCKMANN SCORE

Facial nerve paralysis, because of the dysfunctional problems that occur at the level of a very personal part of patient’s body, who gives their personality, needs special consideration. Because speech, mastication, and expression of moods and emotions are based on the ability to move the facial musculature, successful treatment of facial nerve paralysis and especially functional reeducation are a vital concern for the physical therapists (1). Bell’s palsy has an incidence of approximately 20 cases of 100,000 persons and it’s considered to be of idiopathic etiology. The onset is sudden, often proceeded by facial dysesthesia, epiphora, pain, hyperacusis, dysgeusia, and decreased function of the lacrimal gland (2, 3).

We found that very few patients with Bell’s palsy are referred from the neurology services to physiotherapy centers. Very often, the patients are told to do nothing and that the muscle function and facial expressions will return without any intervention. Patients that are referred to physical therapy are typically treated with elec-
trical stimulation of the facial muscles and exercises with maximal effort. The results of such interventions were less than optimal resulting in the development of mass action or synkinesis (4).

Facial neuromuscular reeducation with tailored exercises for patients had been demonstrated to be effective in impairments related to facial paralysis (5).

MATERIAL AND METHODS

We are presenting a modality of manual stimulation for the reeducation of functional disorders in facial paralysis inspired from the proprioceptive neuromuscular facilitation concept of H. Kabat. This approach was used in clinical settings on Bell’s palsy syndrome patients with positive effects on increasing muscle control and overall functionality; we also report the effects of this technique in three Bell’s syndrome patients which were previously evaluated.

The techniques utilized in the rehabilitation of facial paralysis are tailored and executed specifically for every patient separately taking into account the following lines in the therapeutic conduct: degree of muscle function, functional disability and pain.

The techniques that we have used in managing facial paralysis conditions are: rhythmic initiation, repeated stretch (repeated contractions), combination of isotonics and percussion of tendons or marginal fascia of the muscle.

Rhythmic initiation was utilized in patients who could not perform any movement or when the therapist wanted to teach a motion or improve the coordination of that motion; this is achieved starting from passive range of motion and progressively passing to active range of motion with or without manual resistance. Description: the therapist starts by moving the patient passively through the range of motion using verbal commands to set the rhythm, and at a point in the treatment when the patient can promote movement he will first accompany the therapist and then will move against opposed force from the therapist (6, 7).

Repeated stretch was used at the beginning of the range of motion but also through range in case of muscle weakness and also when required for the initiation of motion, increasing strength and range of motion. Description: the therapist elongates the muscle just at the level when he feels a slight tension of the muscle (especially in flaccid situations) and then gives a “tap” to lengthen the muscle and evoke the stretch reflex; at that point the patient receives a verbal command to move and the therapist is resisting the resulted reflex and voluntary muscle contraction.

Combination of isotonics was performed in the program of rehabilitation at the time when the patient would have voluntary muscle contraction and movement for the following goals: achieving active control of motion, coordination and muscle strengthening. Description: the therapist is resisting the movement of the patient through the active range of motion desired, at the end of which the therapist tells the patient to stay in that position for the purpose of stabilization of the contraction. When the stabilization is achieved therapist tells he patient to allow the part to be moved slowly back (eccentric contraction).

In the functional rehabilitation of facial nerve paralysis is important to know the movement of the principal muscles and how to appropriate stimulate them in such a manner as to obtain the maximum muscular response. In the following photos we are presenting the specificity of manual facili-
Neuro-proprioceptive facilitation in the re-education of functional problems in facial paralysis.

Stimulation for different muscles and the afferent explanation.

Stimulation of the frontalis muscle is made by the therapist pushing downwards with a diagonal component of inwards movement. The verbal command is: “Lift your eyebrow up and wrinkle your forehead, be surprised” (fig. 1).

**Fig. 1. Stimulation of frontalis muscle**

Stimulation of the corugator muscle is made by the therapist pulling upward with a diagonal component of outward movement. The verbal command is: “Pull your eyebrows down, look angry” (fig. 2).

**Fig. 2. Stimulation of corugator muscle**

Stimulation of orbicularis oculi muscles is made by pulling up the inferior and superior parts of the muscle at the same time with a diagonal component and resisting at the movement of the muscle from the contralateral side to reinforce the weak muscle. The verbal command is: “Close your eyes” (fig. 3).

Stimulation of levator labii superioris and procerus muscles is made by pulling downward superior lip. The verbal command is: “Show your upper teeth and wrinkle your nose” (fig. 4).

Stimulation of zygomaticus major and minor muscles is made by pushing the upper corner of the lip downwards and with a diagonal component of inward movement.

Stimulation of buccinator and risorius muscles is made by pulling the corners of the mouth medially; if the patient will push more interior towards your fingers it will stimulate more the buccinators muscle. The verbal command is: “Pull the corner of your mouth” (fig. 5).

**Fig. 3. Stimulation of orbicularis oculi muscles**

**Fig. 4. Stimulation of levator labii superioris and procerus muscles**

**Fig. 5. Stimulation of buccinator and risorius muscles**
Stimulation of depressor anguli oris is made by pulling up the corners of the mouth. The verbal command is: “Push down the corners of your mouth. Look like you are sad”. Stimulation of orbicularis oris muscle is made by pulling outwards the corner of the mouth. The verbal command will be: “Kiss, whistle”. This muscle has a great importance in closing the mouth.

**CASE PRESENTATIONS**

We are presenting three cases of facial paralysis (Bell’s syndrome) that were treated at the Physio-kinesitherapy and Rehabilita-
Neuro-proprioceptive facilitation in the re-education of functional problems in facial paralysis.

S. U. has presented to our clinic on 9.04.2012 with a right facial paralysis caused by the inflammation of the seventh facial nerve. After the clinical examination the qualitative score on Hause-Brauckmann facial grading was V and the quantitative score was 1/8 – 2/8, that meant severe dys- function with only barely perceptible motion and at rest with facial asymmetry. Characteristics: no movement at the level of the forehead, incomplete eye closure, excessive function of lachrymal glands and slight movement at the level of the mouth.

A. V. has presented to our clinic on 6.07.2012 with a right facial nerve paralysis caused by a car accident with head trauma. After the clinical examination the qualitative score was V and the qualitative score was 1/8 – 2/8. Characteristics: no movement at the level of the forehead, incomplete eye closure with no lachrymal gland action, and slight movement at the level of the mouth.

S. A. has presented to our clinic on 10.09.2012 with a right facial nerve paralysis caused by facial nerve inflammation. After the clinical examination the qualitative score on Hause-Brauckmann scale was graded IV and the quantitative score was 3/8, that meant moderately severe dysfunction with obvious weakness and normal symmetry of the face in rest position. Characteristics: no movement at the level of the forehead, incomplete closure of the eye and asymmetrical closure of the mouth with maximal effort.

**RESULTS**

After 30 sessions of P.N.F. manual therapy the patients’ time of recovery was different from one another and came in different stages.

Patient S. U. had a good outcome of its treatment improving his qualitative score from grade V to grade I and the quantitative score from 1/8 to 8/8. The lacrimal gland ceased to work excessively and the blinking of the eyelash came through. The asymmetry of the face at stand position was no more visible and the overall facial expressions were reinstated.

Patient A. V. improved his qualitative Hause-Brauckmann score from grade V to grade I and the quantitative score from 1/8 to 8/8. The eyelash started to blink and lachrymal glands resumed their action.

Patient S. A. has improved her qualitative score from grade IV to grade I and the quantitative score from 3/8 to 8/8. (tab. I, fig. 6)

**TABLE I**

Analysis of the Hause-Brauckmann score

<table>
<thead>
<tr>
<th>Patient name</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qualitative score</td>
<td>Quantitative score</td>
</tr>
<tr>
<td>S. U.</td>
<td>V</td>
<td>1/8</td>
</tr>
<tr>
<td>A. V</td>
<td>V</td>
<td>1/8</td>
</tr>
<tr>
<td>S. A.</td>
<td>IV</td>
<td>3/8</td>
</tr>
</tbody>
</table>
Moreover, because of the negative impact that it has on social integration of the facial paralysis subjects, the patients were more inclined to socialize after the treatment because of the regained conscience over their facial mimics and expressions.

**CONCLUSIONS**

Recovery from facial paralysis can be a difficult and long lasting process and the utilization of a grading system may help the physical therapist. The effects of this type of therapy may help benefit the patient if the therapist is well trained and knows the neurophysiological background.

Facial paralysis is one of the dysfunctions that actively affect the desire of the patients to communicate in social environments and from this idea it is of most importance for them to be treated their functional disabilities at the level of one part of the body that gives them the identity and their personality.

Furthermore, the success of the program depends on the relation established between the physical therapist and the patient, the perseverance and the motivation that lies behind.

**REFERENCES**