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OUR EXPERIENCE IN THE REHABILITATION OF PATIENTS WITH THE FACIAL NERVE NEUROPATHY USING THE METHODS OF PHYSIOTHERAPY

In this article we present a review of a scientific literature and own observations of physiotherapeutic treatment of patients with the facial nerve neuropathy based on 20-years experience. The effectiveness of the facial nerve paralysis treatment with different methods of physiotherapy has been assessed in our research. Including physiotherapy in the complex treatment significantly increases the efficiency and reduces the treatment time.

Key words: facial nerve neuropathy, rehabilitative, physiotherapy.

Physiotherapy of facial nerve neuropathy (FNN) causes certain difficulties even for experienced physiotherapists, taking into account the features of the disease course, the inability to clearly predict the outcome of treatment and the fairly frequent occurrence of contractures of facial muscles. A cosmetic defect that occurs in this pathology is often perceived by the patient as a "personal tragedy," especially in young women; and the depressive component aggravates the course of the disease. Therefore, the aim of this article was to generalize the observations of the clinical course of the neuropathy of the facial nerve in the process of physiotherapy based on 20 years of clinical experience.

The facial nerve facilitates the work of the muscles in performing the synergistic act of both sides of the face: the muscles can contract simultaneously or separately, creating different facial expressions with different functions (eating, emotions, etc.). The symptoms of FNN are as follows: the eye on the side of the lesion is not closed (lagophthalmos); manifest asymmetry of the mouth is a symptom of "tennis racket" since it resembles its shape; the inability to frown or raise an eyebrow; paralyzed mimic muscles makes it difficult to eat; bites of the oral mucosa occur on the affected part; arbitrary flow of saliva and liquid food through the corner of the mouth; difficulty in speaking (pronunciation); difficulties in some functions (whistling, blowing out candles).

In the practice of the family doctor, there are difficulties in differentiating FNN and trigeminal nerve neuropathy, since both nerves participate in the innervation of the face. In this case, the presence of motor disorders of the facial muscles should be an important diagnostic criterion, while in the trigeminal nerve affection they are mainly sensitive violations and pain. Symptoms of paresis or paralysis of the facial nerve depends on the level of its lesion, which must be determined before the start of therapeutic methods. With defeat before departure of n. petrosus superficialis major, all accompanying fibers are involved in the process, and in the clinic, in addition to peripheral paralysis of facial musculature, - dry eyes, hyperacusis, a taste disorder in the front 2/3 of the tongue are present.

Lower level of localization of the lesion over the site of n. Stapedius origin is accompanied by a hyperacusis and a taste disorder. The dryness of the eye is replaced by increased tearing. If the lesion is above the divergence of the chorda tympani, lachrymation and impaired taste on the front 2/3 of the tongue are observed. The defeat below the chorda tympani is accompanied by a "pure" paralysis of the facial muscles. Thus, the level of lesion causes a clinical picture - from a light paresis of one of the branches to complete paralysis of all branches.

Peripheral paresis of the facial nerve can be caused by various the etiology and pathogenesis of diseases. The most common lesion of the facial nerve is due to: otitis, since the facial nerve is in the immediate proximity of the ear; dental diseases and various dental traumas; pregnancy and childbirth; nervous exhaustion, stressful situations, emotional overload, depression; hypothermia; diabetes and various neoplastic diseases; intoxication of the body; weakened immunity; various kinds of facial trauma; infectious diseases; ischemic diseases; neurotropic viruses (Herpes zoster).

The variety of etiological factors excluded the previously used term "neuritis of the facial nerve" from practical use.

Pharmacotherapy is mainly based on the use of medicines that improve microcirculation and stop swelling [2, 14]. To arrest edema, the most adequate is using of steroid hormones, in particular hydrocortisone, which has an obvious antiexudative, antiproliferative, antitoxic action [16]. To improve the rheological properties of blood, low-molecular dextrans are used, which have a particularly positive effect on terminal vessels, reduce hematocrit, blood viscosity, peripheral vascular resistance, increase the

microcirculatory pressure gradient, and improve the perfusion oxygenator ability of blood [9]. As a supporting therapy, oral intake of vasoactive drugs, usually trental, is used. During therapy, it is necessary to monitor the level of potassium in the blood plasma and give a sufficient amount of liquid. According to some researchers [4, 14], perineural injections of hormonal preparations (25 mg (1 ml) of hydrocortisone with 0.5 ml of 0.5% solution of novocaine) should be considered as the most effective in treatment of affected nerve trunk.

The Research Institute of Children's Infections (Russia) recommends the administration of amixin in combination with nurofen and antioxidants (alpha-lipoic acid) for 10-14 days when FNN is a viral etiology [13]. After 5-10 days from the onset of the disease, in spite of its etiology, it is prescribed restorative therapy - anticholinesterase drugs (proserine, galantamine), the vitamin B group, stimulants for protein synthesis (potassium orotate, retabolil), dibasol, glutamic acid, aloe etc. However, there is no consensus on the effectiveness of anticholinesterase drugs (as well as anabolic agents) with FNN [2, 13]. Apparently, these medicinal agents should be used only in those cases when there are severe motor disorders, under the "cover" of carbamazepine (finlepsin) in order to prevent the development of post-paralytic contracture.

In addition to medicinal preparations, various physical methods of treatment are widely used in the treatment of FNN [1, 5, 8, 12]. Thus, in the early period, treatment is prescribed by a posture that includes the following recommendations: Sleep on the side of the lesion; For 10-15 minutes 3-4 times a day to sit, bending head in the direction of defeat, supporting it with the back of the hand (with support on the elbow); tie a shawl, pulling the muscles from the healthy side to the side of defeat (from the bottom up), striving to restore the symmetry of the face.

To reduce the asymmetry of the face, the sticking plaster tension applies from the healthy side to the affected. Plaster tension in the first day is applied for 30-60 minutes 2-3 times a day, mainly during active mimic actions (for example, during a conversation, etc.). Then the treatment time is increased to 2-3 hours.

Physiotherapy is an essential component of rehabilitation. Addition of physiotherapy undoubtedly must be based on the stage of the disease.

There are: • non-acute (acute) stage - up to two weeks; • subacute period - up to four weeks; • chronic stage - more than 4 weeks.

When choosing physiotherapeutic methods, a CT scan of the brain is necessary in order to clarify the possible level of facial nerve damage, to exclude oncopathology and also to clarify individual features (the protrusion of the facial nerve, etc.) [6].

The purpose of UHF therapy (a physiotherapy technique based on the impact on the patient's body of a high-frequency electromagnetic field with a frequency of electromagnetic oscillations of 40.68 MHz or 27.12 MHz) during the acute period of FNN, recommended by many authors [3, 10, 11] is controversial because of the possibility of enhancing the proliferative processes of connective tissue elements surrounding the facial nerve and the danger of forming a "tunnel syndrome" with the subsequent development of contractures. Here it is necessary to mention the very important from a practical point of view the relationship between the diameter of the canal of the facial nerve and the nerve itself, which in some places (drum part) is 1.2-1.4 mm: 1.3-1.8 mm, which indicates that the nerve trunk passes in a very narrow bone receptacle [7].

According to our observations, the most effective in the acute period, starting from 2-3 days after the onset of the disease is laser therapy, mainly the infrared spectrum. Magnetolaser therapy from the MILTA apparatus with a frequency of 5-50 Hz and a wavelength of 900 nm is applied on the region of the stylophyllous aperture with a gradual increase in the frequency and time of exposure and along the branches of the facial nerve.

During first 14 days of the disease ultraviolet radiation is effective [1, 11]. It is applied every other day, on both sides of the face; dosage - 1-2 biodose, daily, 10 procedures. The variable magnetic field ("Polyus-1" apparatus) is applied to the projection of the mastoid process: a rectangular inductor is located in contact or with 3-5 mm gap, the magnetic field is sinusoidal, the mode is continuous, the magnetic induction is 20-28 mT, the duration of exposure is 15-20 min. The course of treatment is 10 procedures.

Blockade of cervical sympathetic nodes with diadynamic (DDC) or sinusoidal modulated (SMC) currents: the positive electrode is located in the region of the upper and middle cervical sympathetic ganglia (at the anterior margin of the sternocleidomastoid muscle) on the affected side, and the negative electrode on the opposite side. In the case of DDC, a full-wave continuous current is used, when using SMC, variable mode is recommended, one kind of work (constant modulation), modulation frequency-

100 Hz, modulation depth from 0-50%; the duration of the procedure is 3-5 minutes - 2 times a day, the course - 8-10 procedures. For the purpose of rapid and complete relief of tissue hypoxia, the application of hyperbaric oxygenation is expediently. When using the single-chamber "Oka-MT", the oxygen pressure is 100 kPa. The duration of the first procedure is 30 minutes, followed by 40 minutes. The course of treatment is 6-10 procedures.

A good effect is obtained by ultrasound or ultraphonophoresis hydrocortisone on the trunk of the facial nerve, the middle and lower branches. Influence on the upper branch of the facial nerve is not recommended. Technique is contact, labile. The intensity of ultrasound is 0.1-0.3 W / cm², the pulse mode. The duration of exposure is 8-10 minutes. The course of treatment up to 10 procedures.

Electroprocedures should be prescribed with great care, especially in the acute period, until the electrical excitability of the affected nerve is clarified.

Before the start of electrostimulation, it is necessary to conduct a classical electrodiagnostic to detect the electrical excitability of the nerve on the affected side, to exclude an increase in electrical excitability in comparison with a healthy side and to select individual parameters of the effect. The following types of current are used: direct current with manual interruption of duration; - pulsed current of rectangular shape (Leduc currents), duration 0.1-100 ms, frequency 0.5-160 imp • per sec. and duty cycle from 1: 2 to 1:10; - impulse currents of exponential form (currents of Lapik) with a duration of 1.6-60 msec and a frequency of 0.5-120 imp • sec; - pulsed currents of triangular form (tetanizing) with a pulse duration of 1-1.5 msec, a frequency of 100 impulses per second.

For this purpose, the following devices can be used: "Neuropulse", "Physiotron", "Amplipulse", "Stimul-2" etc. Conveniently, when the device is equipped with dielectric hand holders for each electrode and a button for interrupting the stimulating pulses, or a sliding bipolar holder.

The procedure should be performed by a doctor, taking into account the need for daily monitoring of the dynamics of the disease, the need for correction of the parameters of exposure and also for monitoring the possible appearance of synkinesis. This procedure allows you to approximate the timing of treatment, give a relative prognosis of the course and outcome of the disease and also determine the individual features of the topography of the facial nerve. Considering the accuracy during the procedure, a sufficiently long time spent individually beside the face of the patient - not all physiotherapists, even the experienced, own the technique of electrodiagnostics and electrical stimulation, despite the high efficiency of this procedure. According to our observations, the earlier the procedure of electrostimulation is started, the higher the result of treatment.

At less expressed paresis, a monopolar technique is used. At a more expressed paresis, the bipolar technique is used. Usually one electrode (anode) is installed between the external auditory meatus and the mastoid process, and the other (cathode) - depending on the stimulation of a specific muscle group: to stimulate the frontal muscle - into the region of the temple; the circular eye muscle - the inner corner of the orbit; muscles of the nose bridge - on the back of the nose; nasolabial folds and a nose wing - in the area of the upper lip; circular muscle of the mouth - in the corner of the mouth; muscles of the chin - on the chin.

As a rule, denervated muscles do not react to short electrical impulses; therefore, currents of 100 to 1000 msec are individually selected to stimulate them. The deeper the paresis, the more prolonged should be the impulse - 100, 200, 600msec. The pause between individual impulses should be 3-5 times longer than the impulse itself. The most universal is the rectangular shape of the impulse, the least painful is the trapezoid shape. During the reinnervation, the impulse duration is successively reduced.

It is necessary to watch that the irritated muscles do not show signs of fatigue, which are expressed in a decrease in the strength of muscle contraction. This means that there isn't enough time to restore muscle fiber activity, so pauses should be longer. It is desirable to limit individual sessions of 20-30-40 muscle contractions and repeat them several (5-6) times a day.

In the subacute period, calcium chloride, sodium salicylate, magnesium sulphate, potassium iodide, galantamine are used by the method of half-masks of Bergonier (electrophoresis). Proserine electrophoresis is also controversial due to the high sensitivity of the facial muscles to acetylcholine, which leads to the formation of local hypertonia and contractures of facial muscles.

After 20 days of the disease, electrophoresis is prescribed with the vitamins B group, salicylic acid, dibasol, glutamic acid, calcium chloride. In-the-ear techniques with KI 3% are also used. At this time, active heat therapy is possible - paraffin therapy, mud therapy. A good therapeutic effect is provided by hydrotherapy - sodium chloride or hydrogen sulphide baths.

With high electroexcitability of facial muscles, galvanic and impulse currents are not used, since the procedures performed increase the probability of appearance of hyperkinesis and synkinesis. At the

first sign of the contractures, all the stimulating types of physiotherapy must be canceled. In order to prevent contractures in the early period, there is a combination of SMC and ultrasound. If the contractures do appear, the most attention deserves the use of ultrasound therapy with hydrocortisone, "Contractubex" or "Fermencol", as well as a massage. Electrotherapy and active heat treatment should be canceled. Principles of kinesiotherapeutic rehabilitation for paresis of mimic muscles include treatment by position, therapeutic gymnastics and massage [15]. They are largely based on taking into account the interaction of the musculature of the intact and affected side of the face. It is known that most of the facial muscles of the right and left half of the face of a healthy person are simultaneously antagonists and synergists: the muscle groups of each side are pulled in their direction, and the action of the muscles of both sides provides the semantic symmetry of the face necessary in any emotional mimic situation.

Therapeutic exercises are mainly for the muscles of the healthy side: the dosed tension and relaxation of the individual muscles, the isolated tension (and relaxation) of the muscle groups that provide a certain facial expression (laughter, attention, sadness, etc.) or actively participate in the articulation of some labial sounds (n, b, m, c, w, v, o). The gymnastic session lasts 10-12 minutes and is repeated 2 times during the day.

Long-term experience of observation and treatment of patients with FNN allows to make a conclusion about the high efficiency of physiotherapy included in complex treatment provided that individual selection of physical factors, accurate dosing of intensity and careful dynamic observation.

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Реферати

НАШ ДОСВІД У РЕАБІЛІТАЦІЇ ХВОРИХ НА НЕЙРОПАТІЇ ЛИЦЬОВОГО НЕРВУ З ВИКОРИСТАННЯМ МЕТОДІВ ФІЗИОТЕРАПІЇ. Верещакина В. В.

У статті наведено огляд наукової літератури та власних спостережень фізіотерапевтичного лікування пацієнтів з нейропатією лицьового нерву базованого на основі 20-річного досвіду. Було оцінено ефективність лікування нейропатії лицьового нерву за допомогою різних методів фізіотерапії. Включення фізіотерапії в комплекс лікування нейропатії лицьового нерву суттєво підвищує ефективність та скорочує терміни лікування.

Ключові слова: нейропатія лицьового нерву, реабілітація, фізіотерапія.

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НАШ ОПЫТ В РЕАБИЛИТАЦИИ ПАЦИЕНТОВ С НЕЙРОПАТИЕЙ ЛИЦЕВОГО НЕРВА С ИСПОЛЬЗОВАНИЕМ МЕТОДОВ ФИЗИОТЕРАПИИ Верещакина В. В.

В статье представлен обзор литературы и результаты собственных наблюдений на основании 20-летнего опыта. Была оценена эффективность лечения нейропатии лицевого нерва при помощи различных методов физиотерапии. Включение физиотерапии в комплекс лечения нейропатии лицевого нерва существенно повышает эффективность и сокращает сроки лечения.

Ключевые слова: нейропатия лицевого нерва, реабилитация, физиотерапия.