

# Opportunities Of Acupuncture In Treatment Of Facial Nerve Neuropathy

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*Neuropathy of facial nerve (NFN) is actual problem in neurology, which is determined by the frequency of complications and the lack of a sufficiently effective treatment. In this research there are developed optimal methods of rehabilitation therapy of peripheral neuropathy of the facial nerve using acupuncture, therapeutic exercises, taking into account the peculiarities of clinical and functional changes depending on the timing of the disease. 64 outpatient records of patients (n = 64) aged from 16 to 60 years with a lesion of the facial nerve were analyzed. Patients were divided into two groups. The main group consisted of 34 patients who received acupuncture with electrostimulation together with pharmacotherapy. The control group included 30 patients who used pharmacotherapy. The use of A-IRT and ES together with pharmacotherapy made it more effective in restoring facial nerve neuropathy and its complications than using these methods separately from each other. Early use of these techniques in patients at the onset of the disease may be the cause of complete rejection of glucocorticoid, hormonal therapy, which makes it possible to optimize the rehabilitation of the facial nerve lesion based on the restoration of functions of the affected facial muscles.*

**Keywords:** *acupuncture, electrostimulation, facial nerve neuropathy, pharmacotherapy, rehabilitation, dysfunction*

**Urgency.** Diseases of the peripheral nervous system (PNS) are a significant medical and social problem due to its widespread prevalence, lack of age selection, the formation of complicated forms of the disease and the frequent occurrence of comorbid pathology [3,9], and the lack of a sufficiently effective method of therapy [4]. Among PNS diseases, paresis of the facial muscles due to neuropathy of facial nerve (NFN) in adults takes first place with respect to lesions of other cranial nerves [6]. Physiological symmetry of the face and the integrity of the functioning of the facial muscles are a necessary unit for the correct expression of emotions and communication in society.

The dysfunction of these muscles not only leads to asymmetry of the face and cosmetic defect, not differentiating either gender or age characteristics of patients, but also to a sharp decrease in the quality of their life.

Considering the extensive and diverse clinical manifestations of NFN, timely therapy often requires a multidisciplinary approach [7].

The prevalence of neuropathy of the facial nerve is 20–45 cases per 100,000 population [4] at the age of 15–60 years [5,8] in equal proportion among men and women. According to Hollandetal., 2004, in 1 out of 60 people, there is an NFN throughout life [2]. DeDiego-SastreJI and others. Based on their research, concluded that quite often 4–6 months after the development of prozoparez in the post-paralytic period contractures of mimic muscles develop; pathological synkinesis (involuntary muscle activity during an arbitrary contraction of functioning distant muscles);spontaneous muscle twitching; hemifacial sweating; lacrimation; drooling, etc. [6]. Such a variety of synkinesis in severe cases leads to a massive contraction of muscles on one side of the face, with the development of persistent, difficult to

treat hemispasm, which causes a cosmetic facial defect for life, predetermining the psychopathological condition of patients. According to other authors [7], hypothermia, increased blood pressure, inflammatory diseases of the ear and throat, as well as a common cause of nerve damage in dental practice is the anesthesia of the inferior alveolar nerve [5]. During this study, the main causes contributing to the pathology of the facial nerve, such as inflammation, trauma, compression of the nerve root, were identified. The clinical picture of the lesion of the facial nerve is well known and depends on the level of damage, as well as the degree of conduction disturbance.

The leading symptom of facial nerve damage, in 80% of cases, is weakness of the facial muscles (Bell's palsy) of the corresponding half of the face [10]. The prognosis of the disease is favorable, however, restoration of the function of the facial nerve occurs in 40-60% of cases, and therefore the search continues for effective treatment regimens for the facial nerve neuropathy [9].

The use of traditional methods of treatment, despite the considerable arsenal of drugs and methods of physiotherapy, does not always give a positive result and various complications develop (contractures of mimic muscles, synkinesis). They also determine the need to develop new and modernize the known methods of pathogenetic therapy. Rehabilitation measures should include a consistent treatment program, taking into account the stage, duration of the disease, the severity of clinical manifestations, and be aimed at preventing the development of facial contractures.

Acupuncture (A), which has a minimum of contraindications and has no side effects, is an effectively recognized method of treating facial neuropathy. Acupuncture consists in exposing the organism to various strengths, intensities, and durations of stimuli applied to specific point areas located in the skin surface of the head, face, torso, and extremities through special acupuncture needles. Currently, the combination of Acupuncture with electrostimulation (ES) is widely used in clinical practice. The application of this method allows to compensate the functional deficit of intrasegmental reflex impulses, improves trophism and increases the power of muscle contractions, the activity of the neuromuscular spindles, and also activates microcirculation and metabolism in the muscle tissue and trunks of peripheral nerves.

**Purpose** of this study was to study the effect of non-traditional therapies (Acupuncture and ES) on the motor function of the mimic muscles in the NFN nerve at different stages of its development and to develop optimal methods for the rehabilitation of protoparesis.

## 2. MATERIALS AND METHODS OF RESEARCH.

Analyzed 64 (100%) outpatient cards of patients (n = 64) aged 16 to 60 years with a lesion of the facial nerve who were treated in a private clinic "Fiziomedplyus" Bukhara city, in the period from 2017 to 2018, the average age of patients was 35.8 years. The number of adolescents aged 14–16 years was 13 (20.3 ± 5.0%) of the patient (mean age 15.0 years), women from 22 to 55 years were 27 (42.2 ± 6.2%), the average whose age was 39.5 years, men from 24 to 60 years old amounted to 24 (37.5 ± 6.0%), whose average age was 42.8 years. The disease duration ranged from 5 days to 1 year. Patient diagnosis included anamnesis, clinical neurological data, and magnetic resonance imaging of the brain (to exclude organic pathology of the central nervous system). The patients were divided into two groups: primary (1-group) and control (2-group). The main group consisted of 34 (53.1 ± 6.2%) patients who were treated with Acupuncture and ES together with pharmacotherapy. The control group included 30 (46.8 ± 6.2%) patients who received exclusively pharmacotherapy without the traditional methods of the proposed therapy. Acupuncture with ES was performed using the apparatus KWD-8081. Acupuncture provides three basic

principles: 1) impact on the healthy half of the face in order to relax the muscles and thereby reduce the over-stretching of the muscles of the sick half of the face; 2) simultaneous impact on 1–2 distant points, which have a normalizing effect on the muscles of both the patient and the healthy side; 3) the impact on the sick half of the face, for the exciting effect.

For Acupuncture, local points of the meridian of the stomach E2 (sy-bai) - level of the infraorbital orifice, E3 (ju-liao) on the same vertical line with point E2 - nasolabial fold, E4 (di-qan) - outward from the corner of the mouth on 1 cm, E6 (jia-che) - anteriorly and upward from the angle of the lower jaw by 1 - 1.2 cm; Bladder meridian V1 (qing-min) – inside from the inner corner of the eye by 0.3 cm, V2 (quan-zhu) - above the point of qing-min, corresponds to the beginning of the eyebrow; the gallbladder meridian VB1 (tong-ji-liao) - 0.6 cm outward from the outer corner of the eye, VB12 (vang-gu) at the posterior edge of the mastoid 1.2 cm upwards from the border of the scalp, VB14 (yang-bai) above the pupil, above the eyebrow 1 qung.

The remote ones include potentiating acupuncture points: the stomach meridian E36 (ju-san-li) to the outside of the tibial scallop 0.3 cm; colon meridian GI 4 (he-gu) between I and II metacarpal bones, closer to the radial edge of the II metacarpal bone, GI 11 (qui-chi) at the outer edge of the elbow bend, in the middle of the distance between the elbow fold and the external condyle when the elbow joint is bent.

Acupuncture method was carried out according to the principle of the painful side - the exciting, healthy side - the inhibitory side for 10-20 minutes. Also, in both groups, the rehabilitation program included a differentiated therapeutic gymnastics, taking into account the characteristics of clinical and functional changes: facial massage; exercises for mimic muscles and articulation gymnastics with pronouncing sounds, words and tongue twisters under objective control in front of a mirror;

Course of Acupuncture was 12 sessions. The number of courses conducted was selected for each patient individually, based on the severity of the facial nerve. Patients in the main group with IV degree of facial nerve dysfunction received 1 course of acupuncture; with V and VI degree - 1 - 2 courses. Pharmacotherapy was performed on both groups from the onset of the disease, it included protraction, NSAIDs, vitamin therapy, pyrimidine nucleotides - cytidine-5-monophosphate (CMP) and uridine-5-triphosphate (UTP) 1 capsule 2 times a day for 20 days. The nucleus CMP (cytidine-5-monophosphate (CMP) and uridine-5-triphosphate (UTP)) is a necessary component of the myelin sheath of nerve cells, which provides for the regeneration of axons and the myelin sheath. Both nucleotides - CMP and UTP, which are integral parts of the drug Nucleo CMP, play a crucial role in the restoration of a number of the main morphological elements of the nervous system (NS). CMP is involved in the synthesis of complex lipids - components of the neuronal cell membranes, in particular, sphingomyelin, the main component of the myelin sheath, and is also a precursor of nucleic acids (DNA and RNA) involved in cellular metabolism and protein synthesis. UTP acts as a coenzyme in the synthesis of glycolipids of neural structures and the myelin sheath, complementing the effect of CMP.

Thus, the combination of CMP and UTP contributes to the regeneration of the myelin sheath, the restoration of a commensurate impulse conduction and the restoration of muscle trophism.

### 3. RESULTS AND DISCUSSION.

According to the results of the study, a lesion of the facial nerve in the bone canal below the discharge of the tympanic string and / or after leaving the stylo-mastoid opening was found in 33 (51.5 ± 6.0%) patients. Nerve damage in the bone canal below the staped nerve discharge and above the tympanic cord in 21 (32.8 ± 5.8%) patients, nerve damage in the

bone canal below the large stony nerve discharge in 8 ( $12.5 \pm 4.1\%$ ) patients ; lesion of the nerve trunk in the facial canal before the formation of the knee - in 2 ( $3.1 \pm 2.2\%$ ) diagnosed. From this it follows that the greatest number of lesions of the facial nerve, by the localization of the process, is diverted to the place of discharge of the tympanic string and / or after leaving the stylo-mastoid opening. It is necessary to pay attention to the fact that 12 ( $18.7 \pm 4.8\%$ ) patients turned on the fifth-sixth day of the disease after hypothermia; 19 ( $29.7 \pm 5.7\%$ ) 12 days after the onset of the disease with hypertension, 21 ( $32.8 \pm 5.8\%$ ) after 30 days, after prolonged hormonal treatment, 12 ( $18.7 \pm 4, 9\%$ ) from 6 to 12 months after receiving outpatient treatment.

In accordance with the degree of dysfunction of the facial nerve on the House-Braackman scale, the patients were divided into three groups: Group 1 patients with IV degree of facial nerve dysfunction 12 ( $18.8 \pm 4.9\%$ ) (2 ( $16.6 \pm 1.7\%$ ) adolescents, 5 ( $41.6 \pm 2.3\%$ ) men and 5 ( $41.6 \pm 2.3\%$ ) women); Group 2 with the V degree - 22 ( $34.4 \pm 5.9\%$ ) (8 ( $36.3 \pm 2.3\%$ ) adolescents, 7 ( $31.8 \pm 2.2\%$ ) men and 7 ( $31.8 \pm 2.2\%$ ) women); Group 3 with grade II - 30 ( $46.9 \pm 6.2\%$ ) patients (3 ( $10 \pm 1.4\%$ ) adolescents, 12 ( $40 \pm 2.3\%$ ) men and 15 ( $50 \pm 2.3\%$ ) women). According to the House-Braakman scale from 1 to 3, degree of dysfunction of the facial nerve corresponded to milder degrees of damage, and therefore it was not considered necessary to compare patients with these degrees of changes in the facial nerve pathology (Table 1).

Table 1 Ratio of severity of neuropathy of facial nerve according to gender and age (%)

Groups	Degree of severity by the House Braakman scale	Teenagers (14 – 16years) (n=13)	Men (>16 year) (n=24)	Women (>16year) (n=27)
1 <sup>st</sup> group	4 <sup>th</sup> degree	15,3±4,5	20,8±5,1	18,5±4,8
2 <sup>nd</sup> group	5 <sup>th</sup> degree	61,5±6,1	29,1±5,6	25,9±5,5
3 <sup>rd</sup> group	6 <sup>th</sup> degree	23,1±5,3	50,0±6,2	55,5±6,2

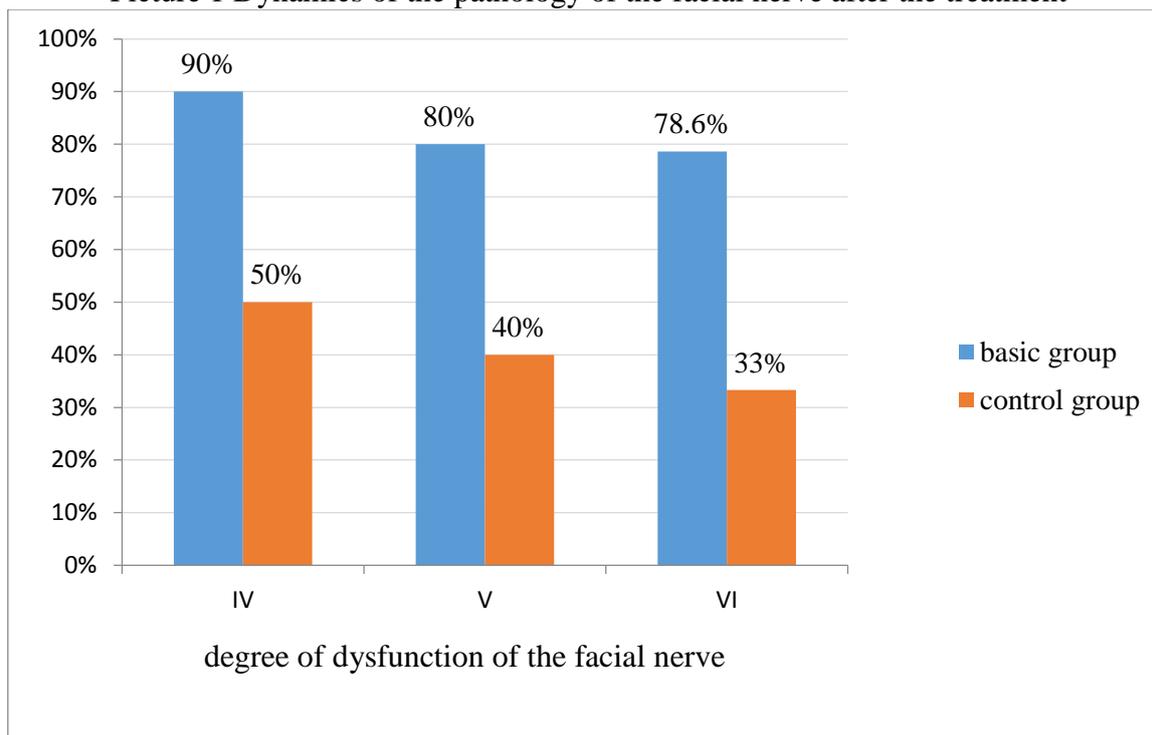
The examined patients of the main and control groups were distributed according to the severity of the facial nerve dysfunction. The main group consisted of patients with 4<sup>th</sup> degree of facial nerve dysfunction 10 ( $29.4 \pm 2.1\%$ ), with 5<sup>th</sup> degree 10 ( $29.4 \pm 2.1\%$ ) and 6<sup>th</sup> degree 14 ( $41.2 \pm 2.3\%$ ) examined patients. The control group included 8 ( $26.7 \pm 2.1\%$ ) 4<sup>th</sup> degree, 10 ( $33.3 \pm 2.2\%$ ) 5<sup>th</sup> degree and 12 ( $40.0 \pm 2.3\%$ ) patients with 6<sup>th</sup> degree of the facial nerve dysfunction (table 2).

Table 2 Distribution of patients according to severity of the main and control groups

Degree of severity by the House Braakman scale	Main group (n=34)	Control group (n=30)
4 <sup>th</sup> degree	29,4±5,7	26,7±5,5
5 <sup>th</sup> degree	29,4±5,7	33,3±5,9
6 <sup>th</sup> degree	41,2±6,1	40,0±6,1

According to the observation of patients with dysfunction of the facial nerve on the House-Braakman scale, the clinical picture in the main group with 4<sup>th</sup> degree complete recovery was observed in 9 (90.0 ± 3.7%) patients after one course of acupuncture for 12 days. In the control group, recovery was noted in 4 (50 ± 6.2%) patients. In patients with V degree of facial nerve dysfunction in the main group, clinical recovery was detected in 8 (80 ± 5.0%) patients, whereas in the control group this change was observed in 4 (40 ± 6.1%) cases. With the 6<sup>th</sup> degree of facial nerve dysfunction, complete recovery was observed in 11 (78.6 ± 5.1%) patients in the main group, and in the control group this change was detected in 4 (33.3 ± 5.9%) cases (Picture 1).

Picture 1 Dynamics of the pathology of the facial nerve after the treatment



Thus, the use of Acupuncture and ES along with pharmacotherapy makes it more effective in restoring the neuropathy of the facial nerve and its complications, rather than using these methods separately from each other. Early use of these techniques in patients at the onset of the disease may be the reason for the complete rejection of glucocorticoid and hormonal therapy, which makes it possible to optimize the rehabilitation of the facial nerve lesion based on the restoration of functions of the affected facial muscles.

With a small prescription of neuropathy of the facial nerve, it was enough to have one course of Acupuncture with ES, which led to the rapid restoration of the lost functions of facial muscles. With a longer tightening (up to 3 months) of the disease with 5<sup>th</sup>-6<sup>th</sup> degrees of facial nerve dysfunction (according to House-Braakman), i.e. severe damage, the amount of course of Acupuncture with ES can increase up to 2-3 times to restore the function of the facial nerve, which has absolutely no contraindications.

Summarizing the above, the **conclusions** are:

1) The use of Acupuncture with ES along with pharmacotherapy in the early stages of the disease is an effective method for restoring the functions of the facial muscles, replacing hormone therapy for neuropathy of the facial nerve;

2) Early use of Acupuncture with ES along with pharmacotherapy in the treatment of facial nerve neuropathy can become the main method for the prevention of its complications;

3) Complex use of Acupuncture with ES with pharmacotherapy can be proposed for the rehabilitation of severe and persistent complications in case of facial nerve neuropathy.

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