



Effect of Treatment Methods for Chronic Stress Headaches on Electroencephalographic Parameters

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Abstract: The article comparatively studies the effect of chronic stress headaches on electroencephalographic parameters when combined with traditional methods and traditional methods of hirudotherapy.

Key words: Chronic stress headache, hirudotherapy, amitriptyline, electroencephalography, alpha rhythm.

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The availability of complete information about the disease, knowledge of the mechanisms of the pathological process, the mechanisms of its transition to chronic forms allow to treat it. The pathogenetic mechanism of chronic stress headaches (CTH) is still being studied and has been the subject of much discussion in scientific councils.

Tension headaches are the most common form of primary headache, with cephalic episodes lasting from a few minutes to several days [10, 11].

CTH is one of the most pressing problems of modern medicine. According to the World Health Organization, CTH is the most common neurological disease, affecting more than 1.5 billion people worldwide, and headache is the third leading cause of disability [10]. According to scientific sources, 85% of the population with this pathology experience periodic headaches, 40% of them experience a decrease in social and labor activity, which requires qualified medical care [9].

A study of middle-aged people found that episodic tension headaches (ETHs) occurred in 18% of those surveyed. In another study, the author found that one-third of the population aged 30-39 years had tension headaches (THs) in various studies (M.Y. Maksimova, 2016). According to the World Health Organization, three-quarters of the population aged 18 to 65 have had a headache at least once in the past year, and chronic stress headaches occur in an average of 2-3% of the population. It is 3 times more common in women than in men [1, 2, 9]. Despite the prevalence of cephalgia, TH is diagnosed in only 1% of cases at the first visit to the doctor. In 70% of cases, CTH develops after the previous ETH.

Episodic forms of TH are not a major medical or social problem, while CTH is associated with a variety of comorbid disorders (depression, sleep disorders, somatoform disorders) that significantly impair the patient's daily life and quality of life brings out.

Unlike migraine, TH is not paroxysmal. TH can be started at any age. Headaches usually begin between the ages of 30 and 40, and in contrast to migraines, bilateral pain is observed [11]. When the

pain is severe, a decrease in appetite is observed up to anorexia, which is considered by patients to be nausea. TH is often associated with other chronic pain conditions - cardialgia, abdominal pain, lumbar pain [10]. Pain in the upper and nape of the neck is common in CTH. Headaches are assessed according to the criteria given in the International Classification 3 view. TH is divided into episodic (less than 15 days per month, not more than 180 days per year) and chronic (more than 15 days per month for 6 months) types. There are fast and slow episodic types according to the 3rd International Classification of Headaches. Each of these can occur with and without pericranial muscle tension. The duration of pain varies from 30-40 minutes in the episodic round to 7-15 days, and in the chronic round for at least 15 days a month.

The EEG was performed on a 16-channel electroencephalography device from Microsoft (Russia). The EEG was recorded using plate electrodes placed according to the international system "10-20". For the activation of pathological manifestations, changes in the background of the EEG do not testify to the localization of the process or do not provide accurate information, and are examined using functional loads such as photostimulation and hyperventilation. Primary headache EEG findings do not show epileptiform symptoms and local changes. Mild abnormalities (alpha rhythm disorganization, decreased beta rhythm, slow wave activity, increased slow wave activity in hyperventilation, exacerbation of alpha and beta activity) are observed in patients with TH. EEG in TH is observed in synchronous type asthenic disorders and vagotonia, desynchronous type EEG in high levels of panic and obvious cardiovascular syndrome, disorganized EEG polymorphic vegetative disorders, vagotonia and obvious asthenia, is also necessary to determine.

Methods of treatment.

We took 117 patients as the object of study. By age of patients (WHO 2017 classification): 21 men aged 18-44, 59 women, 9 men and 28 women aged 45-59.

Patients were divided into 2 groups: 1 group of patients was treated with traditional methods. The European standard for the treatment of headaches has been adopted as a method of treatment, the standards adopted by Russian cephalogologists in 2021.

Group 1 patients received traditional treatment. As a traditional treatment, we gave amitriptyline 25 mg in the evening at the beginning, 12.5 mg in the morning and 25 mg in the evening, gradually increasing the dose over 3 days, increasing the dose every 3 to 4 days and giving 12.5 mg in the afternoon and 37.5 mg in the evening. Amitriptyline is the drug of choice for the prevention of chronic tension headaches and is the only group an antidepressant that has been shown to be effective and has analgesic effects with increasing doses. This is due to its effect on the trigeminal nerve. We know that the 3-horned nerve is one of the pathogenetic mechanisms of CTH.

Patients with pericranial muscle tension were given tolperisone (midocalm) 150 mg 3 times per tablet. The initial dose was 150 mg, and within 4 to 5 days the dose was increased to 450 mg. This drug has been used because of its multi-component effects on headache components and its ability to be used in combination with other drugs.

Ibuprofen 400 mg, a nonsteroidal anti-inflammatory drug, was used for pain attacks.

Methodological approach to the use of hirudotherapy. The temperature of the room where hirudotherapy is applied should be + 22 to + 25C. The place where the leech was placed was wiped with a piece of bandage soaked in warm water. We used hirudotherapy aspiration, ie *Hirudo medicinalis* was applied until it was completely filled with blood (20 to 40 minutes). After treatment, an aseptic bandage was applied to the wound. The day after the treatment, the length was changed and the wound was treated with an alcoholic solution of 5% iodine. The leech was used only once and was destroyed after use. We performed hirudotherapy in 3 stages.

Phase 1. For pain in the neck area, we used the points of the bladder and small intestinal meridian: V60-kun -lun, IG-3hou- si, VB-20-fan-chi. Gastric and colonic meridians in forehead pain: Ye8 tou vay, VG23 shan-sin, PC3 in-tan. Gallbladder point VB8 shuay-gu was used for pain in the temporal region, and VG20 bay xuey was used for pain in the upper area. A total of 6-8 medical zulu were used.

The second stage (day 4). We placed 6 medical zulu at the following points: T (XIII) 14 (da-chjuy), RS (VM) 9 (tay-yan), TR (X) 18 (tsi-may), V (VII) 10 (tyan-chju), VB (XI) 21 (tszyan-tszin), V (VII) 41 (fu-fen).

The third stage (day 6). We placed 6 leeches at the following points: V (VII) 10, VB (XI) 21, VB (XI) 20, T (XIII) 14 (da-chjuy), RS (VM) 9 (tai-yan), TR (X) 18 (tsi-may).

Results and analysis: Prior to treatment, EEG examinations revealed mild to moderate changes in brain bioelectrical activity. Epileptic symptoms (spike, polyspike, peak, polyp, acute slow-wave) were not detected in CTH patients. EEG examinations of CTH patients and control group patients revealed the following differences. Alpha rhythm was dominant in control group patients compared to CTH patients. Alpha rhythm instability (mean frequency observed only 59%): alpha rhythm frequency was 8-9 Gts in 24% of patients with CTH and 10% in patients in the control group. Alpha rhythm frequencies above 11Gts were observed in 13% of patients with CTH. Alpha rhythm instability was observed in patients with CTH (we saw its spontaneous reduction in 59%), and the alpha rhythm form was more acute than in healthy people (76%).

Beta-rhythm clarity was less pronounced in CTH patients than in healthy individuals (84%), bilateral synchronous beta rhythm was more common (76%, of which 72% were in the anterior projection of the cerebral cortex), and delta wave (22%, 10% of which were diffuse and bilateral synchronous). Observed in 12% of cases). Potentials in the individual acute alpha and beta ranges were 48% higher in SZBO patients (20% in the control group).

Results of EEG examination before and after treatment in patients with CTH

	Traditional		Traditional treatment + after girudotherapy №16%		Control Group, N20%
	Until treatment,	N16% After treatment,	Until treatment,	N16% After treatment,	
Dominant alpha rhythm	71	100	87.5	100	100
Alpha rhythm frequency 10-11Gts	60	71	37.5	50	91
Alpha rhythm exaltation	51	35	52	31	10
Alpha rhythm instability	59	42	75	62.5	19
Sharpened alpha rhythm	76	62.5	75	62.5	41
A well-expressed beta rhythm	85	100	75	100	100
B / s theta activity	75	70	100	75	20
Delta rhythm	19	-	25	-	-
GV: b / s slow wave activity	40	15	75	25	-

P<0.05

Before diffuse EEG treatment, general diffuse changes were observed, signs of alpha rhythm disorganization, decreased beta rhythm clarity, bilateral synchronous theta activity, and diffuse delta waves were detected. EEG patterns changed with hyperventilation, and bilateral synchronous slow-wave activity was observed.

A comparative comparison showed that traditional and conventional + girudotherapy treatments lead to stagnation of the bioelectrical activity of the cerebral cortex. After both courses of treatment, the

alpha rhythm predominated, with an average frequency of 50% to 12-13 GHz and 37.5%. Alpha and beta rhythm exaltation decreased. In most cases, the alpha rhythm is unstable and sharp. Increased beta activity (100% definite diffuse beta rhythm), decreased bilateral synchronous theta activity (75%), delta rhythm lost, changes in GV response types, decreased bilateral synchronous theta activity accuracy (75%), loss of delta waves, In GV, bilateral synchronous slow waves are reliably reduced (25%), and alpha activity is distributed in the frontal projection (75%).

After the treatment, there were positive changes: alpha and beta activity stabilized, low-frequency rhythms (theta and delta) decreased. Improved brain bioelectrical activity In GV, bilateral synchronous slow-wave activity was 75% before treatment, while alpha rhythm synchronized in anterior projections after treatment.

Conclusions: Epileptic symptoms and local changes in the EEG of CTH patients were not detected. An increase in theta rhythms of the forehead was found to be higher in patients with CTH than in healthy individuals. Changes in the forehead are associated with disease duration, mental disorders, pericranial muscle tension, and drug abuse. Application of hirudotherapy to acupuncture points has led to a slowing of rhythms and an increase in alpha rhythm clarity, which may be a criterion for evaluating the effectiveness of therapy.

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