

Transcranial Electrical Stimulation of the Protective Mechanisms of the Brain (TES Therapy)

NADCELL  MINDCARE

TES Therapy

TES activates areas of the brain that stimulate the production of endorphins and serotonin, and has been shown to significantly improve a wide range of issues including:

- Drug & Alcohol cravings
- Anxiety
- Depression
- Dementia
- CFS
- PTSD
- Mental clarity
- Long COVID
- Concentration
- Liver function
- Diabetes
- Gastroesophageal reflux disease

Transcranial Electrical Stimulation



Better still, a course of TES treatments will support your brain to re-learn how to make these feel good chemicals for itself, bringing your body back into balance for long term mental and physical health.

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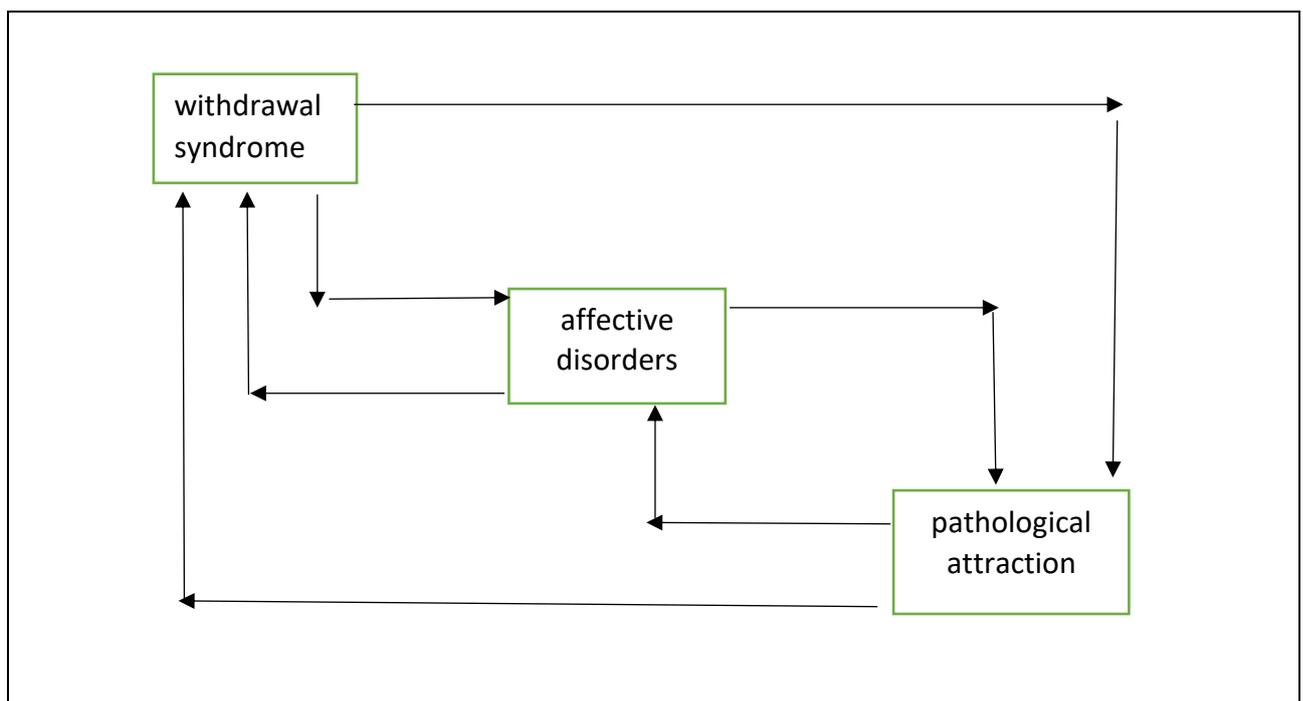


INTRODUCTION

Development of addiction to alcohol and illicit substances is associated with functional and structural disorders in a number of formations of the central nervous system. The main discussion is about the stem and limbic structures of the brain where the system of positive reinforcement and brain structures that form its protective (endorphinergic) mechanisms are located. It is apparent that there are close functional (neurotransmitter and neuromodulatory) relationships between these structures.

Alcohol and drugs penetrate the nervous tissue where they either evenly interact with the membranes of neurons disrupting their structure and function or bind with neuronal receptors which results in disorganization of both the receptors themselves and the afferent streams. The function of neurons is impaired, as well as the production and metabolism of various substances (hormones, neurotransmitters, neuromodulators), such as endogenous opioid peptides, Catecholamines (including Dopamine), Serotonin, GABA. Production at times can be fully suppressed. Thus, a vicious circle develops which is actually the syndrome of dependence on alcohol or drugs

Table 1: The correlation of the main syndromes of alcoholism and drug addiction:



Traditionally, in order to treat alcoholism and drug addiction, doctors use the entire arsenal of existing psychotropic drugs (tranquilizers, antipsychotics, antidepressants, anticonvulsants, etc.) which have quite pronounced side effects and increase pressure on the already affected liver.

Alternative methods such as hemosorption, hyperbaric oxygenation, acupuncture, etc., are also used. However, this therapy is not very effective and there is a lot of work involved. The search for pathogenic agents and methods that would consider the systemic nature of this pathology remains extremely relevant and is on-going.

One of the modern effective pathogenetic methods of treating alcoholism and drug addiction is considered to be Transcranial Electrical Stimulation of the Protective Mechanisms of the Brain (TES therapy)

It is a well-known that TES therapy selectively increases the production of endogenous opioid peptides, primarily endorphins, and due to this normalises the emotional status, mood, motivational sphere, regulates behaviour and social adaptation.

In addition, TES therapy effectively relieves pain syndromes, stimulates reparative processes in the body, restores immune system, normalises blood pressure, and more. Thus, TES therapy has a complex and systemic homeostatic orientation.

Due to the absence of side effects, a small number of contraindications and high efficiency TES therapy is favoured over traditional drug therapy (analgesics, antidepressants and others). Nowadays the use of TES therapy in the treatment of alcohol and drug abuse has become widely accepted and a number of studies, MD and PHD dissertations and numerous publications are devoted to this topic.

Transcranial Electrical Stimulation of the Protective Mechanisms of the Brain (TES therapy)

One of the effects of the TES therapy is the normalization of the psychophysiological status which reduces causes of alcoholism and drug addiction and promotes social adaptation. When treating the existing conditions, TES therapy improves mood and sleep pattern, eliminates anxiety and pathological cravings and dependence on psychoactive substances decrease. The effectiveness of TES therapy in the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents is high and is considered by specialists as the prevention of the potential development of alcoholism and drug addiction in them.

TES Therapy:

- relieves any painful syndromes without any medication, including those associated with withdrawal conditions, and prevents the development of analgesic dependence.
- accelerates the healing of the gastric mucosa and duodenal ulcer in ulcerative lesions, often caused by excessive alcohol consumption.
- eliminates fatty degeneration of the liver and stimulates reparative regeneration of hepatocytes without the formation of cirrhosis
- prevents fatty degeneration of the liver.
- restores the synthetic and detoxification functions of liver
- protective effect against cancer
- normalizes blood pressure, usually prevalent in alcoholics and drug addicts and stimulates the immune system.

It should be emphasized that all the effects of TES therapy have a homeostatic focus and systemic character.

This is the reason why TES therapy is increasingly used in the treatment of alcohol and drug abuse for the relief of alcoholic and illicit drugs withdrawal conditions and post-withdrawal syndromes, correction of affective disorders in addictive patients in remission, reduction of pathological craving for alcohol and drugs, restoration of liver function, treatment of alcoholic visceropathy and intercurrent diseases.

TES Therapy for the Relief of Alcohol Withdrawal State (AWS).

With alcohol withdrawal state, pronounced disturbances in the exchange of neurotransmitters are observed: biogenic monoamines and endogenous opioid peptides.

The use of TEC therapy significantly reduces the intensity of withdrawal symptoms. After 1-2 procedures, the state of health evidently improves and the severity of somatoneurological disorders decreases. Symptoms of apathy, asthenia are stopped, mood and appetite increase. Headaches, shivering and tremors disappear, sleep is normalized. Disorders of coordination are stopped (stability of the Romberg position, finger-nose test), horizontal nystagmus disappears. An increase in positive dynamics is noted with every procedure. Blood pressure is stabilized, the pulse is levelled. Patients notice a distinct decrease in craving for alcohol and relief of thirst and dry mouth.

Biochemical examination reveals that by the 5th day of TES therapy, there is a significant decrease in the levels of dopamine and serotonin in the blood plasma. The concentration of MAO type A (blood plasma) and type B (platelets), significantly reduced with alcohol withdrawal state (before the start of TES therapy), reaches more or less normal levels.

The level of endorphin in blood plasma, significantly reduced in all research participants with alcohol withdrawal state before treatment, rises to the norm and even exceeds it after the first procedures, and by the end of the course of TES therapy it remains at this level.

What's more, in acute stage of withdrawal symptoms (1st day of treatment), 30-60 minutes after the procedure there is a decrease in most alcohol withdrawal state symptoms by 50% or more, and almost complete relief of moderate severity alcohol withdrawal state occurs in 2-3 days.

The effectiveness of TES therapy is more efficient and more beneficial than widely preferred conventional drug therapy.

TES Therapy for the Treatment of Affective Disorders in Patients with Alcoholism in Remission

Anxiety and depressive symptoms are typical in patients during remission period. These disorders may precede and contribute to the development of alcoholism. High level of anxiety and agitation in patients in remission period were noted, however, depressive symptoms were less pronounced.

Tranquilizers and antidepressants are most commonly used to treat anxiety and depression in patients with alcoholism in remission. However, the use of Benzodiazepines often leads to drug dependence, craving for alcohol and the effect of post stress adaptation may decrease. The use of antidepressants can have detrimental effect on the internal organs (liver, cardiovascular system, central nervous system, etc.) which are already damaged by chronic alcohol misuse. It is extremely dangerous to take alcohol while on antidepressants. The positive effect of TES therapy in alcohol withdrawal state was the reason why TES therapy was used in remission period.

During clinical trials, it was established that after the first 2 procedures (in contrast to the use of TES therapy for AWS), there is a slight positive trend (Spielberger test, Taylor anxiety scale, Zung depression scale, etc.). However, after 10 TES therapy procedures, the severity of depressive symptoms and anxiety was significantly less than in the control group. Continuing with TES therapy up to 20 procedures led to even more pronounced improvement. After a month of treatment, the test indicators were more or less the same as the average norm for healthy people. Patients became calm, balanced and cheerful. There was an increase in activity, good mood, good sleep, patient felt rested. The use of TES therapy was easily tolerated by patients, and the procedures were well received by the patients.

Research has shown a high degree of correlation between positive clinical dynamics and the normalization of biochemical parameters. As a result of TES therapy, the concentration of GABA in the blood and the activity of MAO type B significantly increased. However, a decrease in these markers is a manifestations of heavy alcohol misuse. On EEG there was a decrease in the rigidity of excitation processes in the central nervous system and an increase in the functional activity of the systems for generating the α -rhythm (a decrease in the latent period of the appearance of the α -rhythm after closing the eyes), which also indicates a reduction in affective disorders due to TES therapy.

To conclude, TES therapy is effective in case of affective disorders both preceding the development of alcoholism and those developed during the period of remission.

TES therapy for the relief of pathological craving for alcohol (PCA)

Pathological craving for alcohol, which occurs in a sober state and outside the alcohol withdrawal state framework, dominates in order to eliminate mental or somatovegetative discomfort or to achieve a euphoric effect.

The most common treatment for pathological craving for alcohol is medication. To stop it, all known groups of psychotropic drugs are used: neuroleptics, antidepressants, tranquilizers, anticonvulsants, nootropics, etc. In recent years, the use of biologically active food additives BAA has increased. Some non-pharmacological methods are also used, such as acupuncture and physiotherapy. This proves the insufficient effectiveness of pathological craving for alcohol treatment and the absence of a proven specific pathogenetic therapy.

It is known that the leading role in the pathogenesis of pathological craving for alcohol is played by dysregulation in catecholamine neuromodulation, which are closely associated with a functional deficiency of endogenous opioid neuropeptides. Studying the possible effectiveness of TES therapy for the relief of pathological craving for alcohol actualization states seemed promising.

It was established that after the first procedure of TES-therapy there was more than a 2-fold decrease in the intensity of pathological craving for alcohol (according to the objective scale of assessment of the State Scientific Center of Narcology of the Ministry of Health of the Russian Federation and the subjective scale of self-assessment of PCA). Patients noted a significant decrease in the severity of signs of the state of pathological craving for alcohol actualization somatovegetative and behavioral manifestations

During all subsequent days of TES therapy, the intensity of pathological craving for alcohol in the experimental group was significantly lower than in the control group of patients. A short 5-day course of TES therapy led to almost complete relief of PCA, including its affective components. Due to fast and effective relief of pathological craving for alcohol, starting from the first procedure, the use of TES therapy is recommended for urgent treatment.

TES therapy for the relief of abstinent syndrome (AS) in patients with heroin and ephedrine drug addiction at the acute stage

Opioid based illicit substances directly affect opioid receptors blocking them and distorting the metabolism of neurotransmitters of the entire positive reward system. This suppresses the synthesis of endogenous opioid peptides and β -endorphin primarily. Enhanced synthesis of catecholamines, accumulation of dopamine causes the development of the main signs of withdrawal symptoms.

The possibility of using TES therapy in the treatment of opioid addiction, starting from the first stage, that is the relief of withdrawal symptoms with the normalization of somatoneurological disorders and the correction of additional mental pathology was studied at the Department of Psychiatry of the St Petersburg Military Medical Academy. The studies evaluated the severity of withdrawal symptoms, compared the index of tension, the index of autonomic balance and analysis of heart rhythms.

As a result of the TES therapy the patients noted a pronounced reduction in the main withdrawal by the end of the first week of treatment. Pains considerably reduced, irritability and sweating disappeared, sleep improved, etc. The rate and quality of positive dynamics significantly differed from the control groups that received imitation TES or drug treatment.

10-12 days after starting TES therapy the patients showed a significant improvement in the degree of harmonization of biorhythms, the index of autonomic balance and the index of the intensity of the heart rate. A similar positive dynamic was achieved in both heroin and ephedrine addiction. TES therapy was well received, there were no complications and patients' attitudes towards procedures varied from neutral (14.7%) to clearly positive (85.3%). Moreover, if TES therapy was carried out during the formation of a compulsive craving for a drug, then the manifestations of this state were stopped after the first procedure and the craving for the drug was significantly reduced.

Many programs for the treatment of opioid addiction are based on the use of opioid receptor agonists (methadone, buprenorphine) as substitution therapy which ultimately leads to new addictions. With TES therapy, there is a natural replacement of heavy drugs of the opioid group with endogenous opioid peptides. At the same time, TES therapy does not cause addiction since the excess of endorphins that does not correlate with opiate receptors is quickly destroyed by its own enkephalins.

Thus, the use of TES therapy for treatment of abstinence syndrome in patients with opium addiction can reduce the severity of withdrawal symptoms, increase the body's adaptive reserves and increase the duration of remission.

TES therapy for the treatment of post-withdrawal disorders (Anhedonia Syndrome/AS) in patients with heroin addiction

After passing the acute withdrawal stage, patients with drug addiction often experience a condition which can be defined as "anhedonia syndrome": a lack of psychophysiological comfort outside of drug intoxication and manifests itself in the form of affective symptoms, ideational and behavioral components.

Effective therapy of anhedonia syndrome in patients with opioid addiction who have been through detox is important not only from the point of view of immediate relief of post-withdrawal symptoms, but also as a guarantee of relapse prevention and stable remission.

A study took place to assess the effectiveness of the treatment of anhedonia syndrome in opioid addicts after the relief of withdrawal symptoms during which the patients were not prescribed any psychotropic drugs. It revealed:

- After 5 TES-therapy procedures there was a significant decrease in the affective components of anhedonia syndrome: anxiety (Spielberger test), tension, irritability significantly decreased.
- Depression (Zung's test), indifference and feelings of psychological discomfort disappeared. Sleep normalized.
- After the first procedure patients noted a decrease and disappearance of craving for opioids
- In the course of treatment thoughts, memories, dreams and fantasies about the use of opioids disappeared.

After 10 TES-therapy procedures all psychometric parameters (anxiety, depression, anhedonia, and craving for heroin) were close to normal. Only 15% of patients dropped out of the study (refused treatment or heroin use). In the control group this indicator was significantly higher reaching 40%.

Thus, it was found that TES-therapy has a positive effect on all manifestations of the anhedonia syndrome.

TES therapy to restore the structure and function of a toxically damaged liver

Toxic effect on internal organs caused by harmful use of psychoactive substances and alcohol, liver damage in particular, are very common.

Cytolysis of hepatocytes, fatty degeneration, a sharp decrease in the synthetic and detoxification functions of the liver and cirrhosis-are serious issues. In addition, they aggravate alcoholism and drug addiction, limiting the effectiveness and prospects of treatment.

It has been established that TES therapy accelerates the reparative regeneration of all types of tissues with various damage. As a result, it was suggested that TES therapy may be effective in the treatment of toxic and mechanical damage to the liver.

In a series of experiments, it was consistently proven that TES therapy significantly reduces the signs of cytolysis of hepatocytes in acute and toxic liver damage. At the same time, the detoxification and synthetic functions of the liver are quickly restored. A prevention of fatty liver degeneration and proliferation of interlobular connective tissue (cirrhosis) were established. Moreover, TES therapy activates the regeneration of hepatocytes and has oncostatic and oncoprotective effect.

The clinical application of TES therapy has confirmed its high efficiency in the treatment of toxic hepatitis in both adults and children. Patients receiving TES therapy experience the release of heavy feeling, pain in the right hypochondrium and itchy skin. Other positive effects: well-being improves, irritability disappears, sleep is normalized.

Fast positive clinical symptoms correlate with the normalization of biochemical parameters, such as LFT, AST, alkaline phosphatase, thymol test, etc. The need for pharmacological treatment is actually reduced.



We are a UK based pioneering clinic that provides innovative treatments & digital therapies proven to reduce stress, increase clarity and improve mental wellbeing. We have been using TES therapy successfully for a number of years

Whether you are dealing with stress, anxiety, depression, insomnia, addictions, or a wide range of other issues we are confident that we can help you.

Our team consists of the foremost authority on NAD+ cell therapy in the UK; John Gillen & a group of highly qualified clinicians led by Dr Alexander Lapa.

We have witnessed first-hand over a number of years how the therapies that we now provide under 1 roof at Nadcell Mindcare give blissful relief to those who thought that a constant state of anxiety was just how their life was always going to be.



Patient Review of TES Therapy:



'NADCELL clinic Glasgow have been nothing short of outstanding! They have been a lifesaver for me, in both literal and figurative sense of the word.

I was fighting depression for over 17 years: was on and off antidepressants, anxiety and panic attacks were a part of my

daily life, couldn't sleep. After the consultation with Dr Lapa (which was thorough and conducted in a professional manner) I saw the light at the end of the tunnel. Dr Lapa is patient, understanding and has a very reassuring manner. He showed great consideration of my case and to my well-being as an individual. This was the first time I was able to discuss my issues without fear of judgement or stigma.

I attended the clinic for 5 days. My treatment included 5 sessions of TES therapy along with daily consultations. I noticed the result after the first treatment: I felt relaxed and calm and that night slept like a baby. As a result of the treatment I am no longer experiencing panic attacks and able to keep my anxiety under control. I am off antidepressants and doing very well. I feel my life has been refreshed in the best way possible, I really feel like a new person. I will eternally be grateful for all the guidance and help I received.

I would have no hesitation recommending NADCELL clinic Glasgow as they have finally helped me understand my condition and taught me how to manage it.'

Andrew, July 2021



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