

*Aktuelne teme/  
Current topics*

ACUPUNCTURE THERAPY

TERAPIJA AKUPUNKTUROM

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*Abstract*

Acupuncture is a unique approach to medical issues in struggle for health. In the concept of traditional Chinese medicine, acupuncture has been developed as a philosophical approach to human body and spirit. According to acupuncture, health represents an equilibrium of Yin and Yang principles which are tightly connected, mutually dependent and with a significant influence upon each other. The basics of contemporary understanding of the acupuncture mechanisms rely upon neurohumoral theory based on achieving analgesic effect. Beside that, acupuncture also has other effects being the following: vasodilating, immunological, anti-allergic, antihypertensive, sedative, antidepressive, anti-inflammatory, spasmolytic and others. Within numerous experiments, studies and analyses, it has been discussed the efficacy of acupuncture with the resulting controversial standpoints. In some conditions and diseases, acupuncture represents a method of choice, while in others it is applied as a complementary approach along with some other methods of treatment. The legalization of acupuncture as well as other alternative methods of treatment and their integration into health care system was recognized by World Health Organization in 1978. Small percentage of adverse effects and high level of patients' satisfaction with the achieved effect led to great interest for acupuncture application. One in five adult Europeans suffers from some chronic pain syndrome, where 13% of them apply or applied acupuncture.

Due to its analgesic effect, in numerous „pain management clinics“, acupuncture represents a part of the protocol for remediation of pain syndromes such as: headache, trigeminal neuralgia, paresis n. facialis, osteoarthritis, cervicobrachial syndrome, lumboschialgia, „frozen shoulder“, „tennis elbow“, etc.

**HISTORY**

Acupuncture is a unique approach to medical issues in struggle for health that has been developing over centuries and millennia. In the concept of traditional Chinese medicine (TCM), acupuncture has established itself as philosophical approach to human body and spirit.

The word „acupuncture“ originated in Europe from Latin words „acus“ – needle, and „punctura“ – puncturing, and represents puncturing of needles into specific points on body surface – acupuncture points<sup>(1)</sup>.

The history of acupuncture dates back many millennia ago, probably even from the period of Stone Age. It could be seen from stone daggers and other sharps named „bian“ which were used for pain relief and disease treatment. Their application can be considered to be the most primitive

method of acupuncture. In later periods, „bians“ were replaced by needles made of bones and bamboo, later even of bronze. The first written evidence of acupuncture was found in the Warring States Period (475-221 BC) in China and was called The Inner Canon of Huangdi or Yellow Emperor's Inner Canon (Huang Neijing). Treatment by acupuncture was also accepted in other countries.

In the 6th century AD this kind of treatment was applied in Japan, and later on also in Arab countries. Missionaries brought knowledge of acupuncture to Europe in XVI and XVII century. George Soulie de Morant is acknowledged as the „Father of European Acupuncture“<sup>(2)</sup>.

**Table 1. Classification of the organs of human body according to TCM**

Zang organs		Fu organs	
1	Stomach	1	Heart
2	Small intestine	2	Lungs
3	Colon	3	Spleen
4	Gall bladder	4	Liver
5	Bladder	5	Kidney
6	Triple Burner *	6	Pericardium

\* Triple Burner - Thoracic-abdominal-pelvic cavity

Zang organs belong to the Yang principle and serve for transport. Those are the organs of the „workshop“ which transform the food intaken from the outside into energy and blood. Fu organs are the „treasury“ and receive energy and blood from zang organs, and also take over the role of purifiers and distributors of the energy through organs. They are the carriers of the Yin principle. Life energy (qi) circulates through a human organism through energetic channels, i.e. meridians which are mutually interconnected and located on both sides of the body. There are 12 meridians in total to which 12 internal organs correspond and connect them with surface formations. They have profound and surface courses; they are symmetrical and even.

Circulation of this energy has its own rhythm and time of passing through each meridian lasting for 2 hours, so that in 24 hours the energy passes through all the 12 meridians. Each organ has its own time of entry when the maximum activity for that organ lasting for 2 hours starts, as well as the time of exit when the minimum activity lasting for 2 hours starts. Beside the 12 even meridians, there are also two odd channels – front and back middle channel, as well as 6 channels (extra channels) with no acupuncture points of their own which use the point of the major meridians. The closest communication of the channel with the body surface via which it is possible to influence the energy movement through the meridian is the acupuncture point. When puncturing the acupuncture points there occur „puncturing sensations“, so called techi (or deqi) in the form of pain, numbness, stretching, heaviness and drifting. On the very spot around the needle there can occur erythematous ring or decolorization zone. Some of the patients feel these sensations as weaker ones, while the other as stronger ones, depending on general degree of sensibility and constitution of body. Those sensations are tightly connected with the treatment efficacy (3, 4, 5, 6).

#### **SCIENTIFIC APPROACH TO UNDERSTANDING THE MECHANISM OF ACUPUNCTURE**

Applying contemporary scientific experimental research in recent decades, acupuncture gained partial confirmation of its „existence“, influence upon living organisms and processes within them known to modern science (7, 8, 9). For the time being, these experiments only point at the fact that processes within human organism are very complicated, complex, mutually dependent and, to some extent, unknown.

#### **Basics of mechanisms of acupuncture analgesia**

The basics of contemporary understanding of acupuncture mechanisms rely upon neurohumoral theory based on achievement of analgesic effect through participation of:

1. Central nervous system (CNS) through „gate control theory“ and modulation of pain impulses of the periphery pain receptor
2. Spinal-segment-presynaptic system (endorphins, encephalines, dynorphins)
3. Supraspinal central blockage system

During the stimulation of an acupuncture point which is usually localized near the superficial nerves, the signals of nociceptive impulses are transmitted in interaction via thin non-myelinated C fibers and thick myelinated A delta nerve fibers from the acupuncture needle punctured point through several levels to CNS. According to the theory of the control entry, in posterior horns of the spinal cord there are transmittent T cells by which help the reflux arc is formed. They accept information via thick myelinated nerve fibers which are characterized by low threshold for irritability and quick conductivity and transmission of information. Along with them, T cells form synapses. In the vicinity of the T cells, there are localized fascilatory cells which directly or indirectly accept pain sensations via the T cells by means of interneurons. The T cell function is influenced by both excitatory and inhibitory neurons (which are irritated by touch or pressure).

Impulses transmitted from the periphery (treated acupuncture point) via thick myelinated nerve fibers to dorsal horns of the spinal cord affect the cells of gelatinous substance which influence the T cells by closing the “gate“ and blocking the P substance binding, thus reducing the transmission of impulses for pain quality (10).

Complete neural network represents a thalamic gate to the cortex, so that cortical projections influence the analysis of all the signals going toward thalamus. In that way, the cortex opens and closes the thalamic gate, rendering the control a unique phenomenon. It is also of importance the mechanism of interaction of regions in the thalamus surrounding which has somatosensory competence (11, 12).

A major role in the mechanism of acupuncture analgesia development play noradrenaline and dopamine, neurotransmitters that decrease this effect, while serotonin and acetylcholine increase it.

During the application of acupuncture, there are released different neuropeptides such as the following: endomorphin-1, beta endorphin, encephaline, serotonin and dopamine which quantity is increased in the plasma and brain tissue, therefore leading to analgesia (13).

Beside analgesic effect, acupuncture also exhibits other effects, being the following:

1. vasodilatory effect
2. immune – anti-allergic effect
3. antihypertensive effect
4. sedative and antidepressive effect
5. anti-inflammatory effect
6. spasmolytic effect etc.

In exhibiting these effects, an important role is played by neurobiological mechanisms reflecting in increasing and accelerating of local blood flow, causing somatic autonomic reflex by which stomach and cardiovascular functions are influenced. By increasing the level of neuropeptides, especially serotonin and dopamine, we influence the emotional state leading to sedation and recovery of motoric functions. It is also noted the immunomodulatory effect on the immune system, as well as lipolytic effect on metabolism. In recent studies it has been demonstrated that during acupuncture there occurs the increase of the level of nitrogen oxide in treated regions, which consequence is the increase of local blood flow, which, in turn, influences the prevention of local inflammation and ischaemia (14).

### *THE EFFICACY OF ACUPUNCTURE*

There is much controversy about the efficacy of acupuncture. A number of authors holds the opinion that the cause of favourable therapeutic response to the acupuncture application is the occurrence of placebo which is present in patients with chronic pain syndrome, because the invasiveness during acupuncture application has greater effect than an orally taken drug (15, 16). Analyzing 35 papers on the topic of the efficacy of acupuncture, Derry et all. found a good therapeutic response in 12 studies. In 6 randomized and double-blind studies there were not established significant positive effects of acupuncture (17). Greater number of studies which followed the efficacy of acupuncture in the treatment of paresis and nervus facialis paralisis showed significant results. Patients that underwent this therapy in shorter period and at higher percentage achieved complete recovery in relation to those treated by medication and physical therapy (18, 19).

In numerous clinical studies it was researched the efficacy of acupuncture in chronic back pain. In one meta-analysis including 6359 patients, 44 of them showed that the real acupuncture treatment was more effective than „false“ acupuncture. However, there were also proofs that the applied real and „false“ acupunctures were more effective in relation to the results of patients who did not undergo any treatment. Thus, the conclusion has been drown that acupuncture can be a useful addition to other forms of conventional therapy for low back pain (20, 21, 22). The development of neuroimaging methods such as positron emission tomography (PET) and functional magnetic resonance imaging (FMRI) enabled non-invasive studies of the effect of acupuncture to human brain. Studies applying PET showed that the thalamic asymmetry present in patients suffering from chronic pain decreased after they were treated by acupuncture (23).

The legalization of alternative technologies and the very acupuncture, as well as their integration into the health care system in the majority of the world countries was a very slow process. In 1978 in Alma-Ata, World Health Organization (WHO) proclaimed the Declaration „Health for All“ which recommends the inclusion of different methods of alternative medicine in the health care systems of treaty members (24).

During 2003, WHO published a review and analysis of controlled clinical trials of acupuncture. This publication

gives information about the efficacy of different aspects of acupuncture therapy on the basis of the existing clinical data. Since the methodology of clinical trials of acupuncture is still being discussed, it is very difficult to evaluate the acupuncture practice as a generally accepted measure (25).

### ***Indications:***

Practically, there is no field of medicine in which acupuncture cannot be applied. The most frequent indications for the application of acupuncture are the following:

1. acute and chronic pain syndromes of inflammation and neuropathic origin
2. arthritic pain and inflammation (degenerative and inflammatory rheumatism)
3. neurohumoral autoimmune disorder
4. motoric and sensory disorder after an ischemic event and damaging of nerves

Contraindications for the application of acupuncture:

1. conditions of extreme weakness (anergy)
2. conditions of extreme excitation
3. patients under the influence of alcohol and narcotic drugs
4. the existence of mechanic barrier in bowels - ileus
5. fractures
6. bleedings
7. infections.

Zones forbidden for the acupuncture application:

1. in children, the zone of fontanelle
2. the zone of nipples and breasts, navel and external genital organs
3. evade points in the zone of varicose veins and skin infections
4. during pregnancy, the zone of stomach

### ***CONCLUSION***

Low percentage of adverse effects on one hand and high degree of satisfaction of patients with the achieved effect on the other hand led to great interest for acupuncture practicing. One in five adult Europeans suffers from some kind of chronic pain syndrome, where 13% of them apply or had applied acupuncture. In some conditions and diseases, acupuncture represents a method of choice, while in others it is used as a complementary approach along with other methods of treatment. Due to its analgesic effect, in numerous „pain management clinics“, acupuncture represents a part of the protocol for eliminating pain syndromes such as: headache and migraine, trigeminus neuralgia, n. facialis paresis, osteoarthritis, cervicobrachial syndrome, lumboschialgia, „frozen shoulder“, „tennis elbow“, etc.

## Sažetak

Akupunktura je svojstveni pristup medicinskoj problematiki u borbi za zdravlje. U konceptu tradicionalne kineske medicine akupunktura se izgradila kao filozofski pristup ljudskom telu i duhu. Po njoj zdravlje predstavlja ravnotežu principa Yina i Yang-a koji su tesno povezani, međusobno zavisni i bitno utiču jedno na drugo. Osnovi savremenog shvatanja mehanizma akupunkture počivaju na neuro-humoralnoj teoriji koja se bazira na postizanju analgetskog efekta. Pored njega, akupunktura ima i druga dejstva koji se ogledaju kroz: vazodilatatorno, imunološko, antialergijsko, antihipertenzivno, sedativno, antidepresivno, antiinflamatorno, spazmolitičko itd. Kroz veliki broj eksperimenata, studija, analiza raspravljanja je o efikasnosti akupunkture koji je za sada kontraverzan. Kod nekih stanja i bolesti akupunktura je metod izbora, dok kod drugih koristi se kao komplementarni pristup sa drugim metodama lečenja. Legalizacija akupunkture kao i drugih alternativnih metoda lečenja i njihove integracije u zdravstveni sistem dogodila se 1978. od strane Svetske Zdravstvene Organizacije.

Nizak procenat štetnih efekata i visoki stepen zadovoljstva bolesnika s postignutim efektom dovelo je do velikog interesovanja za primenu akupunkture. Jedan od pet odraslih Evropljana pati od nekog hroničnog bolnog sindroma, pri čemu 13% koristi ili je koristilo akupunkturu. U mnogim „klinikama za bol“ zahvaljujući svome analgetskom efektu, akupunktura predstavlja deo protokola za sanaciju bolnih sindroma kao što su: glavobolje, neuralgije trigeminusa, pareze n. facialisa, osteoartrose, cervikobrahijani sindrom, lumbosialgija, „zaledeno rame“, „teniski lakat“ i dr.

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