

Acupuncture and salutogenesis

Acupuncture & its neuroscientific mechanisms of action

A great healing system: from relieving pain and stress, to achieving well-being

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(1) ABSTRACT

Rationale

Understanding how acupuncture is a real salutogenetic form of therapy, and seeing that it can be the main treatment system with some other CAM strategies for lots of dysfunctions.

Objectives

Focusing on the targets of acupuncture: peripheral and central molecules (as endogenous opioids), such as neurotransmitters and hormones, and on the main pathways and brain centers, involved thanks to the actions of acupuncture.

Materials and Methods

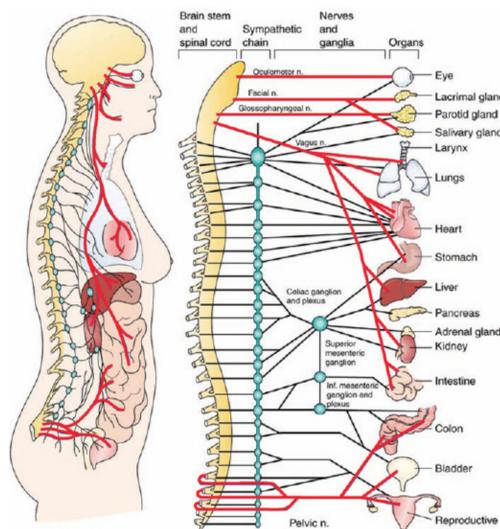
Reviewing the most relevant and important scientific researches on the stress-reward equilibrium, balanced by acupuncture, and applying these notions to a case of polysymptomatic stress-related autonomic insomnia (heart qi and yin deficiency: insomnia, weakness, palpitations, hypertension, anorexia; points: HT5, HT6, HT7, ST36, CV4, CV6, SP6, CV14, BL15, LU7; 8 times once a week, 2 times once a month; needles Huanqiu 0,30x40 mm), thanks to points specificity (due to neural correlations).

Results

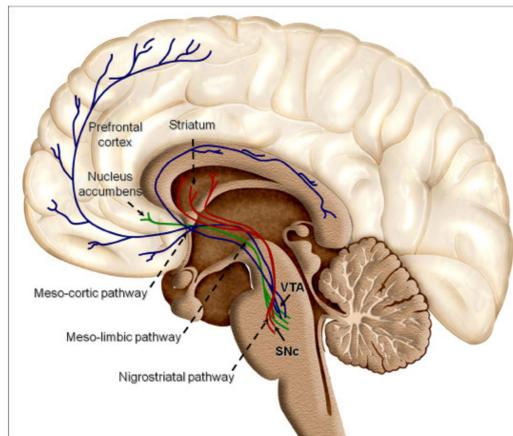
Acupuncture is able to fastly and effectively act on the stress system, by reducing the ortosympathetic outflow, by creating an equilibrium of the main neurotransmitters, by balancing hypothalamic activity, and moreover by enhancing parasympathetic and reward centers, with a whole wellness effect. The patient felt better after 2 sessions, and was asymptomatic at the end of the 10 sessions treatment.

Conclusions

Acupuncture is an old healing system, that nowadays can be understood in all its most important actions mechanisms. It helps any situation in which stress is the main cause of disease: it not only relieves pain and symptoms, but it can also be the basis for a salutogenetic global approach, since it acts on reward centers with a wellness effect on body and mind.



Autonomic nervous system, the stress side



Reward pathways, the well being side

(2) PHYSIOPATHOLOGY OF ACUPUNCTURE

- anti-nociceptive**: relieving pain thanks to "gate" control system and opioids (2Hz: endorphins, enkephalins, endomorphin; 100Hz dynorfin)
- anaesthetic effects**: opioids and other neurotransmitters
- immuno-modulation** and anti-inflammatory effect: reduction of COX, less cytokines, normalization of TH
- neuroscience of acupuncture**: neurotransmitters and pathways (opioids, Ser, DA, GABA, ACh, Glu, and others)
- reflexes** in acupuncture: skin on organs (gastroenteric effects, Heart Rate variations, Bladder contractions)
- muscular effects**: relaxation
- acupuncture and body's blood flows**: induction of NOS and effects of NO, nitric oxid, vasomodulator molecule
- CNS-ANS improvement**: neurogenesis, neutrophins; "pain matrix" modulation: lymbic system, brain stem
- neuroendocrine** regulation: hypothalamus-pituitary gland and peripheral hormones
- psycho-emotive** improvement: reduction of ortosympathetic outflow, induction of wellness on reward pathway ...and always: "de qi" (aching, numbness, tingling, warmth, ...) and points specificity^o

...acupuncture is more than placebo effect: medium effect size 0,50%
...acupuncture is better than sham acupuncture: medium effect size 0,25%

(4) SALUTOGENESIS* FROM ACUPUNCTURE

- organ protection**: improvement of blood flow in the brain, of blood flow and heart rate on the heart, of motility and secretions on gastro-enterical system
- modulation of stress**: acupuncture reduces activity in ortosympathetic brain areas (amygdala, hippocampus, insula, stem) with reduction of the outflow thanks to opioids (CRH (+) POMC (+) endorphins), and increase of vagal-parasympathetic (ACh in NA)
- acupuncture and default network**: regulation of resting-state associative areas (lymbic system, parietal frontal and temporal affective areas) and better connections with amygdala, SN, hippocampus
- action on reward system** (RP): nucleus accumbens, and VTA/midbrain; sense of BENECEPTION with balancing of reward signals (Serotonin in ACC, Dopamine in RP, and opioids), connection with ACC and PAG [opioids (-) GABA = (+) dopamine]; and dopamine is precursor of endomorphin; importance of trust & belief (in common with placebo, the subjective side of reward), better motivation and wellness
- acupuncture and fertility**: modulation of uterine blood flow, improvement of uterus muscles, balance of psychic components, increase of 50% of ovulation

*Antonovsky social medicine theories - here we see how acupuncture leads to health and wellness too

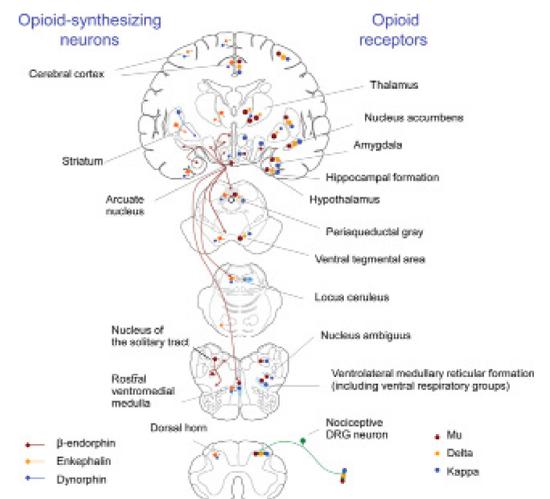
- shen** for well-being: du mai and heart points; hun, shen, yi, po, zhi
- CAM in sport**: acupuncture and **positive psychology mental training***; importance of fitness on body and mind, mental training for the relieving of sport pain, for relaxation and performance concentration
- zen** mindfulness from oriental to occidental world: zazen meditation, koan, sutra, satori

(5) This CLINICAL CASE as an example...

...of how acupuncture can modulate stress and help in find well-being perceptions.
The patient, a 60-years-old woman, had problems in falling asleep at night, and the sleep quality was also bad. Moreover she felt palpitations at awakening and at stressful moments during the day, moments in which she had hypertensive states too. She also felt weak and she could not find energy in eating, since she had a sort of anorexia.
According to the symptoms the diagnosis can be "heart qi and yin xu", that is represented by a dysautonomia, clearly perceivable from all the symptoms: the stress system is prevalent, and the well-being state is to improve.
The points were: HT5, HT6, HT7, ST36, CV4, CV6, SP6, CV14, BL15, LU7, adapted to each session according to the clinical features according to **point specificity**^o.
The perception of the patient was a relief of stress from the 2nd session, with an improvement of sleep quality and quantity as soon as the acupuncture therapy continued, and after the 10th session she was totally asymptomatic.
During the sessions, simple relaxation dialogue techniques* were also useful to find a more conscious well-being state.

(3) CLINIC OF ACUPUNCTURE: ORGAN PROTECTION

- Cochrane full effectiveness of acupuncture on**: cervical and lumbar pain (opioids and muscular effects), fibromyalgia (body-mind effects); headaches (reduction of stress and balance of positive neurotransmitters); nausea and vomiting (action on vomit centers and on splanchnic ganglia); gynaecological and obstetrics dysfunctions (stress-wellness balance, local blood flows)
- probable effectiveness, and others diseases acupuncture can improve**: cardiovascular dyfunctions and others disautonomic alterations (points acting on HR); gastro-enterological diseases (NTS modulation); epilepsy (auriculopuncture on parasympathetic); Parkinson's disease (**neurogenesis**), Alzheimer's disease, stroke (improvement of blood flow and neurogenesis); variations of blood pressure (neurotransmitters), psychological dysfunctions, insomnia (less stress and more REM-nonREM sleep), drug abuse and addictions (reduction of craving)



(6) CONCLUSIVE PERSPECTIVES

It is clear how acupuncture is a great therapeutical and healing system; having a salutogenesis goal, we can use acupuncture with any other CAM therapeutical form, since they all act also on wellness and reward neurobiological system too.

It could be important to integrate acupuncture: for instance giving suggestions about physical activity, this one acting on opioids as well; any form of mental training could also be useful, since it can re-balance our internal mental state by developing reward thoughts.

So improving our body-mind well-being state is a real possibility.

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