

Neuro-Acupuncture

INTRODUCTION.

- Chinese were the first to scientifically investigate the neurophysiological mechanisms of acupuncture.
- 309 acupuncture points are close or on large nerves
- 286 acupuncture points are on or close to major arteries.

Cont.

- 1974 CSF transplant in EA anesthetized mice
- 1977 Naloxone abolishes acupuncture's pain effects. Naloxone is a mu receptor agonist which block the effects of beta endorphins.
- 1985 Generation of nerve action potentials away from the area being treated were being discovered.

Purpose of this course

- Clean Needling technique
- Using TCM acupuncture model and meld it to western science of neuroanatomical model.
- Using a systematic and practical approach to the design of treatments, separating the bodying and practice
- Combine meridian theory and neuroanatomy.
- Trigger Point acupuncture

Traditional Acupuncture

- Based on meridian theory.
- Effects of De Qi sensation
- Meridian first of Acupoint first?
- Zang Fu organs, yin yang, 5 elements, vital substances.

Nervous System

- Receives information from changes of external and internal conditions.
- Brain receives information as form of electrical signal.
- Every input we do has an effect on of the three levels of the nervous system

HOW DOES ACUPUNCTURE WORK?

- ANATOMY
- = STRUCTURE
- = **YIN**

- PHYSIOLOGY
- = FUNCTION
- = **YANG**

Energy Transformation in Biological Systems

- The sun is the primary source of energy for living organisms.
- All living organisms must capture, transduce, store, and use energy to live.

Pain

- Pain involves a complex interaction between specialized nerves, your spinal cord and your brain. Imagine a complicated traffic system, with on-ramps, different speeds, traffic lights, varying weather and road conditions, a traffic control center, an emergency response system, and more.
- And the vehicle you're in also makes a difference, because the experience of pain varies from one person to another.
- Pain is both physical and emotional. It involves learning and memory. How you feel and react to pain depends on what's causing it, as well as many personal factors.

Neuroplasticity and synaptic plasticity

- neural pathways that can replicate another's function so that small errors in development or temporary loss of function through damage can be easily corrected by rerouting signals along a different pathway.
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5331279/>

Neuromodulation

- "the alteration of nerve activity through targeted delivery of a stimulus, such as electrical stimulation or chemical agents, to specific neurological sites in the body". It is carried out to normalize – or modulate – nervous tissue function. Neuromodulation is an evolving therapy that can involve a range of electromagnetic stimuli such as a magnetic field (rTMS), an electric current, or a drug instilled directly in the subdural space (intrathecal drug delivery).

Mechanism of Acupuncture

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3996195/>

Purpose of neuroacupuncture

- This is a technique for precise peripheral nerve stimulation technique.
- Stimulation comes from either manual manipulation or electricity for the therapeutic purpose of changing nervous system abnormal conditions.

Main Indications

- Acute pain and dysfunction
- Chronic pain and dysfunction
- Autonomic nervous system activity
- Etc..

Mechanisms involved in responses

- Local reflexes
- Spinal segmental reflexes
- Supra spinal reflexes

Local reflexes

- Somato-autonomic local vascular reflexes with participation of local release of nitric oxide

Spinal segmental reflex

- Involve either somatic sensory and/or motor neuromodulation through somato-somatic reflexes, or autonomic and visceral neuromodulation mediated by somato-autonomic reflexes

Supra-spinal reflexes

- Triggered by signals reaching the central nervous system above the spinal cord.

Takeshigue 1993:

- The stimulation of Acupuncture point across the skin or directly on the corresponding nerve evokes similar action potentials in the CNS

Majority of acupuncture points contain:

- Connective tissue
- Neural divisions
- Receptions
- Perivascular neural tissue
- Mast cells
- Glomus, smooth muscles

Acupoints

- Tender on palpation
- High electrical conductance
- Show fibrillation/ fasciculation potential with electromyography
- May become erythematous on insertion of a needle
- Provoke paresthesia in distal parts of the body

Ciszek 1985:

- High concentration of free nerve endings – nociceptors in low electrical resistance sites

Acupuncture points

- Nociceptors concentration occurs in a circle of 5mm diameter in each one of the low electrical resistance points