

## Special Article – Acupuncture

# Acupuncture East - West from Chronobiology to Neuroscience

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## Abstract

The last decade a multimodal bio-psychosocial management of pain has been proposed. For patients with chronic pain and/or chronic pain refractory to conservative treatment it is important to assess all factors involved with chronicity. The principles of traditional Chinese medicine link three major themes: nutrition and microbiome, neuroplasticity, and homeostasis while considering the side effects of medication. The improved biological, genetic and epigenetic knowledge has contributed to a better understanding of the acupuncture mechanism. Neuroimaging demonstrate the brain regions activated by acupuncture and also illustrates the differences with sham or placebo. These brain areas are associated with a pain matrix.

In the field of acupuncture research there is a need for a bidirectional approach to acupuncture research, where basic science studies and clinical trials each inform the other.

A strategy integrating pharmaco nutritional and acupuncture approach shows as described in literature a better response and tolerance of the treatment, a dose reduction and a significant improvement of the parameters involved with the chronicity.

**Keywords:** Acupuncture; Multimodal treatment; Nutrition; Chronobiology; Pain; Integrative medicine

## Introduction

A multimodal bio-psychosocial management of pain has been proposed. For patients with chronic pain refractory to conservative treatment all factors involved with chronicity should be assessed.

The principles of traditional Chinese medicine link three major themes: nutrition and microbiome, neuroplasticity, and homeostasis while considering the side effects of medication. The improved biological, genetic and epigenetic knowledge has contributed to a better understanding of the mechanism of acupuncture. Neuroimaging demonstrates the brain regions activated by acupuncture and also illustrates the differences with sham or placebo.

These brain areas are associated with a pain matrix.

## Discussion

The peripheral sensitization of the primary nociceptors also depends on the intra and extra cellular homeostasis [1]. Changes in brain structure and cortical function are associated with many chronic pain conditions.

14 most studies report changes in common areas involved in pain modulation, including the prefrontal cortex (PFC), and pain-related pathological changes in the PFC can be reversed with effective treatment. Functional neuroimaging studies, documented brain responses in cortical and subcortical regions, including activation in the sensorimotor cortical and deactivation in the limbic-paralimbic-neocortical network with acupuncture treatment [2-4].

The bidirectional signaling can be activated by the inflammation

that it modulates. Acupuncture also increases brain activity in regions closely associated with a wider pain matrix responsible for modulating both the sensation and affective pain perception [2].

Acupuncture and connective tissue and has demonstrated that stimulation by acupuncture needles inserted into muscle fascia causes fibroblasts to realign themselves.

That is a main point of revalidation in wounded tissues and shows strategies in pre and post-operative prevention of pain (Figure 1).

With all these backgrounds acupuncture is a multimodal pain regulator, acting on peripheral and central sensitization, and revalidation of the multiple mechanisms involved in chronicity and vicious circle.

The holistic model of TCM close to the bio psycho social management of pain give a rational strategy on chronic pain treatment.

This integrative method applies the biomedical model and use also the TCM principles

## Acupuncture and Efficacy

From traditional acupuncture, we use from trigger points to complex intervention with extraordinary vessels system, and auriculotherapy giving a strategy enhancing the physiological and neurophysiological status altered by chronicity. That close to the actualized neurosciences and clinical investigation knowledge the association of east west purposes enlarge the results and post effect.

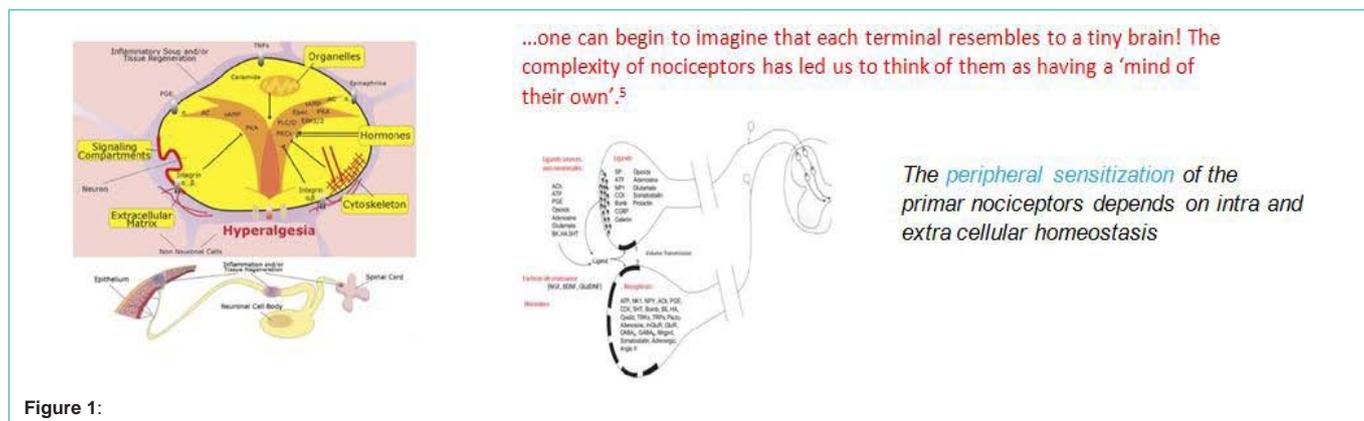


Figure 1:

About the homeostasis involved in the sensitization the multimodal treatment with nutrition and nutraceuticals sustain the acupuncture response on many points.

Underlying the chronobiology purpose of pain chronicity or chronic illnesses is associated to treat or sustain side effects of drugs treatments or many failure responses.

A strategy integrating pharmaco-nutritional and acupuncture approach shows as described in literature a better response and tolerance of the treatment, a dose reduction and a significant improvement of the parameters involved with the chronicity.

**Conclusion**

Challenges remain in the course of establishing evidence on acupuncture, although under the guidance of EBM, acupuncture will become a standard therapeutic procedure in the modern health care system.

In research of complex intervention, the EBM model does not evaluate all parts of acupuncture efficacy and strategies.

The methodology «whole system» open the research on Integrative Medicine efficacy with an enhancing EBM validation.

To solve the question do we have to think others methodologies?

The incompatibility is about internal and external validity addressing efficacy and effectiveness. Internal and external validity are complementary, they need to be addressed separately in different studies and the results have to be seen together. The hierarchy is

one of the internal efficacy not of evidence in general. Except for the evidence of the effectiveness shown in trials, a considerable part of evidence for the mechanisms of acupuncture action was also discovered by advanced neuroimaging technology.

Based on scientific evidence acupuncture become a part of the integrated health care system under EBM paradigm in chronicity and acute diseases.

In the field of acupuncture research there is a need for a bidirectional approach to acupuncture research, where basic science studies and clinical trials each inform the other.

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