

Are minimal, superficial or sham acupuncture procedures acceptable as inert placebo controls?

Irène Lund, Thomas Lundeberg

Abstract

Most controlled trials of acupuncture have used minimal, superficial, sham, or 'placebo' acupuncture. It has recently been demonstrated that light touch of the skin stimulates mechanoreceptors coupled to slow conducting unmyelinated (C) afferents resulting in activity in the insular region, but not in the somatosensory cortex. Activity in these C tactile afferents has been suggested to induce a 'limbic touch' response resulting in emotional and hormonal reactions. It is likely that, in many acupuncture studies, control procedures that are meant to be inert are in fact activating these C tactile afferents and consequently result in the alleviation of the affective component of pain. This could explain why control interventions are equally effective as acupuncture in alleviating pain conditions that are predominantly associated with affective components such as migraine or low back pain, but not those with a more pronounced sensory component, such as osteoarthritis of the knee or lateral epicondylalgia.

Keywords

Acupuncture, control, placebo.

Irène Lund
research student
Karolinska Institutet
Stockholm, Sweden

Thomas Lundeberg
senior consultant
Danderyds Hospital
Stockholm, Sweden

Correspondence:
Thomas Lundeberg

thomas.lundeberg@
lidingo.mail.telia.com

Control interventions in acupuncture studies

During the last decade a large number of studies have been published comparing manual acupuncture or electroacupuncture with different modes of 'placebo' controlled procedures in the treatment of perceived pain. The control procedures most commonly used include minimal or superficial acupuncture (needling of the skin), or sham acupuncture (needling of non-acupuncture points), or 'placebo' acupuncture needles (a blunt tip of a needle touches the skin without penetrating it).^{1,2}

Acupuncture has been reported to affect the different components of perceived pain, ie to alleviate the sensory discriminative aspect (intensity) as well as to lessen the affective component (unpleasantness) of pain.³ Physiologically, the afferent stimulation of the acupuncture needling has been attributed to the activation of ergo-receptors,⁴ conveying their information in A-delta or type II or III afferents into the spinal cord, and then to the sensory cortex, resulting in the perceived sensation of *de qi*.⁵ The activity set up by acupuncture is said to result in 1) the activation of descending pain-inhibiting pathways

and 2) deactivation of limbic structures; these mechanisms are involved in the sensory and affective component of pain, respectively.^{6,7}

Recently, it was demonstrated that light touch of the skin stimulates mechanoreceptors coupled to slow conducting unmyelinated (C) afferents resulting in activity in the insular region, but not in the somatosensory cortex.⁸ Activity in these C tactile afferents has been suggested to induce a 'limbic touch' response resulting in emotional and hormonal reactions commonly seen following caressing.⁸ It is likely that control procedures used in many acupuncture studies aimed at being inert are in fact activating these C tactile afferents and consequently alleviating unpleasantness and re-establishing the patient's sense of self-esteem and wellbeing.^{9,10} Therefore, neither minimal, superficial, sham acupuncture nor 'placebo' needles may be regarded as placebo as they are not inert.

This suggestion challenges the general concept of study designs adopted in many acupuncture studies and meta-analyses. If the controls used were not inert we could assume that they would be superior to other

placebo controls. Interestingly, in patients with osteoarthritis of the neck, superficial needling was found to be superior to placebo diazepam.¹¹

If the above is true one would expect that acupuncture and its 'placebo' control procedures would be equally effective in alleviating pain conditions predominantly associated with affective components like migraine or low back pain.¹²⁻¹⁴ On the other hand, in patients suffering from pain with a more pronounced sensory component, such as osteoarthritis of the knee or lateral epicondylalgia, manual or electroacupuncture would be expected to be superior.¹⁵⁻¹⁷ Even if the acupuncture control procedures may be effective in some pain conditions, manual or electroacupuncture stimulation may still be recommended as they appear to be more effective in reducing pain by taking into account both the sensory and affective aspect.¹⁸

Altogether, in studies showing significant pain relief in response to both acupuncture and its placebo control but no difference in outcome between the groups, this result may be attributed to the amelioration of the affective aspect of pain. This is described as one of the most important factors that determines a patient's use of analgesics and strongly influences the frequency of contacts with healthcare providers.¹⁹ Reduction of the unpleasantness of pain may be the most important effect of acupuncture in the treatment of pain.

Before the effects of acupuncture are attributed to placebo on the basis of lack of differences in evaluated effects between different needling modalities, its therapeutic effects should be compared with other interventions like analgesics.²⁰ If proven equally effective, acupuncture merits consideration for reimbursement as it is associated with fewer risks and side-effects and is cost-effective.²¹⁻²³

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