Experimental Studies (humans)

Different modes of manual needling have different physiological effects (n=12)


**Summary**
The psychophysiological effect of different modes of manual acupuncture stimulation was investigated in 12 healthy, right-handed, male subjects (mean age 29). The cerebral blood flow velocity (CBFV) in both middle cerebral arteries, arterial blood pressure (BP), heart rate (HR) and the perceived intensity of the stimulation were monitored while an acupuncture needle in the right dorsal thenar muscle (LI4) was repetitively rotated with either high frequency (4-8Hz) and low amplitude (hf-la) or low frequency (1-2Hz) and high amplitude (lf-ha). Response patterns induced by hf-la and lf-ha stimulation differed significantly (P<0.05) as tested by Student's t test: (1) lf-ha stimulation was perceived as more intense and induced a more marked right hemispheric CBFV increase; (2) while hf-la stimulation led to a slight decrease of BP and HR, lf-ha stimulation induced an initial pressor response (increase of BP, decrease of HR) and a more marked long term decrease of BP. Data indicate that the mode of manual acupuncture stimulation has a differential effect on the perceived stimulation intensity, the cerebral activation and the cardiovascular reflex response.

**Comment**
In this report, needle rotation is described in terms of both ‘frequency’ and ‘amplitude’. Low frequency high amplitude (lf-ha) was 4-8 rotations [amplitude] at 1-2Hz [frequency], and high frequency low amplitude (hf-la) was 0.5-2 rotations at 4-8Hz. Hertz is the unit of frequency, and it is defined as one cycle per second. One cycle in terms of needle rotation is not defined, but presumably it is the process of rotating in one direction and then the other until the needle has returned to its start point. The amplitude would then refer to the number of rotations in each direction before the direction is changed. Low frequency high amplitude rotation might appear as 'long slow twirling' of the needle, with the thumb and finger moving slowly past each other, and high frequency low amplitude as 'short fast twirling'. Anyway, the slow twirling was significantly more painful than the fast twirling, and so it is hardly surprising that there were physiological differences between the two manual needling styles.

This study adds to the evidence which suggests that, in relation to acupuncture, only high intensity stimuli have meaningful physiological effects.

Atropine-induced gastric dysrhythmia is not normalised by electroacupuncture (n=15)


**Summary**
Acupuncture has been shown to improve the regularity of gastric myoelectric activity. The aim of this study was to evaluate whether atropine-induced gastric dysrhythmia can be normalised by electroacupuncture. Fifteen healthy male volunteers were enrolled for this study. Each subject was studied for three sessions in a randomised sequence which included electroacupuncture on the Zusanli (ST36) points with or without premedication with atropine and a placebo stimulation on a non-acupoint. Cutaneous EGG was performed for 30 minutes at the baseline, 30 minutes during acupuncture, and for an additional 30 minutes after acupuncture. Serum gastrin, motilin, and human pancreatic polypeptide (hPP) levels were also measured.
When applying 2Hz of electrical stimulation on the Zusanli point, there was a significant increase in the percentage of normal frequency (2-4cpm) during acupuncture (baseline versus acupuncture, 82.09±12.37% versus 93.08±8.17%, P<0.01). There was a significant decrease in the percentage of bradygastria as well as tachygastria during 2Hz of electrical stimulation on the Zusanli point. Using intravenous atropine immediately before electroacupuncture, the percentage of normal frequency during acupuncture and post acupuncture periods decreased significantly (baselines versus acupuncture and post acupuncture, 83.86±13.79% versus 55.07±29.44% and 56.76±33.44%, P<0.01). There was a significant decrease in serum PP after intravenous atropine. This observation indicated that atropine-induced gastric dysrhythmia might be mediated partly via the vagal pathway. However, atropine-induced gastric dysrhythmia is not normalised by electroacupuncture.

**Comment**

The reviewer was a little surprised to read the title of this study, since Sato et al have already established, through their well-conducted and reported research on rats, that an intact vagal supply is required for the excitatory effect of acupuncture on gastric motility. Atropine blocks the actions of acetylcholine at its muscarinic receptors, and the latter are found in the smooth muscle of the gut and mediate the effect of vagal parasympathetic efférent nerves. The results of this study, therefore, are entirely concordant with the work of Sato et al, and might even have been predicted.

**Reference List**


Trapezius is more sensitive and more easily ‘wound-up’ than tibialis anterior (n=16)


**Summary**

Chronic myofascial pain is very common in the general population. The pain is most frequently located in the shoulder and neck regions, and nociceptive input from these regions may play an important role for tension-type headache. The mechanisms leading to the frequent occurrence of muscle pain in the shoulder and neck regions are largely unknown. It is possible that the pain is caused by increased sensitivity of muscle nociceptors or by central sensitisation induced by nociceptive input from muscle. The primary aim of the present study was to compare muscle pain sensitivity in the trapezius and anterior tibial regions. Temporal summation was assessed by repetitive electrical stimulation. Pressure-pain thresholds (P=0.005) and intramuscular electrical pain thresholds (P=0.006) were significantly lower in trapezius than in anterior tibial muscle. Temporal summation was present in skin and muscle of both regions (P<0.001). The degree of temporal summation was significantly higher in muscle than in skin in the trapezius region (P=0.02), but not in the anterior tibial region (P=0.47). The authors found that muscle pain sensitivity was higher in the trapezius than in the anterior tibial muscle. They also demonstrated that temporal summation could be induced in both muscle and skin and, importantly, that temporal summation was significantly more pronounced in muscle than in skin in the trapezius but not in the anterior tibial region. These data may help to explain why chronic muscle pain most frequently is located in the shoulder and neck regions.

**Comment**

Readers may not be very surprised by the title of this review; however, this is the first time that this sort of comparison has been made. There are very
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