

Is Minimal Needling Just Placebo?

Acupuncture Clinical Case Study: Heart Rate Variability Monitoring and Clinical Outcomes in Anxiety Patients

Author: Kristen Sparrow, MD
Private Practice San Francisco, California USA



Negative Values Indicate a Decrease in
Stress Response and Increase in HRV During Treatment

Clinical Case Series Findings:

7 patients were successfully treated with acupuncture for anxiety and/or panic attacks. 5 of these patients had pronounced needle sensitivity and so received minimal needling. Not only were they successfully treated with minimal needling but also had improvement in their HRV during treatment. Strong needle stimulation is not a prerequisite, nor is sensitivity to needling an impediment for successful treatment in all cases.

Introduction and Objectives

- This study is part of an ongoing clinical exploration using Heart Rate Variability (HRV) to help identify successful acupuncture treatment 1,2, and to develop pragmatic protocols for its use.
- Increase in HRV, which is an indication of vagal enhancement or relaxation response, not only can be beneficial to patients' health for all types of conditions, but when measured during treatment may be an indication of patients' autonomic response to needling and correlate with effective clinical outcome^{3,4}.
- Optimal intensity of acupuncture needling remains in dispute, with "de qi" and electroacupuncture considered by some to be essential, though their superiority has not been established.
- There are patients who present to the Acupuncture Clinic who cannot tolerate robust needling and require minimal needling.
- In this group of sensitive patients, minimal needling was sufficient to lead to successful clinical outcomes as well as a relaxation response as measured by HRV during needling. This outcome raises questions vis a vis "dosing" of needling and clinical efficacy.

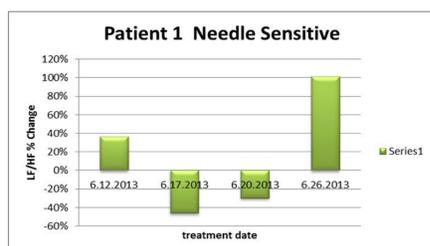
1 Sparrow K Analysis of Heart Rate Variability in Acupuncture Practice: Can It Improve Outcomes? Medical Acupuncture Volume 19, Number 1, 2007
2 Sparrow K SAR 2013 Poster Presentation: Can Heart Rate Variability Analysis Predict Effective Acupuncture Treatment? A Comparison of Profound Responders and Nonresponders
3 Backer, M., Grossman, P., Schneider, J et al., 2008. Acupuncture in migraine: Investigation of autonomic effects. Clin. J. Pain 24 (2), 106-115.
4 Chambers AS, Allen JJ. Vagal tone as an indicator of treatment response in major depression. Psychophysiology. 2002;39:861-864.

Methods

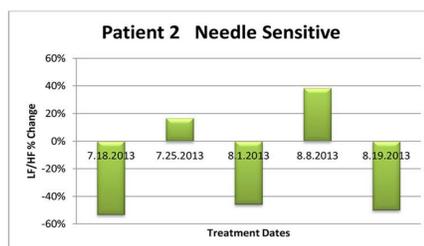
Patients presented to Acupuncture clinic with diagnosis of anxiety and/or panic attack. All received Traditional Chinese Medicine body acupuncture according to their presenting pattern and diagnosis. Patients were not excluded from study if on SSRI or anxiolytic medications. Five patients reported on here were sensitive to needling with fear and aversion to even gentle needling. They received minimal needling (10 needles or less, 14 or 16 gauge needle, no needle stimulation at the time of needling nor afterwards.) Needles were left in place for at least 20 minutes. In addition, all patients reported on had adequate data (no artifact), enough data sessions in succession, and could be positioned suitably for HRV monitoring. Outcome measures were patients' assessments of progress. Heart rate was measured with a Nonin Pulse Oximeter during treatment after needle placement, then data analyzed using Vivosense software. LF/HF (Low frequency/High frequency) trends were chosen for report though other parameters (Sample Entropy, pnn50, HF, Poincaré plots) were also measured. The first 5 minutes of treatment were compared with the second 5 minutes of treatment. Their results are compared for illustration to patients who also presented with anxiety, but no needle sensitivity. All patients responded to treatment, no "Nonresponders" are included in this presentation.



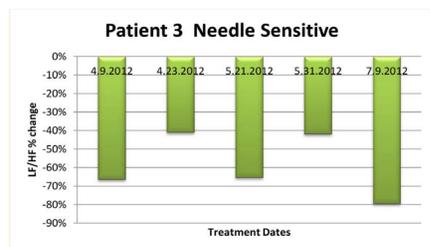
Ancient Medicine Made Modern



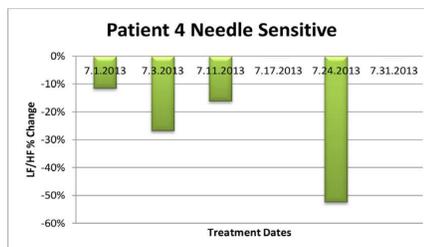
32 Year Old Male with Anxiety and Panic Attacks and Insomnia
Rx: 4Sp(R), 3H(L), 6PL, 4LR, 7H, 16g



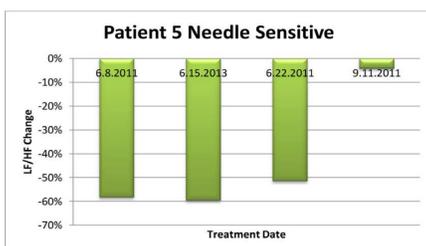
30 year old female with Anxiety, Extreme Gag reflex, vaginismus
Rx: 2L, 3L, 8L, 5L, 4Sp, 6PC, 4LI



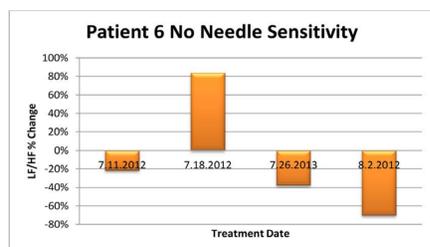
40 year old female with Driving Phobia and "running piglet" anxiety
Rx: 4Sp, 3KL, 3Liv, 4LI, sishengcong, 7H, 23CV 14g



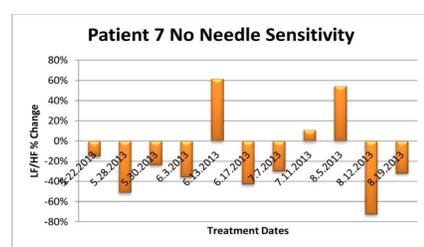
34 year old female with Anxiety and Panic Attacks
Rx: 4Sp(R), 3L(A), 4LR, 6PC(L), 7H 16g



32 Year Old Female Anxiety and Depression weaning off SSRS medication
Rx: 4Sp, 6K, 6Sp, 7H, yintang, sishengcong 14g



27 year old Male with Anxiety and Panic Attacks, "heart kidney rupture"
Rx: 3Liv, 3K, 4Sp, 6PC, 7H, Sishengcong, 4LI 25g



20 Year Old Male with Anxiety, Depression, and Insomnia
Rx: 4Sp, 6PC, 3Liv, 4LI, 3K, 7H, yintang, sishengcong, an mien, knee points 25g

Results

- Are shown by individual treatment since one of the aims of this line of inquiry going forward is to compare one particular treatment (needle gauge, acupoint prescription, and stimulation intensity) compared to another.
- Graphs represent the LF/HF ratio of the first 5 minutes after needle placement to the second 5 minutes.
- HRV analysis shows, in general, an increase in HRV from the first to the second 5 minute segment in needle sensitive patients and nonsensitive patients alike, best demonstrated by a decrease in their LFR/HFR.
- Nonresponders show no discernible pattern in their LF/HF, or an increase in their LFR/HFR over the same segments (only one pertinent data set shown here.)

Discussion

HRV Response

- The data of these anxiety patients is consistent with the finding that HRV tends to increase (as measured by a decrease in LF/HF) during treatment in patients with positive clinical response¹.
- This study is looking at very short term HRV responses to needling in order to capture the neurological response to the stimulation. This is in contrast to many acupuncture/HRV studies which seek to determine HRV responses over the course of treatment.

Intensity of Needle Stimulation

- There is precedent for gentle needling in ancient practice.
- In Chinese Medicine, pulse diagnosis and other clinical findings guide the intensity of acupuncture treatment, where depleted patients are treated more gently than robust patients: Exploring the issue of "dosing" in acupuncture treatment invites an expansion of the possible physiological models of acupuncture's effects.
- Though strong stimulation with electroacupuncture or "de qi" may be appropriate for a wide variety of pain and musculoskeletal conditions or in protocols for infertility or hypertension, minimal needling may very well be appropriate for certain patients without it being considered "placebo."
- Alternative physiological models may explain this minimal needling. Acupuncture needling can be considered a somatosensory nociceptive stimulation. The physiological phenomenon of "righting" or "orienting" may be at play after this stimulus, sometimes leading to a vagal augmentation.^{2 3 4}
- Other models could be expanded to include subtle immunological response⁵, a sort of hormesis⁶ stimulation, or even providing a counterstimulation that calms the hypervigilance of the modern nervous and immune systems.⁷

¹ Sparrow K SAR 2013 Poster Presentation: Can Heart Rate Variability Analysis Predict Effective Acupuncture Treatment? A Comparison of Profound Responders and Nonresponders
² Backer M, Schaefer F, Siegler N, et al Auton Neurosci. 2012 Sep 25;170(12):4855. Impact of stimulation dose and personality on autonomic and psychological effects induced by acupuncture.
³ Napadow V, Lee J, Kim J, et al Hum Brain Mapp. 2012 Apr 14;Brain correlates of phasic autonomic response to acupuncture stimulation: An event-related fMRI.
⁴ Williams LM, Brammer MJ, et al. (2000). The neural correlates of orienting: An integration of fMRI and skin conductance orienting. Neuroreport 11:3011-3015.
⁵ Bennett MF, Robinson MK, Baron ED et al J Investig Dermatol Symp Proc. 2008 Apr;13(1):159. Skin immune systems and inflammation: protector of the skin or promoter of aging?
⁶ Qiang Zhang, J Jingbo Pi,2 Courtney G,etal Dose Response. 2008; 6(2): 196-208. Hormesis and Adaptive Cellular Control Systems
⁷ VelasquezManoff M Scribner 2012 An Epidemic of Absence

Going Forward

- HRV will never likely be the "gold standard" as a pragmatic biomarker for clinical use because there are too many variables.
- Valuable correlations with HRV and more reliable biomarkers (inflammatory markers, cortisol, fMRI) should be studied.
- Objectives of this presentation are to refine protocols for HRV monitoring in the acupuncture clinic with the aim of improving treatment.
- To determine which HRV parameters are the most sensitive and pertinent in this context to clinical outcomes.
- Using these protocols to refine treatment by point selection, and stimulation type (electro, deqi or moxibustion) to optimize HRV response and hopefully clinical response as well.
- Explore other possible physiological models that might help provide new perspectives and approaches to improving acupuncture efficacy.

Tips: HRV Analysis in the Acupuncture Clinic

- Reasonably reliable data can be achieved from 5 minute windows comparing the first to the second 5 minute window.
- If a patient has two sided treatment, it is best to do HRV monitoring during the supine portion of the treatment first, then do the prone portion of the treatment afterwards
- If the patient requires prone or lateral treatment, their data will be less reliable.
- If the patient has persistent PAC's (premature atrial contractions), or other artifact, their data is less reliable.
- Often the LFR/HFR will increase towards the end of the treatment, after 17 to 20 minutes or so. The significance of this is open to speculation.
- Sensitivity of the Patient to needling (low pain threshold) has no bearing on their resultant stress response.

Contact Info

Kristen Sparrow, MD
2000 Van Ness, Ste 506
San Francisco, CA 94123
415.775.0117
www.ksparrowmd.com
for a compendium of Acupuncture and HRV references please go to
http://www.ksparrowmd.com/category/kristen-sparrow-mdblog/heart_rate_variability/

