Abstracts and Commentaries on Key Articles in the Literature

Reviewed by Wadie I. Najm, MD, MEd

Effect of acupuncture treatment for weight loss on gut flora in patients with simple obesity.

Xu Z, Li R, Zhu C, Li M. *Acupunct Med*. 2013;31(1):116–117.

RESEARCHERS FROM Shanghai's Eight People's Hospital, and Ninth People's Hospital, Medical College, Shanghai Jiao Tong University, Shanghai, People's Republic of China conducted this randomized study.

The goal of this study was to explore the effect of abdominal acupuncture treatment on body mass index (BMI) and on intestinal flora.

Forty-five women were recruited from one clinic and randomized equally (15/group) into three groups: 2 treatment groups and 1 control. Subjects were women between the ages of 29–63 (mean age 48.8) with BMIs ≥ 24 with no known endocrine or metabolic causes. Subjects were excluded if they were pregnant or breastfeeding; if they had serious heart, liver, kidney, or brain conditions; or if serious complications of other primary diseases, mental illness, or courses of antibiotics were present.

The two active groups received manual acupuncture treatment every other day (for a total of 20 treatments) by 2 senior acupuncturists using selected points from CV 12, CV 9, BL 24, BL 26, ST 28 and ST 25, together with ST 36 and SP 6. The two active treatment groups received the same treatment, but by different acupuncturists to evaluate if treatment using the same points by the different acupuncturists would be the same or different. Each treatment was 30 minutes long. The control group received no treatment or dietary education.

Changes of BMI and fecal microbial flora in each group before and after one course were observed and recorded.

Statistically significant changes ($p < 0.05$) in BMI were noted in both treatment groups (from 27.63 to 25; and from 27.76 to 25.27, respectively). No significant change was noted in the BMI of the control group (27.52 [before treatment] and 27.16 ± 1.09 [after treatment]) or between the two active-treatment groups.

Analysis of gut flora identified an increase of *Lactobacillus* and *Bifidobacterium* in both treatment groups after

treatment. In group 1, a drop in *Bacteriodes* and *Clostridium perfringens* was also noted after treatment ($p < 0.05$). The control group did not have any statistically significant changes.

The researchers concluded that acupuncture might have an ecological role in the gastrointestinal-tract, activating gastrointestinal function by adjusting the body's immune system. The researchers based their conclusions on work by Bäckhed et al.,* in which *Bacteroides* were found to suppress intestinal fasting-induced adipocyte factor, which promotes adiposity. Alteration of *Bacteroides* level after acupuncture treatment may be one of the mechanisms for the weight loss.

*Bäckhed F, Ding H, Wang T, et al. The gut microbiota as an environmental factor that regulates fat storage. *Proc Natl Acad Sci*. 2004;101(44):15718–15723

Acupuncture in the treatment of obesity: a narrative review of the literature.

Belivani M, Dimitroula C, Katsiki N, Apostolopoulou M, Cummings M, Hatzitolios AI. *Acupunct Med*. 2013;31(1):88–97.

SCIENTISTS FROM Aristotle University of Thessaloniki, Thessaloniki, Greece, and the British Medical Acupuncture Society, Royal London Hospital, conducted this review for Integrated Medicine, University College London Hospitals NHS Foundation Trust, London, UK. This review was not funded.

In this review, the possible mechanisms of actions and the results of recent experimental and clinical studies with different forms of acupuncture (e.g., body, auricular, manual, and electroacupuncture [EA]) for the treatment of obesity were presented.

MEDLINE® was searched for articles until March 1, 2011. In addition, the reference lists of the articles were searched for additional articles of significance. Articles

were excluded if the authors could not extract sufficient data from the English abstract of Chinese articles. A formal quality assessment was not performed because of the volume of articles.

Data from animal studies suggests that acupuncture has multifaceted favorable effects on obesity, such as weight loss, regulation of obesity-related peptides, reduction of insulin resistance, and improvement of lipid profile. EA was the method most widely used in experimental conditions. The researcher in the majority of studies concluded that both acupuncture and EA were effective for reducing body weight in obese rats. Acupuncture influences levels of neurotransmitters in the central nervous system and results in significant body-weight reduction. For EA, the data on the ideal frequency of stimulation were conflicting because of the different study designs. Interestingly, animal models of insulin resistance and polycystic ovarian syndrome did not show any weight loss.

The researchers postulated that acupuncture acts on the satiety center, which is situated in the hypothalamic ventromedial nucleus, and increases its electrical activity. Acupuncture also seems to influence the feeding center in the lateral hypothalamic area, but acupuncture's effects there are less clear. The effect on the lateral hypothalamus was equivocal. It was also suggested that a regulatory action on serotonin and its metabolism in the raphe nuclei is one of the possible mechanisms for weight reduction by acupuncture. When EA was administered three times per week for 4 weeks in obese rats, increased expression of the anorexigenic peptides α -melanocyte-stimulating hormone, and cocaine and amphetamine-regulated transcript peptide was observed in the hypothalamic arcuate nucleus.

EA (100 Hz), applied to nonobese rats for 4 weeks, produced a significant increase in leptin levels. EA was also shown to reduce leptin levels in parallel with its weight-loss effect in experimental models of obesity.

Researchers who conducted several animal studies reported decreased serum insulin levels after EA treatment in obese rats. EA was shown to increase plasma insulin growth factor-1 concentration and influence intracellular signaling pathways in the muscle. EA was also shown to regulate blood-glucose levels by increasing insulin sensitivity, inducing secretion of β -endorphin or stimulating cholinergic nerves.

With respect to clinical trials, a meta-analysis of 29 randomized controlled trials with different types of acupuncture used found that acupuncture was associated with significant body-weight reductions, compared with lifestyle measures, placebo, or sham treatments, and conventional medication (average weight reduction with acupuncture was 1.72 kg (confidence interval: 0.50–2.93).

A more-recent systematic review of the use of Chinese Medicine and acupuncture for treating obesity included 44 trials and concluded that acupuncture was more effective than placebo or lifestyle changes for reducing body weight and that acupuncture was as efficacious as conventional

antiobesity drugs but produced fewer reported adverse effects.

The results of studies looking at the effect of body-manual or auricular acupuncture on body weight remain controversial. Meantime, the majority of studies using EA suggest that EA induces significantly greater weight loss than sham EA and diet.

Clinical trials exploring the mechanism of weight loss showed that manual and auricular acupuncture significantly increase ghrelin levels in comparison with sham acupuncture, while EA seems to cause a remarkable increase in β -endorphin and adiponectin in parallel with producing weight loss. Studies looking at glucose metabolism concluded that EA acted through an increase of serum insulin and C-peptide levels, while manual acupuncture improved insulin sensitivity.

The researchers of the review concluded that both experimental and current clinical data suggest that acupuncture (in different forms) exerts beneficial effects on obesity. Although EA seems to be more effective for reducing weight, combinations of different forms of acupuncture with diet and exercise remain necessary to achieve and maintain weight loss.

Systematic review of acupuncture in cancer care: a synthesis of the evidence.

Garcia MK, McQuade J, Haddad R, et al. *J Clin Oncol*. 2013; Mar 1;31(7):952–960.

SCIENTISTS FROM the University of Texas MD Anderson Cancer Center; American College of Acupuncture and Oriental Medicine, Houston, TX; and the University of Pennsylvania, Philadelphia, PA, conducted this systematic review. The review was supported by a grant from the National Cancer Institute (Institute Grants No. CA121503 and CA016672) and by the University of Texas MD Anderson Cancer Center.

The objective was to provide synthesis of the broad area of acupuncture for symptom management in patients with cancer and to evaluate the overall level of evidence.

Several major databases were searched from inception to December 2011 for prospective randomized controlled trials (RCTs) related to acupuncture in cancer care. No language limitations were applied. Two investigators independently screened articles for inclusion. Inclusion criteria were prospective RCTs, evaluation of acupuncture use for symptom management in patients with cancer, and using needle insertion into acupuncture points. Articles were excluded if they were unpublished reports, letters to the editor, retrospective chart reviews, studies for which only interim data analyses were available, studies that only compared two types of active acupuncture, and studies that did not evaluate acupuncture for cancer-related symptom management.

A total of 2151 articles were screened. Of those, 41 RCTs involving eight symptoms (pain, nausea, hot flashes, fatigue, radiation-induced xerostomia, prolonged postoperative ileus, anxiety/mood disorders, and sleep disturbance) met all inclusion criteria and were evaluated for risk of bias (ROB). Four of the included studies were written in Chinese and 37 were written in English.

One positive trial of acupuncture for chemotherapy-induced nausea and vomiting (CINV) had a low ROB. Of the remaining studies, eight had unclear ROB (4 positive, 3 negative, and 1 with unclear outcomes). Thirty-three studies had high ROB (19 positive, 11 negative, and 3 with both positive and negative outcomes depending on the symptoms).

Eleven RCTs focused on pain. Most studies had problems with blinding patients and small sample size.

Eleven RCTs (8 studies had high ROB; 3 positive and 5 negative outcomes) on nausea and vomiting met the inclusion criteria. Three studies with unclear ROB had positive outcomes.

Eight RCTs evaluated the use of acupuncture to treat or prevent prolonged postoperative ileus. Six studies (4 positive and 2 with negative outcomes) were assessed as having high ROB, and 2 had unclear ROB because of a lack of information about blinding or who performed the acupuncture treatments.

Four studies evaluating xerostomia were included. All had high ROB (two with positive outcomes and two with negative outcomes).

Seven RCTs studying vasomotor symptoms (hot flashes) were included. All seven studies had high ROB.

Three studies of fatigue were included. All were appraised as having high ROB. Two studies reported negative outcomes, while in the one study with a positive outcome, there were questions about possible group differences at baseline.

Six trials looking at anxiety/depression met the inclusion criteria. All evaluated additional symptoms, therefore, treatment specificity for anxiety, depression, or other mood disturbances were questionable.

Three studies looking at sleep problems were included. All three reported positive outcomes, but they were unblinded studies with high ROB.

The researchers concluded that studies with adequate power, duration, and controls are needed to evaluate its applications for general symptom management. According to this review, acupuncture is an appropriate adjunctive treatment for CINV, but additional research is needed to increase the reliability of these findings. For other kinds of symptom management, efficacy remains undetermined because of unclear or high ROB among studies.

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