

Electro-acupuncture for central obesity: abridged secondary publication

LLD Zhong *, S Zhang, E Wong, C Cao, ZX Bian

KEY MESSAGES

1. A total of 168 participants with central obesity were randomly assigned to the electro-acupuncture group (n=84) or the sham group (n=84). 91.7% and 90.5% of participants in the respective groups completed all treatment sessions and follow-ups.
2. Electro-acupuncture was found to have greater benefits on waist circumference, body weight, BMI, hip circumference, waist-to-hip circumference ratio, and body fat percentage than sham acupuncture.
3. Results of this study provide evidence for the

safety and effectiveness of electro-acupuncture for treatment of central obesity.

Hong Kong Med J 2023;29(Suppl 2):S33-4

HMRF project number: 15163331

¹ LLD Zhong, ² S Zhang, ² E Wong, ³ C Cao, ¹ ZX Bian

¹ School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, China

² Department of Family Medicine and Primary Care, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China

³ Clinical Research Centre, Zhujiang Hospital, Southern Medical University, China

* Principal applicant and corresponding author: ldzhong@hkbu.edu.hk

Introduction

Central obesity is strongly associated with insulin resistance, dyslipidaemia, and systemic inflammation and plays a crucial role in the pathogenesis of certain chronic diseases.¹⁻³ Acupuncture can adjust various metabolic functions, improve fat decomposition, reduce blood triglycerides levels, and thus achieve weight loss. The effectiveness and safety of electro-acupuncture have been reported.^{4,5} We previously reported that a combination of electro-acupuncture and auricular acupressure could significantly reduce the body weight and body mass index (BMI), compared with sham control. However, objective metabolic parameters were not tested. Waist circumference is an indicator of body fat distribution and central obesity. This study aims to evaluate the effect of electro-acupuncture on central obesity.

Methods

Participants aged 18 to 65 years who had central obesity, waist circumference of ≥ 90 cm (for men) and ≥ 80 cm (for women), and BMI of ≥ 25 kg/m² were recruited through advertisement. They had not received weight-loss treatment in the past 3 months. Those with endocrine system diseases (thyroid disorder, pituitary disorder, and sex gland disorder), impaired hepatic or renal function, heart disease (arrhythmia, heart failure, myocardial infarction, and having a pacemaker), pregnant or lactating women, bleeding tendency, allergy and immunology disease, bleeding coagulation disorders, stroke or otherwise unable to exercise were excluded.

Participants were randomly assigned to receive 16 sessions (twice a week for 8 weeks) of electro-acupuncture or sham acupuncture by registered

traditional Chinese medicine practitioners with at least 3 years of clinical experience. Participants were followed up at 4 weeks, 8 weeks, and 16 weeks after completion of treatment.

The acupoints used were Zusanli (ST-36), Sanyinjiao (SP-6), Tianshu (ST-25), Fenglong (ST-40), Zhongwan (CV-12), Qihai (CV-6), Daheng (SP-15), and Daimai (GB-26). The needle retention time was 30 minutes. Participants were instructed to lie supine on a bed, exposing the abdomen and legs for disinfection. Acupuncture needles (verum acupuncture needles Asia-med Special No. 16 with 0.30 × 0.30 mm matching the Streitberger sham-needles) were used for 14 acupoints. The insertion depth was about 10 to 25 mm to achieve Deqi sensation (a feeling of soreness, numbness, heaviness, and pressure soreness by the patient or a feeling of heavy, tight, astringent, stagnant by the practitioner). Electro-acupuncture was then applied to the abdominal points with 50 Hz densely dispersed waves at 50 volts through an electric needle stimulator (ES-160 6-Channel Programmable Electro-acupuncture), and the handle of the needle started to tremble slightly.

For sham control, Streitberger's non-invasive acupuncture needle (specification 8 x 1.2 inches / 0.30 × 30 mm) was used at the same acupoints in the same stimulation manner, but the needles only adhered to the skin. The sham acupuncture also was connected to an electric needle stimulator but no electrical stimulation to the body. The stimulator emitted the same beeping sound and flashing light continuously.

All participants received unilateral auricular acupressure at four auricular points: Hunger, Shen men, Spleen, and Stomach, with Semen Vaccariae

(Wang Bu Liu Xing) embedded within adhesive tape in each treatment session. We did not apply sham acupressure to avoid reducing the pure acupuncture effects. Participants were instructed to repeatedly press the tape with fingertips for 1 minute per point, thrice per day. The embedded tape was retained in situ for 24 hours, and then the alternate ear was treated at the next visit.

All participants were advised to take a regular number of meals daily and not intake any snacks. Meals comprised one bowl of rice (210 g) for participants >70 kg and two-thirds of a bowl of rice (140 g) for those <70 kg, with instructions to eat side dishes balanced with the rice. In addition, participants were required not to take exercise, except for essential activities in daily work.

The primary outcome was the change in waist circumference. The secondary outcomes included the changes in hip circumference, waist-to-hip circumference ratio, BMI, body fat percentage, and body weight. Participants were evaluated at the first, fourth, eighth, and sixteenth sessions of treatment and at the follow-up.

Results

A total of 168 participants were randomly assigned to receive electro-acupuncture (n=84) or sham acupuncture (n=84). 91.7% and 90.5% of participants in the respective groups completed all treatment sessions and follow-ups. The baseline characteristics of the two groups were comparable at baseline.

At 8 weeks after treatment, decreases in the waist circumference, body weight, BMI, hip circumference, waist-to-hip circumference ratio, and body fat percentage were significantly greater in the electro-acupuncture group than in the sham acupuncture group. There were no serious adverse events in both groups.

Discussion

Electro-acupuncture was found to have greater

benefits on waist circumference, body weight, BMI, hip circumference, waist-to-hip circumference ratio, and body fat percentage than sham acupuncture. Results of this study provide evidence for the safety and effectiveness of electro-acupuncture for treatment of central obesity.

Conclusion

Our findings provide evidence of efficacy and safety of electro-acupuncture and auricular acupressure for treating central obesity.

Funding

This study was supported by the Health and Medical Research Fund, Health Bureau, Hong Kong SAR Government (#15163331). The full report is available from the Health and Medical Research Fund website (<https://rfs1.fhb.gov.hk/index.html>).

Acknowledgements

We thank Ms Ankie Wong and Ms YoYo Wu and Mr Tsz-fung Lam for patient recruitment.

References

1. Yusuf S, Hawken S, Ounpuu S, et al. Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. *Lancet* 2005;366:1640-9.
2. Zhang C, Rexrode KM, Van Dam RM, Li TY, Hu FB. Abdominal obesity and the risk of all-cause, cardiovascular, and cancer mortality: sixteen years of follow-up in US women. *Circulation* 2008;117:1658-67.
3. Tsujimoto T, Kajio H. Abdominal obesity is associated with an increased risk of all-cause mortality in patients with HFpEF. *J Am Coll Cardiol* 2017;70:2739-49.
4. Zhang RQ, Tan J, Li FY, Ma YH, Han LX, Yang XL. Acupuncture for the treatment of obesity in adults: a systematic review and meta-analysis. *Postgrad Med J* 2017;93:743-51.
5. Cho SH, Lee JS, Thabane L, Lee J. Acupuncture for obesity: a systematic review and meta-analysis. *Int J Obes (Lond)* 2009;33:183-96.