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RESEARCH

Evaluation of the effects of body and auricular acupuncture combination therapy in obesity control: a retrospective study

Vücut ve kulak akupunkturu kombinasyon tedavisinin obezite kontrolündeki etkilerinin değerlendirilmesi: retrospektif bir çalışma

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Abstract

Purpose: The aim of this study is to retrospectively evaluate the effects of body (abdominal) and auricular acupuncture combination therapy on anthropometric measurements and blood parameters in obesity control.

Materials and Methods: This study is a descriptive, cross-sectional and retrospective study. This study was carried out by retrospectively scanning the patient files of the patients who applied to the obesity center between 01.05.2019 and 15.02.2020 and wanted to have acupuncture.

Results: There are 10 points selected: Shenmen (HT7, spirit gate), point zero, small intestine, large intestine, stomach, esophagus, mouth, appetite control (hunger), antidepressant and spleen point. The abdominal acupuncture points applied to the patients for the treatment of obesity are shown in this study. There are 6 points selected: ST 25, ST 26, REN 12 (CV12), REN 10 (CV10), REN 6 (CV6), REN 4 (CV4). The results show that combined ear and abdominal acupuncture resulted in significant weight loss in all participants in the acupuncture group. The mean high-density lipoprotein cholesterol (HDL-C) mean scores of the patients who underwent acupuncture were significantly higher whereas the mean low-density lipoprotein cholesterol (LDL-C) scores was significantly lower than the patients who did not receive acupuncture.

Conclusion: Ear and abdominal acupuncture applications applied for three months for weight loss in obese individuals provided significant weight loss, along with a significant decrease in waist/hip ratio and improvement in all other blood parameters.

Keywords:. Acupuncture, obesity, combination therapy

Öz

Amaç: Bu çalışmanın amacı, obezite kontrolünde vücut (abdominal) ve kulak akupunkturu kombinasyon tedavisinin antropometrik ölçümler ve kan parametreleri üzerindeki etkilerini retrospektif olarak değerlendirmektir.

Gereç ve Yöntem: Bu çalışma tanımlayıcı, kesitsel ve retrospektif bir çalışmadır. Bu çalışma 01.05.2019 – 15.02.2020 tarihleri arasında obezite merkezine başvuran ve akupunktur yaptırmak isteyen hastaların hasta dosyaları retrospektif olarak taranarak yapılmıştır. .

Bulgular: Seçilen 10 nokta vardır: Shenmen (HT7, ruh kapısı), sıfır noktası, ince bağırsak, kalın bağırsak, mide, yemek borusu, ağız, iştah kontrolü (açlık), antidepresan ve dalak noktası. Obezite tedavisi için hastalara uygulanan karın akupunktur noktaları bu çalışmada gösterilmiştir. Seçilen 6 nokta vardır: ST 25, ST 26, REN 12 (CV12), REN 10 (CV10), REN 6 (CV6), REN 4 (CV4). Sonuçlar, kombine kulak ve karın akupunkturunun, akupunktur grubundaki tüm katılımcılarda önemli kilo kaybı ile sonuçlandığını göstermektedir Akupunktur uygulanan hastaların ortalama yüksek dansiteli lipoprotein kolesterol (HDL-K) puan ortalamalarının anlamlı olarak daha yüksek olduğu saptandı. Akupunktur uygulanan hastaların ortalama düşük yoğunluklu lipoprotein kolesterol (LDL-K) skorunun akupunktur uygulanmayan hastalara göre anlamlı olarak düşük olduğu saptandı.

Sonuç: Obez bireylerde kilo kaybı için 3 ay süreyle uygulanan kulak ve karın akupunktur uygulamalarının belirgin kilo kaybı sağlamasının yanı sıra bel/kalça oranında belirgin azalma ve diğer tüm kan parametrelerinde düzelme sağladığı saptanmıştır.

Anahtar kelimeler: Akupunktur, obezite, kombine terapi

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INTRODUCTION

Obesity is becoming an epidemic health problem that will increase the occurrence of many other diseases day by day. Excessive fat accumulation in the body is an important symptom of people with obesity, which results in a body mass index (BMI) value of 30 and above. The result of the imbalance caused by the intake of a high-calorie diet and the inability to consume enough calories has been shown as the cause of this situation. Obesity is mainly caused by the combination of a high-calorie diet and a sedentary lifestyle[1,2].

Research tells us that the world's average BMI has nearly tripled since 1975. According to the World Health Organization (WHO) data; More than 1 billion people are obese and it is estimated that by 2025 approximately 167 million people (adults and children) will be less healthy because they are overweight/obese[3]. Since obesity is a worldwide health problem, all the steps taken to prevent obesity have brought global awareness. It is difficult for many people with obesity to lose weight simply by following the right diet or increasing their physical activity. Although there are many drugs in the obesity-related market, they are insufficient in weight management alone due to high cost or safety. In addition, the weight lost can be regained a short time after the drug use ends, as the patient cannot receive adequate education and cannot integrate lifestyle changes into his/her life[4]. Acupuncture, which is an important branch of traditional Chinese medicine, has a great place in the treatment of obesity because it is easy to apply, cheap and safe. In the literature, the positive results of acupuncture in the treatment of obesity have been shown in many studies [5,7-10].

Acupuncture, including body acupuncture and auricular acupuncture, has been shown to have many beneficial effects, according to the results of many randomized controlled trials and systematic reviews.[9,10] Acupuncture was found to be more effective in lowering BMI, body weight and waist circumference compared to placebo/lifestyle change, it has been shown to have a similar effect as western anti-obesity drugs, with less reported side effects such as insomnia, headache or gastrointestinal reactions.[10,11] While auricular acupuncture is summarized as the effect of appetite suppression in overweight patients, its effectiveness on weight control was found to be higher when combined with body acupuncture.[12]

The data obtained as a result of this study and the effects of ear/body acupuncture on weight control will be revealed with scientific data. With this study, the combined use of ear/body acupuncture points will increase and the positive results obtained will enable the current study to find its important place in the literature as a pioneering study in weight control. The aim of this study is to retrospectively evaluate the effects of body (abdominal) and auricular acupuncture combination therapy on anthropometric measurements and blood parameters in obesity control.

MATERIALS AND METHODS

This study is a descriptive, cross-sectional and retrospective study. This study was carried out by retrospectively scanning the patient files of the patients who applied to the obesity center between 01.05.2019 and 15.02.2020 and wanted to have acupuncture. The study was carried out using the patient data, which was examined and treated by the relevant principal investigator at the Obesity Center of Konya Training and Research Hospital, and all the desired values are included in the file. The data of the existing files are entered into the obesity data entry system, which is contracted by the Ministry of Health, at the same time. All applications in the obesity center; It is done within the knowledge of the physician responsible for the obesity center. The obesity center responsible physician working in the obesity center is the physician who has received the training to carry out the obesity center responsibility given by the Ministry of Health and whose work has been approved by the ministry.

Sample

The sample size was calculated with the OpenEpi v3.01 program and it was found to be 90 at 5% significance level, 95% confidence interval, 80% power. 186 patients were included in the study. As the treatment group; 93 patients who underwent body (abdominal) and auricular acupuncture were included. As the control group, 93 patients who came to the obesity center and attended the trainings given in the center and did not have acupuncture were randomly selected. The frequency of acupuncture application affects the effectiveness of appropriate acupuncture, and frequently applied acupuncture increases the sensitivity of the effective points undesirably. Therefore; The treatment was applied as a single session per week for 12 weeks, and the Ethics

approval was obtained from the Ethics Committee of Selçuk University of Medical Sciences (NMRR-2022/507). All participants were informed about the research purposes, procedures and their rights. Their informed consents were also obtained.

Inclusion criteria were being ≥18 years or older; being applied acupuncture; female or male; body mass index (BMI)≥30 kg/m2 and patients who had not taken any other weight control measures or any medical and/or drug history in the last 3 months were included in the study. Those with endocrine disease such as thyroid disorder, pituitary disorder; patients with heart disease, arrhythmia, heart failure, myocardial infarction or pacemaker; those with allergies and immunology diseases; those with a tendency to bleeding; pregnant or breastfeeding women; those with hepatic or renal dysfunction; those who had a stroke or could not exercise otherwise were excluded from the study.as 12 weeks were excluded. The primary outcome is the change in body weight and other parameters before and after treatment. The total training period was determined as 12 weeks. All patients who come to the obesity center have received the same training, and all the blood parameters before and after acupuncture are taken in detail and all values are recorded in the system when the patients first apply to the center.

Procedure

The treatment was applied as a single session per week for 12 weeks. The needles applied in ear acupuncture were left in the patient's ear for a week. The patient was told to remove all the needles from his/her ears and wash his/her ears well the day before she came to the next week and come to the next session in this way. Body acupuncture, on the other hand, was performed once a week in the same session as ear acupuncture and continued for a total of 12 weeks.

Blood parameters are routinely measured at the first visit and every 3 months for everyone who applies to the obesity center. During the specified period, the blood parameters and anthropometric measurements of the patients, who were taken routinely at the center in 3-month periods, were recorded in the periods before and after the acupuncture treatment applied.

Acupuncture practice prescription

According to the data obtained from systematic reviews, the acupuncture points that are frequently used in body weight control trials are Zusanli (ST-36), Sanyinjiao (SP-6), Tianshu (ST-25), Fenlong (ST-40), Zhongwan (CV-12), Qihai (CV-6), ST44 (Neiting), LI4 (Hegu), LI11 (Quchi) and PC6 (Neiguan) [5-7].

In addition to these acupuncture points, based on our principle investigator clinical experience, she added these needling points on the abdomen that are effective for central obesity; ST 25, ST 26, REN 12 (CV12), REN 10 (CV10), REN 6 (CV6), REN 4 (CV4) and 10 auricular acupoints (Shenmen (HT7, spirit gate), point zero, small intestine, large intestine, stomach, esophagus, mouth, appetite control (hunger), antidepressant and spleen point. There are 16 needling points in total. The location of each acupuncture points are shown in Figure 1 and 2.

Interventions

Acupuncture group

Treatments will be performed 1 time a week for 12 weeks. All acupuncture sessions were administered by the same physician. Abdominal acupuncture needles remained in the patient for approximately 30 minutes. Ear acupuncture needles remained in the patient's ear for 1 week. If the ear needles fell, the patient applied to the doctor again and new ones were inserted instead of the fallen needles. The patients were told that the ear needles should be removed on the morning of their visit to the doctor. It has been mentioned that the cleaning of the ear before it arrives is very important in order to eliminate the possible risks of infection. This patient group attended all of the trainings given in the obesity center for 12 weeks. They also attended exercise classes held at the obesity centre.

Control group

Among those who attended the obesity center trainings continuously for 12 weeks, 93 people were randomly selected and included in the study. These patients only attended the trainings held at the obesity center and took exercise classes. Acupuncture was not applied to these patients.

Statistical analysis

Statistical analysis was appraised using the Statistical Package for the Social Science (SPSS) ver. 21.0 (IBM Corp., Armonk, NY, USA). Percentage (%), frequency (n), mean±standard deviation, minimum (min) – maximum (max) and range values were used as descriptive statistics to appraise the data obtained from the labor. The t-test was used to compare the

averages of the continuous variables of the datum. For statistical significance, $P < 0.05$ was considered significant. The normality of the data was checked using the Kolmogorov-Smirnov normality test. All analysis were conducted within a 95% confidence interval.

RESULTS

A total of 186 people, 93 of whom had acupuncture and 93 of whom were in the control group, were included in this study. Mean age of the participants was 36.46 ± 7.59 (21-53) years. While the measured BMI value of the participants who came to the obesity center was 36.58±3.49 kg/m2 in the first month, the BMI value measured 3 months later was 32.16±4.06 kg/m2. Socio-demographic data of the participants are shown in Table 1. Comparison of anthropometric measurements and laboratory parameters of patients who had acupuncture and those who did not have acupuncture are shown in Table 2. Patients who had acupuncture had a significantly lower BMI at the third month than those who did not (p<0.001). In patients who had acupuncture the average waist and hip circumferences were significantly lower at the third month compared to those who did not have acupuncture (p<0.001). When we evaluated the average score of the patients in the center according to whether they had acupuncture or not, it was found that the mean high-density lipoprotein cholesterol (HDL-C) score averages of the patients who had acupuncture were significantly higher (p<0.001). It was found that the mean mean low-density lipoprotein cholesterol (LDL-C) score of the patients who had acupuncture was significantly lower than the patients who did not have acupuncture (p=0.003). It was found that the mean triglyceride score of the patients who had acupuncture was significantly lower than the patients who did not have acupuncture. It was found that the mean glycosylated hemoglobin (HbA1c) score of the patients who had acupuncture was significantly lower than the patients who did not have acupuncture (p<0.001) (Table 2).

Table 1. Sociodemographic characteristics of patients

Characteristics	Value	n	%
Gender	Female	152	81.7
	Male	34	18.3
Age Mean±SD (min-max)	36.46±7.59 (21-53)		
Marital status	Married	160	86.0
	Single/divorced	26	14.0
Educational level	Literate	40	21.5
	Primary ed.	82	44.1
	High school	50	26.9
	University/↑	14	7.5
Occupation	Housewife	121	65.1
	Retired	23	12.4
	Artisan/S-emp.	10	5.4
	Public p.	16	8.6
	Private sector	16	8.6
Income status	Low	12	6.5
	Middle	38	20.4
	Good	136	73.1
BMI-1st (kg/m^2) Mean±SD (min-max)	36.58±3.49 (31.25-46.28)		
BMI-2nd (kg/m^2) Mean±SD (min-max)	32.16±4.06 (25.48-42.23)		
BMI-1st categorical	30.0-34.9	82	44.1
	35.0-39.9	72	38.7
	≥40.0	32	17.2
BMI-2nd categorical	25.0-29.9	62	33.3
	30.3-34.9	74	39.8
	35.0-39.9	42	22.6
	≥40.0	8	4.3
Total		186	100.0

Values are presented as number (%) or mean±standard deviation (range). Mean±SD: Mean±standard deviation; BMI: Body mass index; Primary ed: Primary education;S-emp: Self-employment; Public p: Public personnel.

Table 2. Comparison of clinical and laboratory parameters of patients with acupuncture

Patients with acupuncture			Control (No acupuncture)			
Variable	**Baseline**	**3 Months**	**Baseline**	**3 Months**	***P**** **(baseline)**	***P†*** **(3months)**
BMI (kg/m2)	36.58±3.50	30.37±3.49	36.38±2.93	34.43±3.25	>0.05	<0.001
WC (cm)	114.68±5.50	105.36±5.76	112.28±5.34	109.71±5.96	>0.05	<0.001
HC (cm)	132.01±4.79	124.68±4.68	132.71±1.79	130.00±2.23	>0.05	<0.001
HDL-C (mg/dL)	45.82±5.78	55.05±6.70	40.71±6.70	44.00±7.81	>0.05	<0.001
LDL-C (mg/dL)	139.44±26.85	119.07±21.90	126.71±21.36	123.42±22.56	>0.05	0.003
Triglyceride (mg/dL)	134.13±19.95	114.61±15.72	133.14±19.94	131.14±17.83	>0.05	<0.001
HbA1c (%)	5.87±0.31	5.55±0.21	6.00±0.56	5.90±0.58	>0.05	<0.001

Values are presented as mean± standard deviation. ; *Statistical analysis was done by Mann-Whitney U-test for baseline values; †Data analysis was done by Mann-Whitney U-test for third month values.; BMI: Body mass index; WC:waist circumference; HC:hip circumference; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; HbA1c: glycosylated hemoglobin.

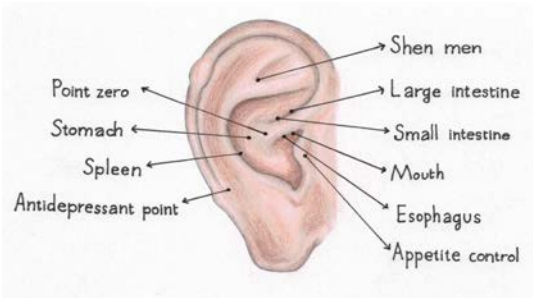

Figure 1. The location of chosen acupoints on humans for the treatment of obesity.

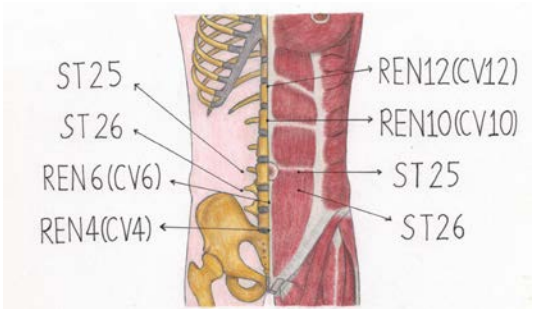

Figure 2. The location of chosen abdominal acupoints on humans for the treatment of obesity

Acupuncture ear points applied to the patients for the treatment of obesity are shown in figure 1. There are 10 points selected: Shenmen (HT7, spirit gate), point zero, small intestine, large intestine, stomach, esophagus, mouth, appetite control (hunger), antidepressant and spleen point.

The abdominal acupuncture points applied to the patients for the treatment of obesity are shown in figure 2. There are 6 points selected: ST 25, ST 26, REN 12 (CV12), REN 10 (CV10), REN 6 (CV6), REN 4 (CV4). The results show that combined ear and abdominal acupuncture resulted in significant weight loss in all participants in the acupuncture group.

DISCUSSION

This retrospective clinical trial aims to evaluate the efficacy and safety of body and auricular acupuncture on body weight control in Turkey. While the aim of acupuncture studies conducted to date was to treat obesity in general, the aim of this study was to reduce abdominal obesity with auricular and abdominal acupuncture. This research it is one of the first studies in which auricular and abdominal acupuncture was applied to Turkish obese patients living in Turkey in the treatment of central obesity. This pilot study will provide evidence for large-sample studies.

It is known that ear and body acupuncture applied together stimulates the energy flow in the body to improve metabolism, thus aiding weight loss. Traditional Chinese Medicine facilitates weight loss by removing excess heat and moisture from the body and also by supporting the organs responsible for proper digestion. There is limited evidence in the literature that co-administered auricular and abdominal acupuncture can treat health conditions on its own. This study is one of the promising

researches in which auricular and abdominal acupuncture is applied together and suggesting that acupuncture may be beneficial for the health status of individuals. In this study in ear acupuncture; shenmen (HT7, spirit gate), point zero, small intestine, large intestine, stomach, esophagus, mouth, appetite control (hunger), antidepressant and spleen point were injected. In abdominal acupuncture ST 25, ST 26, REN 12, REN 10, REN 6 and REN 4 points were injected. The scientific basis for choosing these acupuncture points is based on the results of many reviews and clinical studies [8-14]. It was determined that there were significant changes in waist circumference and hip circumference measured before and after acupuncture treatment, and in all other blood parameters and BMI values.

Another study designed to test the effectiveness of auricular acupuncture on weight loss, waist circumference, and change in waist-to-hip ratio included 55 young adults, 18-20 years old, male and female. Participants were randomly divided into two groups. Patients in both groups were enrolled in 30-minute sessions per week for a total of eight weeks. Auricular acupuncture was applied to the first group and acupressure was applied to the other control group. There was a significant decrease in body weight and waist circumference ($p \leq 0.05$) after treatment in both control and treatment groups, and a decrease in waist-hip ratio was observed in the group that received only auricular acupuncture. Therefore, it was concluded that auricular acupuncture is a reasonable option for the treatment of overweight and obesity in young adults [15]. Our study, with a mean age of 36.46±7.59 years, shows that auricular and abdominal acupuncture is an effective complementary alternative treatment method not only for young people, but also for obese adults aged 30 and over.

In another study by Zhong et al., a total of 168 participants were randomly assigned to receive either electro-acupuncture (n=84) or sham acupuncture (n=84). 91.7% and 90.5% of the participants in these groups completed all treatment sessions and follow-ups. After 8 weeks of treatment, reductions in waist circumference, body weight, BMI, hip circumference, waist-hip circumference ratio, and body fat percentage were significantly greater in the electro-acupuncture group than in the sham acupuncture group. No serious side effects were observed in either group[16]. In our study, similar results were obtained with this study, and no serious side effects were observed in the patients.

When the literature is evaluated; a similar study was not found in which ear and abdominal acupuncture were applied together, and the positive results obtained constitute the different and strong aspect of the study. Another strength of the study was that the study population was homogeneous. Because all patients admitted to the obesity center were accepted to the center because they had similar characteristics. This is another strength of our study, as all applications and examinations are performed by the same physician. Again, a study to be carried out in a larger sample group under the supervision of a physician will be more productive.

In conclusion, ear and abdominal acupuncture applications applied for three months for weight loss in obese individuals provided significant weight loss, along with a significant decrease in waist/hip ratio and improvement in all other blood parameters. In this respect, this study also offers a different acupuncture treatment method to physicians who will apply acupuncture in the treatment of obesity and especially abdominal obesity. The prevalence of acupuncture use in obesity patients is high worldwide, but few high-quality studies have adequately evaluated the effects of acupuncture use on biochemical parameters. Larger studies are needed to determine if abdominal and auricular acupuncture combined therapy is safe and effective in the treatment of obesity.

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REFERENCES

1. Zhong YM, Luo XC, Chen Y, Lai DL, Lu WT, Shang YN et al. Acupuncture versus sham acupuncture for simple obesity: a systematic review and meta-analysis. Postgrad Med J. 2020;96:221-7.
2. Lopez KN, Knudson JD. Obesity: from the agricultural revolution to the contemporary pediatric epidemic. Congenit Heart Dis. 2012;7:189–99.

3. World Health Organization. https://www.who.int/news/item/04-03-2022-world-obesity-day-2022-accelerating-action-to-stop-obesity//. [Accessed 07 Nov 2022].
4. Yıldırım Dİ, Eryılmaz MA. Obezite Merkezine Başvuran Hasta Profilinin ve Hastalara Verilen Eğitim Etkinliğinin Değerlendirilmesi. Ankara Med J. 2020;20:327-36.
5. Tseng, CC, Tseng A, Chang, CH. Effect of laser acupuncture on obesity: study protocol for a randomized controlled trial. Trials. 2015;16:1-6.
6. Kim SK, Bae H, Lee G, Jeong H, Woo HS, Han JB et al. The endogenous CCK mediation of electroacupuncture stimulation-induced satiety in rats. Peptides. 2008;29:564–70.
7. Wang YY, Liang FX, Chen L, Lu W, Zhou YD, Huang XX et al. Electroacupuncture improves obesity by lowering gastrointestinal motility, blood lipids and expression of intestinal leptin and cholecystokinin in obese rats. Acupuncture Res. 2020;45:875–81.
8. Xu L, Ding C, Chen J, Tan R, Chen D, Xu S et al. Efficacy difference between warming acupuncture and other acupuncture methods for primary obesity: a meta-analysis. Zhongguo Zhen Jiu. 2018;38:1019–26.
9. Sui Y, Zhao HL, Wong VC, Brown N, Li XL, Kwan AK et al. A systematic review on use of Chinese medicine and acupuncture for treatment of obesity. Obes Rev. 2012;13:409–30.
10. Cho S, Lee J, Thabane L, Lee J. Acupuncture for obesity: a systematic review and meta-analysis. Int J Obes. 2009;33:183–96.
11. Lin XM, Li B, Du YH, Xiong J, Sun P.Systematic evaluation of therapeutic effect of acupuncture for treatment of simple obesity. Zhongguo Zhen Jiu. 2009;29:856–60.
12. Zhong LD, Wai Kun, Tsz FL, Shi PZ, Jun JY, Tat CZ. The combination effects of body acupuncture and auricular acupressure compared to sham acupuncture for body weight control: study protocol for a randomized controlled trial. Trials. 2016;17:1-7.
13. 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.
14. Set T, Cayir Y, Güven Pirim AB. Effects of ear acupuncture therapy for obesity on the depression of obese women. Acupuncture in Med. 2014;32:427-29.
15. Hsieh CH, Su T-J, Fang Y-W et al. Effects of auricular acupressure on weight reduction and abdominal obesity in Asian young adults: a randomized controlled trial. The American J Chinese Med. 2011;39:433-40.
16. Zhong LLD, Zhang S, Wong E, Cao C, Bian ZX. Electro-acupuncture for central obesity: abridged secondary publication. Hong Kong Med J. 2023;29:33-4.