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Brief Commentary

Brief Commentary Based on Article "A Case Report on Changes in Body Composition in an Adolescent Obese Patient Treated with Complex Korean Medicine Treatment with Modified Fasting, and Space Spinal Conduction Exercise and Manipulation"

Jun-Gyu Park*

Kyung-Hee Saimdang Korean Medicine Clinic. 309. 1426, Jungang-ro, Ilsanseo-gu, Goyang-si, Gyeonggi-do, Republic of Korea

According to the criteria for obesity set forth by the World Health Organization (WHO) for the Asia-Pacific region, a body mass index (BMI) of 35 kg/m² or above is classified as Class III obesity [1]. Class III obesity necessitates active intervention due to its impact on daily life and its association with a range of metabolic complications and an increased risk of severe infectious diseases [2]. The clinical practice guidelines in traditional Korean medicine recommend various therapeutic approaches for obesity, including herbal prescriptions containing ephedra, acupuncture, electroacupuncture, pharmacopuncture, moxibustion, Chuna therapy, and massage. These treatments are most effective when combined rather than applied in isolation. Additionally, dietary and exercise therapies form the foundational basis of obesity treatment [3].

For the management of adolescent obesity, it is recommended that individuals engage in at least 60 minutes of physical activity daily, characterized by increased respiratory and heart rates compared to baseline levels. A well-balanced diet containing all necessary nutrients is essential, and it is particularly important to avoid skipping breakfast. Pharmacotherapy is generally restricted and may only be considered when intensive dietary and behavioral interventions fail to control weight or associated complications [4].

In this study, a 16-year-old adolescent with Class III obesity, weighing 115.8 kg and a BMI of 35.5 kg/m², underwent a complex Korean medicine treatment over 21 weeks (Figure 1). This treatment included herbal medicine, fasting therapy, electroacupuncture, pharmacopuncture, and a spinal manipulation technique known as Space Spinal Conduction Exercise and Manipulation (SSCEM). As a result, the patient experienced a significant weight reduction of approximately 23.0 kg, which corresponds to 19.86% of the initial body weight. The BMI decreased by 6.9 kg/m², with a reduction of 1.6 kg in skeletal muscle mass during this weight loss (Table 1) [5].

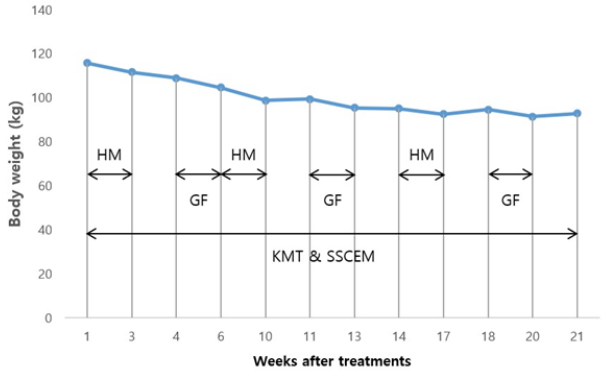

Figure 1: Treatment Timeline and Changes in Body Weight over time. HM: herbal medicine, GF: Gamrosu fasting, KMT: Korean medicine treatments, SSCEM: Space Spinal Conduction Exercise and Manipulation.

Week	BW (kg)	BMI (kg/m²)	SMM (kg)	BFM (kg)	PBF (%)	WHR	VFL
Before	115.8	35.5	44.5	38.1	32.9	0.96	15
4 w	108.9	33.4	43.3	32.8	30.1	0.91	12
6 w	104.6	32.1	43	29.2	27.9	0.91	11
13 w	95.4	29.4	41.8	21.6	22.6	0.85	9
17 w	92.5	28.4	41.4	19.4	21	0.85	8
20 w	91.4	28.2	41.9	17.4	19.1	0.8	7
21 w	92.8	28.6	42.9	17	18.4	0.8	7

Table 1: Change of Body Measurements and Body Composition Analysis.

BW: body weight, BMI: body mass index, SMM: skeletal muscle mass, BFM: body fat mass, PBF: percent body fat, WFR: waist-hip ratio, VFL: visceral fat level

The herbal medicine prescribed in this study contained 24 grams of ephedra per day, which equates to an ephedrine content of 146 mg/day (Table 2). This dosage approaches the maximum limit of 150 mg/

***Corresponding author:** Jun-Gyu Park, Kyung-Hee Saimdang Korean Medicine Clinic. 309. 1426, Jungang-ro, Ilsanseo-gu, Goyang-si, Gyeonggi-do, Republic of Korea, Tel: +82 319122040; E-mail: saimdang0100@naver.com

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day permitted by the U.S. FDA, chosen due to the patient's high BMI and body weight. The fasting therapy involved the use of Gamrosu, developed by the Society of Korean Medicine for Obesity Research, and was performed alternately with herbal medicine treatment, conducted a total of three times (Table 3). Electroacupuncture was administered using disposable needles (0.25×60 mm stainless steel) and a medical electroacupuncture device set at 25 Hz for 15 minutes on the abdominal area. The pharmacopuncture treatment included *Rhodiola rosea*, based on studies suggesting its effectiveness in significantly reducing triglycerides and free fatty acids, and improving insulin sensitivity, thereby exhibiting anti-obesity effects [6]. SSCEM procedure was performed by a skilled practitioner for a minimum of 25 minutes per session (Table 4).

Botanical name	Amount (g)
Ephedra herba (麻黃)	24
Gypsum Fibrosum (石膏)	15
Coicis semen (薏苡仁)	24
Zizyphi Fructus (大棗)	4
Akebiae Caulis (木通)	3
Eriobotryae Folium (枇杷葉)	3
Mori Folium (桑葉)	3
Zingiberis Rhizoma Recens (生薑)	3
Citri Reticulatae Viride Pericarpium (青皮)	3
Liriopis Tuber (麥門冬)	2
Sappan Lignum (蘇木)	1
Platycadi Radix (桔梗)	1
Carthami Flos (紅花子)	1

Table 2: Composition of herbal medicine in Case.

Composition	Ratio (%)
Acer saccharum sap extract	25.0
Prunus mume extract (烏梅)	10.0
Thick starch syrups, rice	5.0
Liriope platyphylla (麥門冬)	3.3
Citrus unshiu (陳皮)	2.2
Schizandrae chinensis (五味子)	1.7
Amomum xanthioides (砂仁)	1.1
Zingiber officinale (生薑)	1.1
Panax ginseng (人蔘)	1.1
Fermented broth of 38 plants	49.5
Total	100

Table 3: Composition of Gamrosu.

SSCEM is a newly developed spinal manipulation manual therapy from Korea designed to address structural abnormalities of the spine and musculoskeletal system. Specifically targeting the hip joint, pelvis, vertebral bodies and spinous processes to ensure optimal space within the spine and enhance structural alignment. Techniques involve using body parts such as hands, feet, and forearms, along with specialized tools like medical hammers, spinal manipulation rods, bars and cervical traction straps. The unique feature of SSCEM is found in its ascending approach, step-by-step alignment of spinal

Step	Manipulation Method	Position
1	Hip joint traction	Lateral
2	Lumbosacral joint distraction	Prone
3	Pressing one side posterior superior iliac spine (PSIS) technique on both sides	Prone
4	Lifting one side thigh and pushing PSIS technique on both sides	Prone
5	Tapping sacrum and one side spinal spinous process technique using spinal manipulation rods and medical hammer on both sides	Prone
6	Pressing down one vertebra technique using spinal manipulation bar on all vertebrae	Prone
7	Occipitocervical junction relaxation	Supine
8	Scalene muscle relaxation	Supine
9	Cervical spine traction	Supine
10	Cervical spine rotational manipulation	Supine

Table 4: Treatment process of SSCEM.

parts, and ability to address imbalances while restoring structural and functional balance. SSCEM employs a series of steps for spinal and musculoskeletal treatment. It begins with gently pulling the hip joint using a pelvic cushion. Then a spinal suspension device is used to tread on the pelvis and correct sacral alignment. Misaligned spinous processes are tapped using medical hammers and rods, followed by pressing on the spine using feet and tools. The processes concluded with cervical traction and controlled rotational manipulation.

This study is remarkable for its focus on adolescent patients with obesity and the repeated administration of herbal medicine and fasting therapy. The significant aspect of this research lies in the combination of comprehensive traditional Korean medicine treatments with the newly developed spinal manipulation technique, SSCEM. This combination demonstrated significant weight reduction effects and the maintenance of skeletal muscle mass. The patient successfully maintained weight loss without additional weight gain, continuing weight control efforts even after the treatment's conclusion. Therefore, this study suggests the potential recommendation of traditional Korean medicine treatments, including herbal medicine, Gamrosu fasting therapy, and SSCEM, as a foundational treatment approach for adolescent patients with obesity.

This case study has several limitations, including the inability to measure abdominal circumference, the lack of use of various diagnostic devices, and the fact that it is a single case. However, further studies that include blood tests and abdominal circumference measurements may provide more scientific conclusions. Additionally, when prescribing ephedra initially, the dosage adjustments based on weight changes were not considered, relying solely on patient consent. As the patient's motivation for weight loss increased with the rapid weight reduction, physical activity naturally increased. This makes it difficult to clearly distinguish whether the preservation of skeletal muscle mass was due to SSCEM treatment or the increase in physical activity.

In the further study, if systematic studies are conducted using various diagnostic tools such as blood tests, ultrasound, and X-rays, and include a diverse range of adolescent patients according to age, a more solid evidence base could be established. This would enable the safe and effective treatment of obesity in adolescent patients,

particularly those in the growth phase where maintaining skeletal muscle mass is important.

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