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Integrative Medicine Research

journal homepage: www.imr-journal.com

Case Report

Successful treatment with Korean herbal medicine and lifestyle management in an obese woman with polycystic ovarian syndrome

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ARTICLE INFO

Article history:
Received 8 May 2017
Received in revised form 5 June 2017
Accepted 15 June 2017
Available online 23 June 2017

Keywords:
Korean herbal medicine
menstruation
obesity
ovulation
polycystic ovarian syndrome

ABSTRACT

In Korea, herbal remedies have been widely used to treat polycystic ovarian syndrome (PCOS). We report the case of a woman with obese-type PCOS who was successfully treated with Korean herbal medicine (KHM) and lifestyle management. A 23-year-old female patient was first examined at our clinic in April 2015. She had amenorrhea for the previous 9 months and presented with obesity and abnormal reproductive hormone levels. She was treated using KHM and lifestyle management. We observed her menstrual cycles and re-evaluated her hormonal levels during the treatment. After KHM therapy, her body weight decreased from 88.2 kg to 66.7 kg. Her menstrual cycles resumed regularly, and the serum levels of the hormones had normalized. No adverse effects on liver and renal functions were observed. This study indicates that KHM might be considered an option for treating women with obese-type PCOS. Further large-scale trials are needed.

1. Introduction

Polycystic ovarian syndrome (PCOS) is diagnosed on the basis of oligo-ovulation or anovulation, hyperandrogenism (HA; either clinical or biochemical), and the presence of polycystic ovaries.[1] The prevalence of PCOS is as high as 15% when the Rotterdam criteria are applied.[2] In PCOS, fertility is adversely affected by an individual being overweight, having HA, and having an elevated serum concentration of luteinizing hormone (LH).[3]

Obesity causes relative hyperandrogenemia, characterized by reduced levels of sex hormone binding globulin and increased bioavailable androgens delivered to the target tissues. Moreover, obesity increases the risk of metabolic syndromes such as diabetes mellitus, dyslipidemia, and insulin resistance (IR).[4,5] Therefore, weight loss [in women with a body mass index (BMI) of >25 kg/m^2 (overweight)] and prevention of weight gain [in women with a BMI <25 kg/m^2 (lean)] are the responsibility of all health professionals who care for women with PCOS.[3]

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http://dx.doi.org/10.1016/j.imr.2017.06.002

Table 1 – Body weight and serum hormone levels throughout the treatment course.

Variable	April 2015	May 2016	October 2016
Body weight (kg)	88.2	67.0	66.0
BMI (kg/m^2)	33.9	25.7	25.3
FSH (mIU/mL)	5.67	4.53	4.33
LH (mIU/mL)	14.61	2.74	3.09
E2 (pg/mL)	28.15	33.15	8.13
Testosterone (ng/mL)	1.43	1.01	0.81
DHEA-S (μg/dL)	1024.4	736.2	542.9
SHBG (nmol/L)	10	21.1	30.8
AMH (ng/mL)	5.91	5.56	3.77
Total cholesterol (mg/dL)	159	128	143
HDL cholesterol (mg/dL)	53	54	60
LDL cholesterol (mg/dL)	89	67	75
AST (IU/L)	24	18	13
ALT (IU/L)	22	8	8
Creatinine (mg/dL)	0.9	0.8	0.8

AMH, antimullerian hormone; ALT, alanine transminase; AST, asparte transminase; BMI, body mass index; DHEA-S, dehydroepiandrosterone sulfate; E2, estradiol; FSH, follicular stimulating hormone; HDL, high-density lipoprotein; LDL, low-density lipoprotein; LH, luteinizing hormone; SHBG, sex hormone binding globulin.

PCOS has been treated with herbal remedies and lifestyle management in Korean medicine clinics. Although the evidence was limited by small sample size and low quality of methodologies, herbal medicines have a similar efficacy as Western antiobesity drugs but with fewer reported adverse effects.[6] However, there have been few published studies in which these treatments were evaluated using key hormone levels for the obese type of PCOS. Herein, we report the case of a woman with obese-type PCOS, in which the patient's menstrual cycle and reproductive hormone levels normalized with Korean herbal medicine (KHM) therapy and lifestyle management.

2. Case Report

A 23-year-old woman was followed-up in the Conmaul hospital of Korean medicine from April 2015 to December 2016. Written informed consent was obtained from the patient. She was obese and had been trying to reduce her body weight by self-management including low-calorie diet and exercises, but was unsuccessful. Her BMI was 33.9 kg/m^2 (body weight, 88.2 kg; height, 161.4 cm) at the first visit and, and she was having amenorrhea since August 2014. A polycystic ovarian morphology was confirmed on transvaginal ultrasonography by an experienced obstetric and gynecologist. She had high levels of LH, testosterone, dehydroepiandrosterone sulfate, and hemoglobin A1c. She had not undergone any previous surgery. She was diagnosed with PCOS (Table 1).

2.1. *Therapeutic intervention*

2.1.1. *KHM therapy*

Considering the long period of amenorrhea, she received progesterone for withdrawal bleeding, prior to KHM therapy. She received two courses of KHM therapy, of 5 months and 2 months duration, respectively. The daily dose and components of KHM are presented in Table 2. Each plant material was mixed and decocted with purified water. This KHM was administered three times a day, prior to each meal. The patient did not receive any conventional treatment while receiving KHM therapy.

Table 2 – Composition and daily dose of Korean herbal medicine.

Medicinal plants (Chinese word)	Dosages (g)
Coicis Semen (薏苡仁)	46
Rehmanniae Radix (熟地黃)	33
Radix Angelicae (當歸)	12
Ephedrae Herba (麻黃)	12
Astragali Radix (黃芪)	9
Dioscoreae Rhizoma (山藥)	9
Cnidii Rhizoma (川芎)	7
Citri Unshius Pericarpium (陣皮)	7
Poria (茯笭)	7
Acanthopanacis Cortex (五加皮)	7
Magnoliae Cortex (厚朴)	6
Coptidis Rhizoma (黃連)	4
Gardeniae Fructus (梔子)	4
Cyperi Rhizoma (香附子)	4
Foeniculi Fructus (小茴香)	4
Glycyrrhizae Radix et Rhizoma (甘草)	4
Total	175

2.1.2. *Lifestyle management*

She was educated to take a low-calorie diet, including low glycemic index and protein rich foods (800–1000 kcal/d). In addition, she was recommended resistance or weight-bearing exercise in combination with aerobic exercise twice per week. She received in-person counseling sessions with a trained interventionist (JL), who provided encouragement, goal setting, and problem-solving instructions every week during two courses of KHM therapy.

2.2. *Follow-up and outcomes*

After 13 months and 18 months of treatment, a second and third blood test including reproductive hormones, lipid profiles, and liver function tests of the patient were conducted. The levels of LH, testosterone, dehydroepiandrosterone sulfate, AMH decreased, whereas the levels of sex hormone binding globulin increased. The results of blood testing prior to and after KHM therapy are shown in Table 1. After the treatment, body weight reduced from 88.2 kg to 66.7 kg. The changes in body weight during the treatment are shown in Fig. 1. In addition, the patient's menstrual cycles gradually became regular (once a month) from November 2015 to the present date. A normal ovarian morphology was confirmed on transvaginal ultrasonography by an experienced obstetric and gynecologist. No adverse effects on liver and renal function were observed during the treatment.

3. Discussion

We report a case of a woman with obese-type PCOS, in which the patient's menstrual cycles and reproductive hormone lev-