Chapter 51
PCOS and Hirsutism

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Abbreviations

17OHP	17-hydroxyprogesterone;
AMH	Anti-Mullerian hormone
DHEA-S	Dehydroepiandrostenedione sulfate
FSH	Follicle-stimulating hormone
GH	Growth hormone
GLP-1	Glucagon-like peptide-1
IVF	In vitro fertilization
LH	Luteinizing hormone
METS	Metabolic syndrome
NAFLD	Non-alcoholic fatty liver disease
SGLT-2	Sodium-glucose cotransporter-2
T	Testosterone
T2D	Type 2 diabetes

A 25-year-old patient with PCOS is complaining of excess hair on her chin that she needs to shave every other day. She also has hair on her abdomen and thighs and around the areolas. She does not have family history of diabetes, acanthosis, or skin tags. She has periods every 6–8 weeks. She is 5′5″ and weighs 164 lbs; her BMI is 27.3 kg/m^2. She is not interested in pregnancy right now. Her main concern is "getting rid of the facial hair." Her laboratories related to PCOS were as follows and other mimicking pathologies were ruled out (Table 51.1).

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Table 51.1 Laboratory test results of case 1

Tests	Reference range	Patient's results
AMH	<5 ng/ml	7.1
Total-T	<55 ng/dl	71
SHBG	30–135 nmol/L	40
Bioavailable-T	2.2–20.6 ng/dl	31.7
Free-T	0.8–7.4 pg/ml	10.2
HgBA1c	<5.7%	5.4

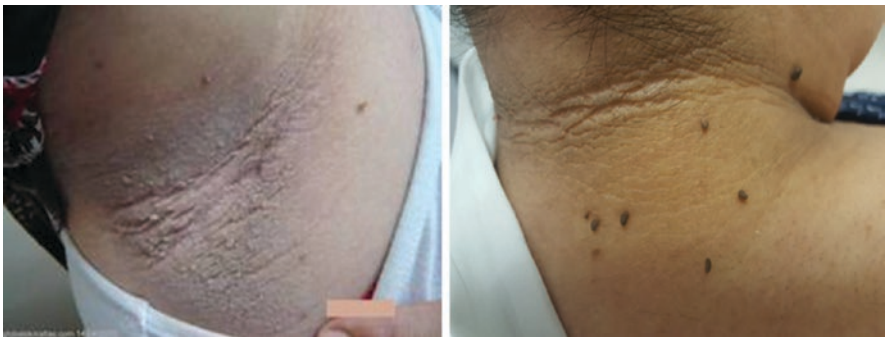

Fig. 51.1 Physical findings of insulin resistance: acanthosis nigricans and skin tags. (Adapted from PCOS: Getting the Right Medical Care. Sidika E. Karakas, MD [1]).

Questions What is the best treatment for her?

1. Spironolactone
2. Metformin
3. Oral contraceptive containing estrogen and progesterone (OCP)
4. Finasteride

How the Diagnosis Was Made The clinical presentation of oligomenorrhea and hirsutism fulfills the criteria for PCOS diagnosis. The laboratory results also confirm PCOS, AMH >5 ng/ml, and she has elevated total-T, bioavailable-T, and free-T concentrations. Her clinical hirsutism is consistent with the laboratory findings of androgen excess. Sex hormone-binding globulin and HgBA1 are normal suggesting that she probably does not have significant insulin resistance. She does not have clinical findings of insulin resistance such as acanthosis nigricans or skin tags either (Fig. 51.1). In addition, she does not have family history of T2D.

Lessons Learned

- *Answer*: The best treatment is oral contraceptives (OCP).
- Her priority is treatment of hirsutism. Oral contraceptives containing both estrogen and progesterone suppress testosterone production in the ovaries and increases SHBG production in the liver; consequently, bioavailable and free tes-

Table 51.2 Laboratory test results of case 1 before and after 3 months of oral contraceptive therapy

Tests	Reference range	Patient's results	
		Before OCP	After OCP
AMH	<5 ng/ml	7.1	–
Total-T	<55 ng/dl	71	36
SHBG	30–135 nmol/L	40	108
Bioavailable -T	2.2–20.6 ng/dl	31.7	7.6
Free-T	0.8–7.4 pg/ml	10.2	2.7
HgBA1c	<5.7%	5.4	–

tosterone levels decrease. Combined OCP are superior to progesterone-only OCP in suppressing testosterone. In addition, OCP provide monthly, predictable periods.

- Hair cycle is approximately 9 months, and therefore, the effects of the therapy may not be observed for at least 6 months. Typically, the treatment lasts minimum of 2 years. It is a good practice to repeat the testosterone panel after 3 months of OCP treatment to assure that testosterone is suppressed. Otherwise, the active pills can be extended to 6 weeks or even to 9 weeks, followed by the placebo during the seventh or tenth week, respectively. This patient had excellent response to OCP (Table 51.2).
- Spironolactone is not recommended as a monotherapy but can be added to OCP if the response is not satisfactory [2].
- Finasteride cannot be prescribed in women who has any risk of pregnancy (even on OCP) because of its feminizing effect on the male fetus.

Reference

1. Karakas SE. PCOS: Getting the Right Medical Care 2018.
2. Martin KA, Anderson RR, Chang RJ, et al. Evaluation and treatment of hirsutism in premenopausal women: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2018;103:1233–57.