

تغذیه درمانی در اختلالات آندوکراین

Polycystic ovarian syndrome (PCOS)

دکتر پروانه صانعی

متخصص تغذیه و رژیم درمانی

استادیار دانشگاه علوم پزشکی اصفهان

PCOS

- An **endocrine disorder** characterized by **hyperandrogenism**, bilaterally enlarged polycystic ovaries, and **insulin resistance**.
- affects about **5–12%** of women of childbearing age
- the most frequent cause of female **infertility**;
- closely associated with the **MetS**.
- Many adolescents present with **hirsutism** and **irregular menses**.

PCOS SYMPTOMS



HAIR LOSS



HIRSUTISM



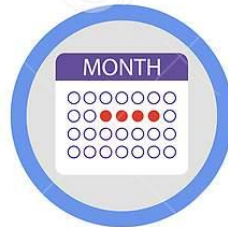
PELVIC PAIN



INFERTILITY



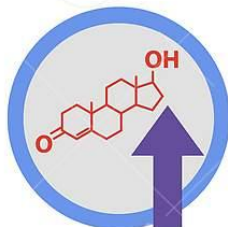
OVERWEIGHT



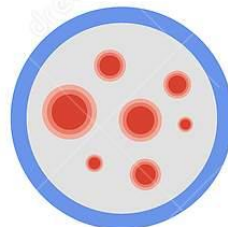
IRREGULAR PERIODS



FATIGUE



HIGH TESTOSTERONE
LEVELS



ACNE

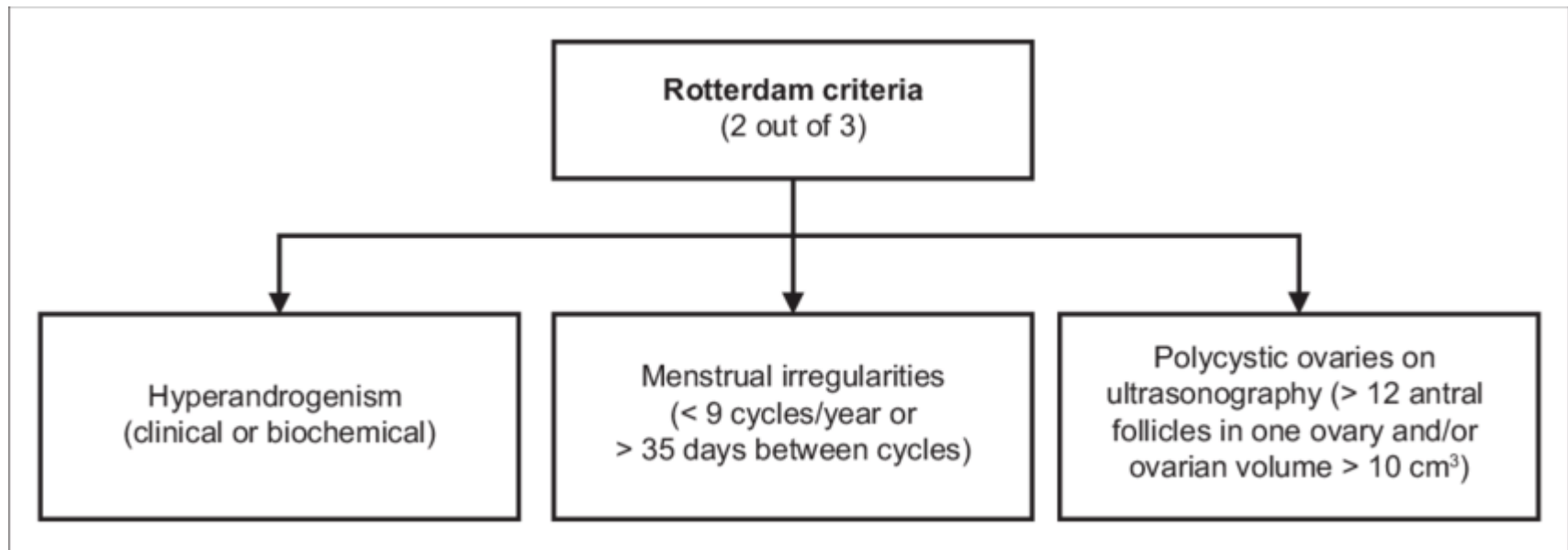


POLYCYSTIC OVARY SYNDROMES (PCOS)

PCOS definition:

- having 12 or more follicles in at least 1 ovary
- **Rotterdam criteria:** presence of 2 of the following:
 1. oligoovulation and/or anovulation
 2. excess androgen activity
 3. polycystic ovaries (by gynecologic ultrasound)

PCOS definition:

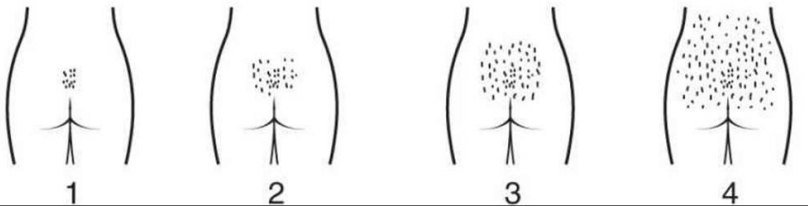
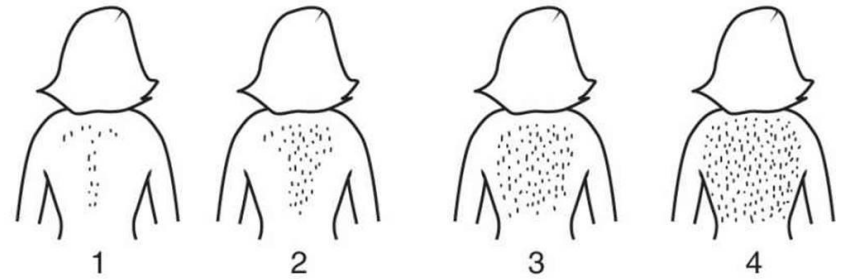
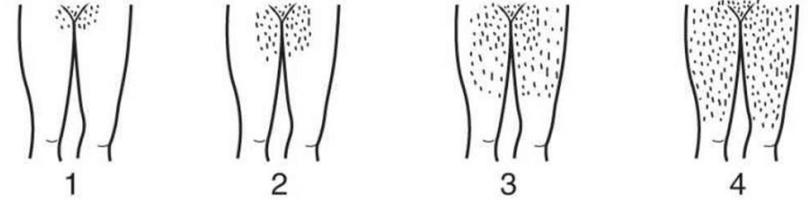
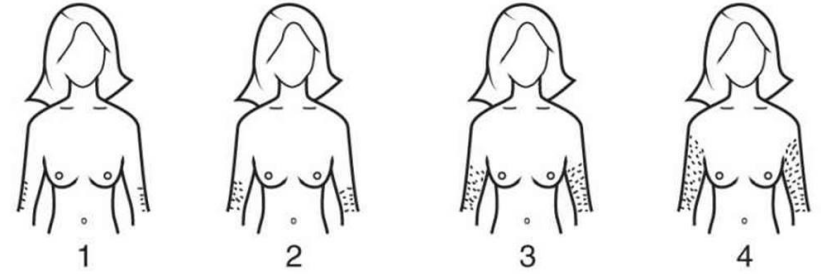
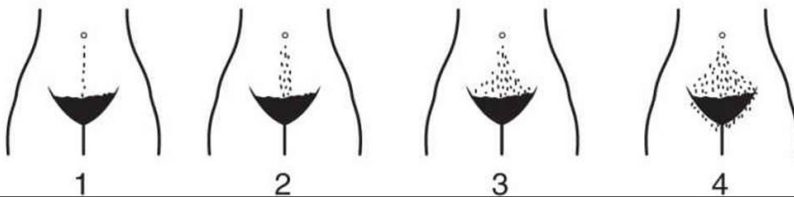
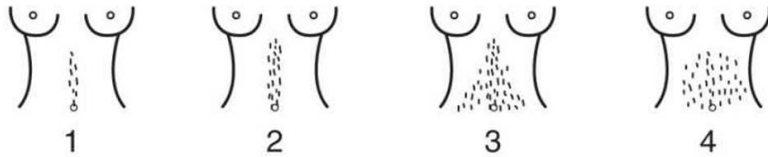
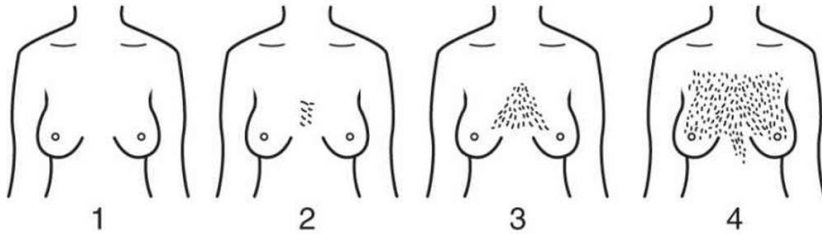
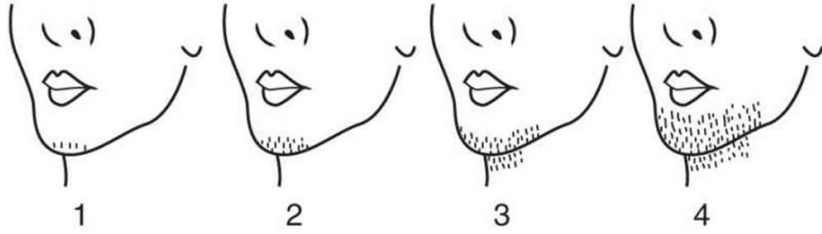
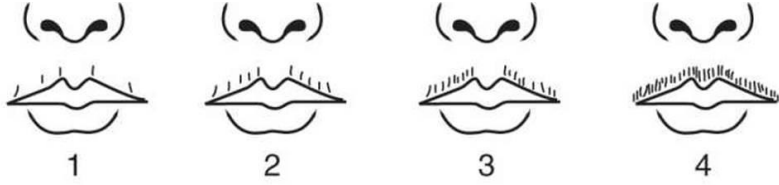


Rotterdam Criteria for Diagnosis of PCOS

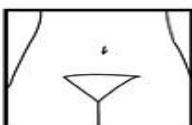
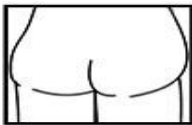
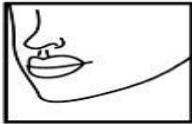
Diagnosis confirmed by 2 of 3 criteria after exclusion of other etiologies:

1. Oligo and/or anovulation
2. Biochemical and/or clinical signs of hyperandrogenism
 - Biochemical: Total T > 70 ng/dL, Androstenedione > 245ng/dL, DHEA-S >248 ug/dL)
 - Clinical: Acne, Hirsutism, acanthosis nigrans
3. Polycystic Ovaries:
 - ≥ 12 follicles (2-9mm diameter) in each ovary or ovarian volume > 10cc

طريقه نمره دهی هیرسو تیسم



0



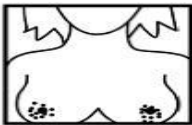
1



A few hairs at
outer margin



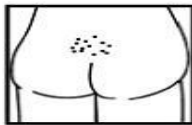
A few scattered
hairs



Circumareola hairs



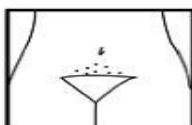
A few scattered
hairs



A sacral tuft of hair



A few mid-line
hairs



A few mid-line
hairs

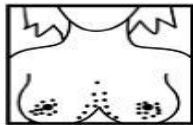
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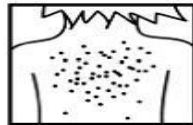
Small moustache at
outer margin



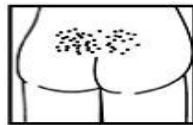
scattered hairs
with small
concentrations



With mid-line hair
in addition



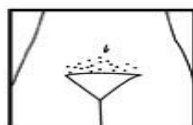
Rather more, still
scattered



With some lateral
extension

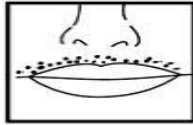


Rather more, still
mid-line



Mid-line streak of
hair

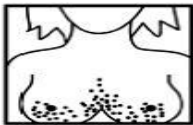
3



Moustache
extending halfway
from outer margin



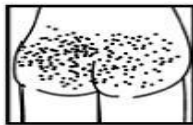
Complete cover, light and heavy



Fusion of these areas,
with three-quarter
cover



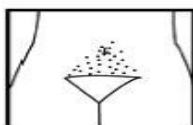
Complete cover, light and heavy



Three quarter cover

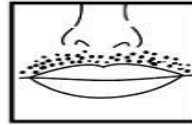


Half and full cover



A mid-line band of
hair

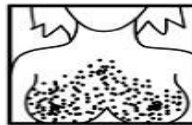
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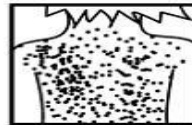
Moustache
extending to
mid-line



Complete cover, light and heavy



Complete cover



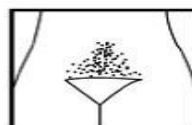
Complete cover, light and heavy



Complete cover



Complete cover



An inverted V
shape grow

طریقه نمره دهی هیر سوتیسم

A point: the
expression of hair
growth varies among
racial/ethnic groups

PCOS definition:

- ❑ However, not all experts agree that women with oligomenorrhea and polycystic ovaries, but **not hyperandrogenism**, should be considered to have PCOS.
- ❑ For women who present with oligomenorrhea, **other causes of irregular menses should be ruled out**. Therefore, in addition to measuring serum human chorionic gonadotropin (**hCG**) to rule out **pregnancy**, testing should include **serum prolactin, thyroid-stimulating hormone (TSH), and follicle-stimulating hormone (FSH)** to rule out **hyperprolactinemia, thyroid disease, and ovarian insufficiency**, respectively.
- ❑ Once the diagnosis of PCOS is made, cardiometabolic risk assessment should include measurement of **blood pressure and body mass index (BMI), fasting lipid profile, and an oral glucose tolerance test (OGTT)**.
- ❑ Women with PCOS should be questioned about symptoms of **depression, eating disorders, and sleep apnea** as all are common in this population.

Menstrual dysfunction in PCOS :

- ❑ The menstrual irregularity typically begins in the peripubertal period, and menarche may be delayed.
- ❑ The menstrual pattern is typically one of **oligomenorrhea** (fewer than nine menstrual periods in a year) and, less often, **amenorrhea** (no menstrual periods for three or more consecutive months). Women with PCOS often experience **more regular cycles** after age 40 years.
- ❑ **Virilization** (another symptom of PCOS): the development of male physical characteristics (such as muscle bulk, body hair, and deep voice) in a female, typically as a result of excess androgen production

PCOS symptoms:

- In PCOS:
 - ❑ elevated LH to FSH ratio,
 - ❑ hirsutism,
 - ❑ acne,
 - ❑ oily skin,
 - ❑ male pattern baldness,
 - ❑ menstrual irregularity, oligomenorrhea, and
 - ❑ obesity can occur.
- Immature cysts remain on the ovaries, giving the appearance of a “string of pearls.”

Other conditions that mimic oligo/anovulation and/or hyperandrogenism of PCOS

- ☐ thyroid disease,
- ☐ nonclassic congenital adrenal hyperplasia [NCCAH],
- ☐ hyperprolactinemia, and
- ☐ androgen-secreting tumors

Goals of PCOS therapy

- ❑ **Amelioration of hyperandrogenic** features (hirsutism, acne, scalp hair loss)
- ❑ Management of underlying **metabolic abnormalities** and reduction of risk factors for **type 2 diabetes** and **cardiovascular disease**
- ❑ Prevention of **endometrial hyperplasia** and **carcinoma**, which may occur as a result of chronic anovulation
- ❑ **Contraception** for those not pursuing pregnancy, as women with oligomenorrhea ovulate intermittently and unwanted pregnancy may occur
- ❑ **Ovulation induction** for those pursuing pregnancy

Objectives of MNT in PCOS:

- ❑ **Lose weight** or maintain a normal weight for height; obesity occurs in 50% of this population.
- ❑ Prevent heart problems, stroke, and heart attack. Improve **lipid profile**.
- ❑ Reduce serum **androgens** and improve menstrual regularity.
- ❑ Decrease risk for endometrial **cancer**.
- ❑ Alleviate **glucose intolerance** and insulin resistance.
- ❑ Improve anxiety, **moods**, and quality of life.

MNT in PCOS:

- ❑ **Lifestyle changes** improve **insulin resistance** and **hyperandrogenism** and have **reproductive benefits** as well.
- ❑ lifestyle changes (**diet** and **exercise**), followed by **pharmacotherapy**, and, when necessary, bariatric surgery
- ❑ **Weight loss**, which can restore ovulatory cycles and improve metabolic risk, is **the first-line intervention** for most women.

Metabolic issues/cardiovascular risks in PCOS:

- ❑ Approximately 40 to 85 percent of women with PCOS are **overweight or obese** compared with age-matched controls
- ❑ **Insulin resistance** is present in both **lean and obese** women with PCOS (**30 and 70 percent**, respectively) compared with age- and weight-matched controls
- ❑ Risk factors for cardiovascular disease, including **obesity, glucose intolerance, dyslipidemia, fatty liver, and obstructive sleep apnea.**
- ❑ **Early diagnosis** and **intervention** are important in women with PCOS for quality of life and well-being. Women with PCOS commonly report **long delays in diagnosis** and **dissatisfaction with their care.**

Cardio-vascular screening in PCOS:

- ❑ We agree with the Androgen Excess Society and also suggest the following:
 - Patients with **normal glucose tolerance** should be rescreened **at least once every two years** or more frequently if additional risk factors are identified.
 - Patients with **impaired glucose tolerance** should be screened **annually** for development of type 2 diabetes.
- ❑ We do **not** recommend **routine assessment of insulin resistance**, due to some limitations, including **changes in beta cell function over time**, **lack of a standardized universal insulin assay**, and **lack of data** demonstrating that **markers of insulin resistance predict response to treatment**

Common Drugs in PCOS

➤ Antiandrogen medication:

❑ spironolactone,

❑ flutamide, or

❑ finasteride

➤ Insulin-sensitizing: Metformin

➤ Chromium picolinate (1000 mcg) may be useful as an
insulin sensitizer

Oral contraceptives and risk assessment in PCOS

- ❑ **Combined estrogen-progestin oral contraceptives (COCs)** are the [mainstay of pharmacologic therapy](#) for women with PCOS for managing hyperandrogenism and menstrual dysfunction and for providing contraception.
- ❑ COCs are associated with an increased risk of **venous thromboembolism (VTE)** in all users but particularly in obese women. There have been concerns that the presence of PCOS per se may represent an additional independent risk factor for VTE, but available data do not support this concept.
- ❑ We currently suggest **using caution** if COCs are prescribed to obese women (body mass index [BMI] ≥ 30 kg/m²) over age 40 years because these women are at particularly high risk for VTE.

Oral contraceptives and risk assessment in PCOS

❑ **Metformin** is a potential alternative to restore menstrual cyclicity as it restores ovulatory menses in approximately 30 to 50 percent of women with PCOS ([second-line therapy](#))

❑ **Hirsutism:**

- A COC as first-line pharmacologic therapy for most women.
- An antiandrogen (such as spironolactone, finasteride) is then added after six months if the cosmetic response is suboptimal

MNT in PCOS:

- Offer a **weight-control** and **exercise** plan to meet weight goals. Loss of **5–10 lb** may reduce symptoms.
- Lower elevated blood glucose and lipids. Eat five to six **small meals** per day.
- The **DASH diet** may be helpful to lower BP. Include low-fat dairy products and more fruits and vegetables.
- **Avoid low-fat, high-CHO** diets, which promote extra insulin secretion.
- A diet of **30–40% fat**, **45–50% complex CHOs**, **15–20% protein** (like **Mediterranean diet**) may be useful.
- Include sufficient **fiber (20–35 g/d)**.
- Include sources of **omega-3** fatty acids (**fish, walnuts, and flaxseed**).
- Dietary or supplemental **chromium** should be included.

منابع غذایی کروم:

- مخمر آبجو،
- گوشت گوساله ، جگر، مرغ، ماهی و غذاهای دریایی (میگو،...)
- مواد لبنی،
- مواد تهیه شده از دانه کامل غلات،
- فلفل سبز،
- موز

MNT in PCOS:

- ❑ There is **no** good evidence that one type of diet is superior to another for women with PCOS.
- ❑ **Low-carbohydrate diets** have become very popular for women with PCOS, based upon the notion that less carbohydrate leads to less hyperinsulinemia and therefore less insulin resistance.

Useful supplements in PCOS:

- ❑ **Magnesium:** increase insulin sensitivity
- ❑ **Vitamin D:** as an anti-inflammatory agent
- ❑ **Vitamin B6:** decrease Hcy levels

MNT in PCOS:

- Counsel about weight loss and nutrition.
 - **Regular mealtimes and snacks** may help control cravings and overeating.
 - Encourage regular exercise and reduced **sedentary lifestyle**.
 - Explain relationship of insulin resistance and increased risk for **T2DM**.
 - Medical treatments may be needed to support **reproduction**.
- Some women will need in vitro fertilization (IVF) treatments.

مورد شماره ۱

- خانمی ۳۰ ساله با وزن ۶۵ کیلوگرم و قد ۱۵۹ سانتی متر که دارای قند خون ناشتای ۱۱۸ میلی گرم در دسی لیتر بوده و دارای کیست های تخمدانی می باشد، مراجعه کرده است. پزشک برای او تشخیص PCOS داده است و روزانه ۲ عدد قرص متفورمین یکی صبح و یکی شب تجویز کرده است. این خانم اختلالات لیپیدی ندارد ولی چاقی شکمی دارد و فشار خون ۱۳۵/۹۵ میلیمتر جیوه دارد. برای او رژیم غذایی مناسب به همراه توصیه های غذایی مناسب را داشته باشید.

