

# Hirsutism

## Case

- 24 year old female presented to your office complaining of excess hair growth on her face and abdomen

**Questions?**

- Started around puberty with gradual progression
- Irregular menstrual cycle
- Acne
- No dark striae, thin skin, or bruising
- No frontal balding, voice deepening, increased muscle mass, clitoromegaly
- Ethnicity: Caucasian
- No family history of excess body hair

- **PMH:** GERD
- **PSH:** Appendectomy
- **SH:** Unremarkable
- **FH :** DM
- **Meds:** Omeprazole
- **Review of systems:** Unremarkable

- **Physical exam:**

- ❖ BP 122/72 HR 71 RR 17 Temp 96.8

- ❖ Height: 5.4 ft, Weight: 172 lb, BMI: 29.5

- ❖ Excess of dark and coarse hair on the chin and abdomen

Labs ?

- **Labs:**
  - ❖ Testosterone 91 (6-82)
  - ❖ DHEA Sulfate 296 (65-380)
  - ❖ 17 OH progesterone: 83 (20-100)
  - ❖ Prolactin 19 (3-26)
  - ❖ FSH 6.5, LH 11.2
  - ❖ TSH 2.72, F T4 1.2
  - ❖ Fasting BS 97, A1c 5.7

# Hirsutism



- **Hirsutism** is defined by the presence of an excessive quantity of androgen-dependent terminal hair growth on the upper lip, chin, chest, abdomen, back and buttocks
- It must be differentiated from hypertrichosis
- **Hypertrichosis** is the excessive diffuse growth of androgen independent hair that is vellus (fine, soft, not pigmented)
- Hypertrichosis could be familial or caused by a drug, examples of which include phenytoin, minoxidil and cyclosporine
- Hypertrichosis also can occur in patients with some systemic illnesses, such as hypothyroidism, anorexia nervosa, malnutrition, porphyria, and dermatomyositis

## Pathogenesis of hirsutism

- Androgens increase hair follicle size, hair fiber diameter, and the proportion of time terminal hairs spend in the growth phase
- Androgen excess in women leads to increased hair growth in androgen sensitive sites except the scalp where it manifests with hair loss
- Nearly all hirsute women have an increased production rate of androgens

## Androgens responsible for hirsutism

- Testosterone excess is usually of ovarian origin
- Dehydroepiandrosterone (DHEA) and its sulfated form (DHEAS) excess are of adrenal origin
- Androstenedione excess can be of either adrenal or ovarian origin

## Ethnicity and hirsutism

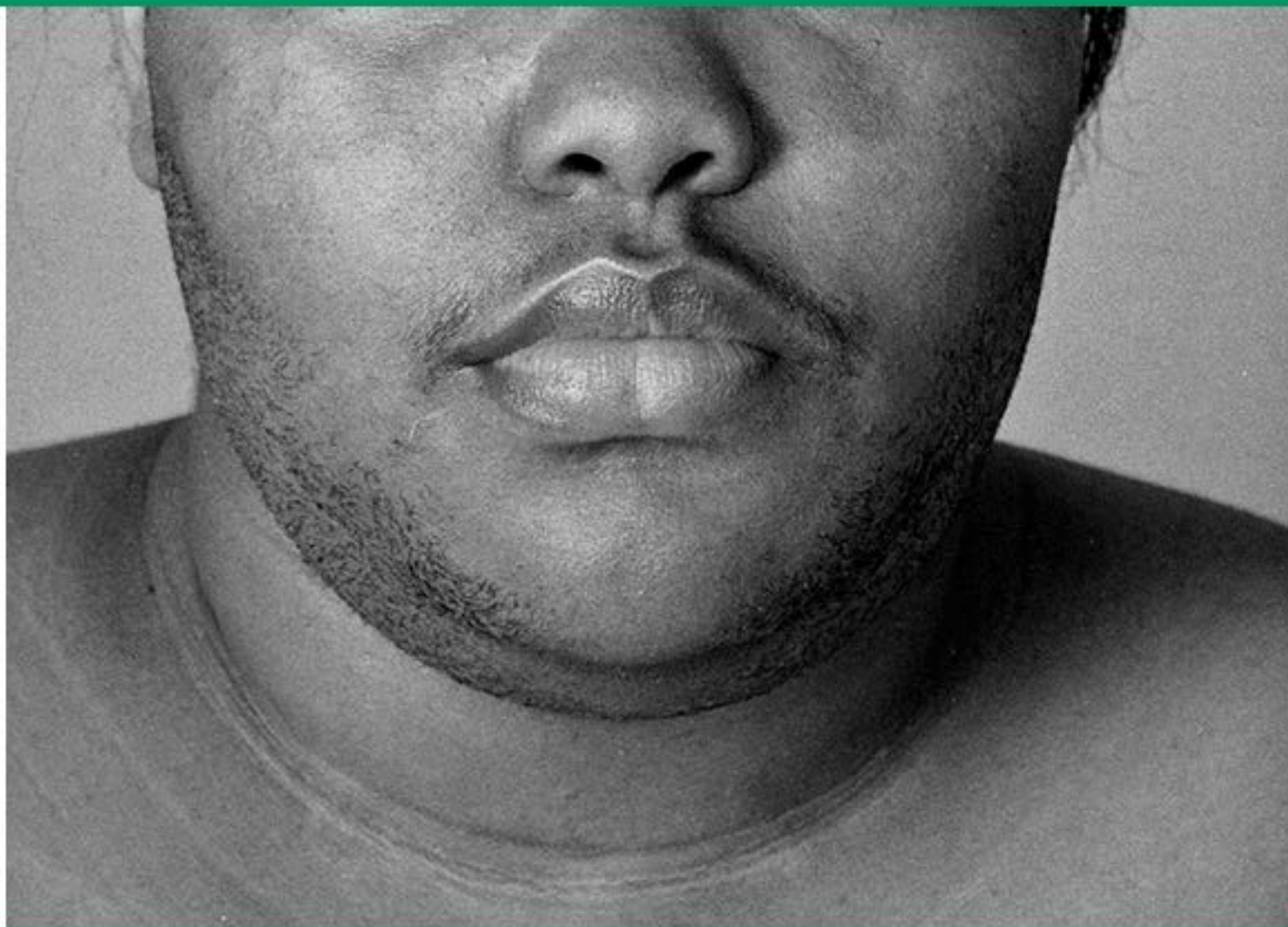
- The definition of normal hair growth must also consider race and ethnicity
- Most Asian and Native American women have little body hair
- While Mediterranean on average have substantially greater quantities of body hair
- The most important consideration, whatever the woman's background, is whether the pattern of hair growth has changed or the rate of growth has increased

## Causes of hirsutism in women

Etiology	Clinical features
<b>Common</b>	
PCOS	Peripubertal onset of symptoms, oligomenorrhea, obesity, polycystic ovaries on ultrasound
Idiopathic hirsutism	Normal menstrual cycles, normal serum androgens, and no other identifiable cause for the hirsutism
Nonclassic 21-hydroxylase deficiency	Similar presentation to PCOS, high serum 17-hydroxyprogesterone concentration, more common in certain ethnic groups
<b>Uncommon</b>	
Classic 21-hydroxylase deficiency	Diagnosed during infancy, ambiguous genitalia
Androgen-secreting ovarian tumors (Sertoli-Leydig cell, granulosa-theca cell, hilus cell)	Onset in third decade or later (usually postmenopausal), rapidly progressive hirsutism, virilization
Androgen-secreting adrenal tumors	Some women with adrenocortical cancer present with just virilization, but a mixed Cushing's and virilization syndrome is more common
Ovarian hyperthecosis	Onset in third decade or later (usually postmenopausal), rapidly progressive hirsutism, virilization
Severe insulin-resistance syndromes	Virilization, amenorrhea, infertility, and the ovary shows histologic changes of hyperthecosis
Cushing's disease	Corticotroph adenoma secreting ACTH results in excess cortisol and adrenal androgens
Drugs	Use of exogenous androgens (testosterone or DHEA) can cause hirsutism and acne
Acromegaly	Enlarged jaw (macrogathia) and enlarged, swollen hands and feet, which result in increasing shoe, glove, and ring sizes. Patients with large pituitary tumors may have headaches, visual field defects, and cranial nerve palsies.

ACTH: adrenocorticotrophic hormone; DHEA: dehydroepiandrosterone; PCOS: polycystic ovary syndrome.

## Hirsutism in PCOS



PCOS: polycystic ovary syndrome.

# EVALUATION

# History

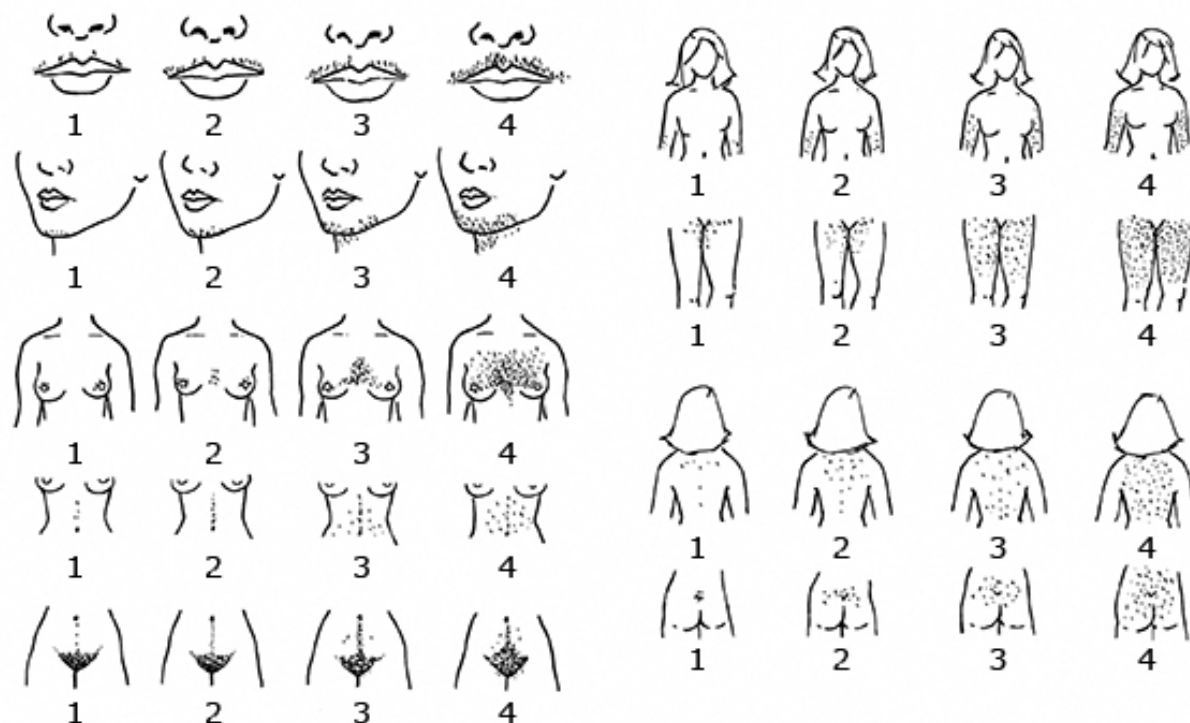
- Menstrual history: regularity, presence of symptoms of ovulation
- Time course of symptoms: The age at onset, the rate of progression
- Weight history
- Medication history: Drugs that have androgenic effects include danazol, oral contraceptives that contain androgenic progestins
- Family history



## Physical examination

- Hirsutism vs hypertrichosis
- Ferriman-Gallwey score: method to grade hair growth
  - ❖ Nine androgen-sensitive sites are graded from 0 to 4
  - ❖ 95 % of women have a score below 8
  - ❖ Scores above 8 suggest an excess of androgen-mediated hair growth that should be confirmed by hormonal evaluation

## Grading of severity of hirsutism in women



Ferriman-Gallwey hirsutism scoring system. Each of the nine body areas that is most sensitive to androgen is assigned a score from 0 (no hair) to 4 (frankly virile), and these are summed to provide a hormonal hirsutism score. "Focal" hirsutism (score 1 to 7) is a common normal variant, whereas generalized hirsutism (score of 8 or more) is abnormal in the general United States population. The normal score is lower in Asian populations and higher in Mediterranean populations.

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## Physical examination

- Body habitus: height, weight and BMI
- Skin: acne, temporal balding, striae, thin skin, bruising, and acanthosis nigricans
- Signs of virilization: deepening of the voice, frontal balding, increased muscle mass, and clitoromegaly
- Abdominal and pelvic examination: could reveal a mass

## Laboratory testing

- Not all women with hirsutism need biochemical testing
- The Endocrine Society Clinical Practice Guidelines recommend biochemical testing in women with:
  - ❖ Moderate or severe hirsutism
  - ❖ Hirsutism of any degree if it is sudden in onset and rapidly progressive, or associated with irregular menses, obesity, or evidence of virilization

- Common approach for initial laboratory evaluation includes:
  - ❖ Total testosterone, DHEAS and prolactin followed by additional testing when indicated
  - ❖ Testing for late onset congenital adrenal hyperplasia with a serum 17-OH progesterone in women with early onset of hirsutism, family history and in women from high risk ethnic groups (Hispanics, Yugoslavs, and Ashkenazi Jews)
  - ❖ LH/FSH when suspecting PCOS
  - ❖ Testing for cushings syndrome when there is a suspicion

# IMAGING

- Pelvic ultrasonography to look for a polycystic ovary and to screen for ovarian androgen-secreting tumors
- Abdomen CT or MRI to look for adrenal mass if DHEAS is markedly elevated or there is other evidence of excess adrenal steroid production

# TREATMENT

- Hirsutism can be mild and requires only reassurance and cosmetic therapy
- It sometimes causes psychological distress and requires extensive intervention

# Endocrine Society guidelines

- Treatment decisions should be based upon the degree and severity of the hirsutism
- The recommendation is to start pharmacologic therapy or direct hair removal methods in clinically significant hirsutism
- The choice between the two approaches depends upon the woman's preference, location and size of the affected area and the availability and affordability of direct hair removal methods (electrolysis or laser)



## Pharmacological therapy

- Estrogen-progestin contraceptives are the preferred initial therapy (increases SHBG and decreases free androgens)
- Antiandrogens (spironolactone, finasteride): decreases testosterone to dihydrotestosterone conversion
- ❖ It can be added in women taking contraceptives but without optimal response after six months
- ❖ It should not be used in women of reproductive age unless reliable contraception is used because of their potential teratogenic effect in a male fetus

## Cosmetic and mechanical treatments

- Cosmetic methods (shaving, plucking, bleaching, waxing):
  - ❖ It can be used alone or in addition to drug therapy
- Permanent hair reduction (electrolysis and laser):
  - ❖ Hair is likely to re-grow in women with underlying hyperandrogenemia especially without pharmacologic therapy

**Questions?**