



Hirsutism and Virilization

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Normal and Abnormal Variations in Secondary Sexual Characteristics :

Normal Variations:

- **Pubertal Development:** During puberty, females typically develop secondary sexual characteristics such as breast development, widening of hips, and the growth of pubic and axillary hair.
- **Menstrual Cycle:** Regular menstrual cycles are a normal variation in reproductive-aged women.

Abnormal Variations:

- **Hirsutism:** Excessive growth of terminal hair in a male pattern (e.g., upper lip, chin, chest, abdomen) in females.
- **Virilization:** Development of male secondary sexual characteristics in females such as:
 - Deepening the voice
 - Increased muscle mass



Definitions :

- **Hirsutism:** The presence of excessive terminal hair in females in areas where males typically grow hair, such as the face, chest, and back.
- **Virilization:** The development of male secondary sexual characteristics in females due to elevated androgen levels.

Pathophysiology :

- ❑ **Hyperandrogenism:** Can result from increased androgen production or increased sensitivity of hair follicles to normal androgen levels. Elevated levels of androgens (e.g., testosterone, dihydrotestosterone) lead to the transformation of vellus hair into terminal hair in androgen-sensitive areas.
- ❑ **Virilization:** Occurs when there is a significant increase in androgen levels, leading to the development of male secondary sexual characteristics in females.

Etiologies :

- **Common Causes of Hirsutism and Virilization:**

1. **Polycystic Ovary Syndrome (PCOS):** The most common cause, characterized by anovulation, hyperandrogenism, and polycystic ovaries.
2. **Congenital Adrenal Hyperplasia (CAH):** A group of genetic disorders affecting adrenal steroidogenesis, leading to excess androgen production.
3. **Androgen-Secreting Tumors:** Tumors in the ovaries or adrenal glands that produce excess androgens.
4. **Idiopathic Hyperandrogenism:** Increased sensitivity of hair follicles to normal androgen levels without an identifiable cause.
5. **Medications:** Use of drugs such as anabolic steroids, cyclosporine, and phenytoin can lead to hirsutism.
6. **Obesity:** Increased adiposity can lead to elevated free testosterone levels due to decreased sex hormone-binding globulin (SHBG) levels.
7. **Cushing syndrome.**

Investigations :

- **Initial Evaluation:**

1. **Clinical Assessment:** Detailed history and physical examination, including assessment of menstrual history, onset and progression of symptoms, and family history.
2. **Ferriman-Gallwey Score:** A scoring system to quantify the degree of hirsutism.

- **Laboratory Tests:**

1. **Serum Testosterone Levels:** Elevated levels suggest hyperandrogenism.
2. **DHEA-S (Dehydroepiandrosterone Sulfate):** Elevated levels may indicate adrenal origin.
3. **SHBG (Sex Hormone-Binding Globulin):** Low levels can increase free testosterone levels.
4. **LH/FSH Ratio:** A high ratio may suggest PCOS.

- **Imaging:**

1. **Pelvic Ultrasound:** To assess for polycystic ovaries.
2. **Adrenal CT/MRI :** If an adrenal tumor is suspected.

Initial Management Options :

- **Lifestyle Modifications:**

- **Weight Management:** Achieving and maintaining a healthy weight can reduce androgen levels and improve symptoms.

- **Pharmacologic Treatments:**

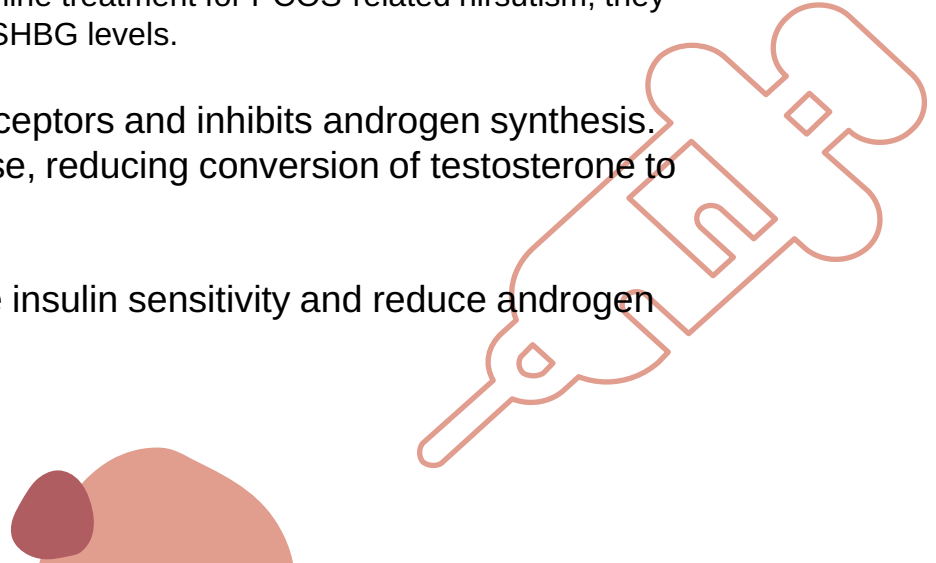
- **Combined Oral Contraceptives (COCs):** First-line treatment for PCOS-related hirsutism; they reduce ovarian androgen production and increase SHBG levels.

- **Anti-Androgens:**

1. **Spironolactone:** Blocks androgen receptors and inhibits androgen synthesis.
2. **Finasteride:** Inhibits 5-alpha reductase, reducing conversion of testosterone to dihydrotestosterone.

- **Insulin Sensitizers:**

- **Metformin:** Used in PCOS to improve insulin sensitivity and reduce androgen levels.



Initial Management Options :

- **Hair Removal Methods:**
 - **Temporary Methods:** Shaving, waxing, plucking.
 - **Permanent Methods:** laser hair removal.
- **Surgical Treatment:**
 - **Ovarian Surgery:** For androgen-secreting tumors.



THANK YOU.

