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HIRSUTISM

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BASICS

DESCRIPTION

- From the Latin, *hirsutus* = hairy
- Symptom associated with male pattern of pigmented terminal hair growth
- Locations are assessed for research purposes in Ferriman-Gallwey score.
- Often associated with acne, irregular menstrual periods, galactorrhea, dark velvety patches of skin, central obesity, infertility

Pediatric Considerations

- Infancy to late childhood (<10 years of age): Associated with Cornelia de Lange syndrome, FAS, CAH, adrenocortical tumors, or drug-induced
- Adolescence: Associated with PCOS, late-onset CAH, HAIR-AN syndrome, steroid use, depression, pregnancy, or drug-induced
- Adulthood: Associated with PCOS, HAIR-AN syndrome, hyperprolactinemia, ovarian tumor, menopause, depression, or drug-induced

EPIDEMIOLOGY

5–10% of women, of which 20% have idiopathic hirsutism

RISK FACTORS

- Ethnicity (Mediterranean, Middle Eastern, South Asian)
- Family history
- Infertility
- Obesity

Genetics

- Can be familial or multifactorial
- Seen with:
 - Polymorphism of 5 α -reductase (SRD5A1 and SRD5A2) isomers
 - CYP21 gene mutation
 - NIPBL mutation associated with Cornelia de Lange syndrome

PATHOPHYSIOLOGY

- Caused by increased:
 - Levels of androgen secretion (DHEA, DHEAS, androstenedione and testosterone)
 - Peripheral conversion of testosterone to potent DHT
 - Sensitivity of hair follicles to androgens regulated by 5 α -reductase, which transforms testosterone or androstenedione to DHT
- Caused by decreased:
 - SHBG concentration with resultant increased free androgen

ASSOCIATED CONDITIONS

- Idiopathic hirsutism
- PCOS
- HAIR-AN syndrome
- CAH
- Cushing disease
- Hyperthecosis
- Hypothyroidism
- Hyperprolactinemia
- Adrenocortical tumors
- Ovarian tumors
- Cornelia de Lange syndrome
- Fetal alcohol syndrome
- Drugs: Corticosteroids, anabolic steroids, phenytoin, valproate, danazol, diazoxide, minoxidil
- Pregnancy
- Stress
- Male pseudohermaphroditism
- Depression



DIAGNOSIS

SIGNS AND SYMPTOMS

- Based on the Ferriman-Gallwey score of hair growth level on 9 different locations of the body:
 - Upper lip, chin, chest, upper back, lower back, upper abdomen, lower abdomen, upper arms, and thighs
 - Hair growth is rated from 0–4, where 0 is virtually no hair at all, and 4 is completely covered with hair. The maximum score is 36. Commonly used research scale in US
 - Normal: <8
 - Light hirsutism: 8–16
 - Moderate hirsutism: 17–25
 - Severe hirsutism: >26
- The scale may vary for different ethnic groups with different levels of expected hair growth.

History

- Age of onset
- Duration
- Location
- Rate of progression
- Skin changes
- Associated symptoms of virilization
- Medication use
- Ethnic background
- Medical history
- Puberty/Menstrual history
- Family history of females with hirsutism, males with early balding
- Psychosocial history/stress, depression

Review of Systems

Other associated signs and symptoms:

- Acne
- Irregular menstrual periods
- Dark velvety patches of skin (acanthosis nigricans)
- Breast discharge
- Central obesity
- Deepening of the voice
- Increased muscle mass
- Infertility

Physical Exam

- Vitals: Increased BMI, high BP, waist circumference >30 inches
- General: Central obesity, BMI, dysmorphism, deepening of voice, male habitus
- Skin: Acne, male pattern hair, seborrhea
- HEENT: Tonsillar enlargement, thyromegaly, acanthosis nigricans, cervical fat pad, temporal balding
- Chest: Breast tenderness, galactorrhea, truncal obesity, buffalo hump
- Abdomen: Striae, tenderness
- GU: Clitoromegaly, ovarian mass

TESTS

Ferriman-Gallwey scoring for research purposes

Labs

Testing as clinically appropriate for:

- DHEA-S
- Total testosterone
- Free testosterone
- Fasting Insulin and glucose
- IGF-1
- TSH
- Free T4
- 17 OH progesterone
- Prolactin
- LH
- FSH
- ACTH
- Cortisol
- 24-hour urine cortisol

Imaging

- Pelvic ultrasound if ovarian mass suspected
- CT abdomen and pelvis if adrenal mass suspected
- MRI head if pituitary abnormality suspected

DIFFERENTIAL DIAGNOSIS

- Hypertrichosis: Excessive androgen-independent fine and soft total body hair growth in both men and women
- Idiopathic hirsutism

Metabolic/Endocrine

- PCOS
- HAIR-AN syndrome
- CAH
- Cushing disease
- Hyperthecosis
- Hypothyroidism
- Diabetes
- Hyperprolactinemia
- Male pseudohermaphroditism

Tumor/Malignancy

- Adrenocortical tumors
- Ovarian tumors

Drugs

- Corticosteroids
- Anabolic steroids
- Phenytoin
- Valproate
- Danazol
- Diazoxide
- Minoxidil

Other/Miscellaneous

- Cornelia de Lange syndrome
- Fetal alcohol syndrome
- Pregnancy
- Stress
- Depression
- Anorexia nervosa
- Obesity

**MANAGEMENT****GENERAL MEASURES**

- Lifestyle changes/weight loss
- Topical:
 - Bleaching
 - Eflornithine HCl: Inhibits enzyme ornithine decarboxylase in skin causing decrease rate of hair growth
- Hair removal:
 - Shaving does not increase rate of hair growth.
 - Plucking
 - Waxing
 - Chemical depilatories
 - Laser epilation—not permanent
 - Electrolysis—only permanent method of hair removal

SPECIAL THERAPY**Complementary and Alternative Therapies**

Aimed at pathogenesis of hirsutism:

- Photodynamic therapy (PDT) using aminolevulinic acid (ALA) decreases hair growth.
- Ethanol extract of fennel (*Foeniculum vulgare*) decreases hair diameter and inhibits growth.
- Stinging nettle (*Urtica dioica*) roots have lignans that increase circulating SHBG.
- Saw palmetto (*Serenoa repens*) has antiandrogenic properties by reducing 5 α -reductase.
- Licorice can reduce serum testosterone.

MEDICATION (DRUGS)

Aimed at primary cause of hirsutism:

- OCP reduces circulating androgen levels through suppression of circulating LH, stimulation of SHBG levels with resultant decreases in free androgens, and reduction of 5 α -reductase activity
- Clomiphene induces ovulation
- Metformin promotes ovulation and reduces insulin resistance of peripheral tissue.
- Gonadotropins: Leuprolide
- Cyproterone competes with DHT for binding to the androgen receptor.
- Spironolactone competes with DHT for binding to the androgen receptor.
- Flutamide is a pure androgen receptor blocker.
- Ketoconazole reduces levels of concentration of circulating androgens.
- Finasteride inhibits activity of 5 α -reductase,

SURGERY

- Hair removal with intense pulsed light irradiator system (IPL) or normal-mode ruby laser for idiopathic or familial hirsutism
- Surgery can be aimed at underlying pathology:
 - Adrenal/Ovarian tumor resection
 - Oophorectomy for androgen-producing ovarian tumor
 - Ovarian wedge resection/ovarian drilling in PCOS

**FOLLOW-UP**

Depends on cause or associated condition

DISPOSITION**Issues for Referral**

- Endocrinology or gynecology or genetics or surgery for hormonal or syndromic or tumor etiology
- Dermatology or cosmetology for idiopathic or familial hirsutism only

PROGNOSIS

Dependent on cause and intervention or therapy

PATIENT MONITORING

- Endocrinology or gynecology or genetics or surgery for hormonal or syndromic or tumor etiology
- Dermatology or cosmetology for idiopathic or familial hirsutism only

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**MISCELLANEOUS**

Virilization indicates more severe androgen effect including breast atrophy, clitoromegaly, temporal balding

CLINICAL PEARLS

- Hirsutism without menstrual irregularities or weight gain is most likely idiopathic or familial.
- Adolescents with hirsutism and early-onset, severe, and refractory acne are likely to have PCOS; OCPs can benefit self-esteem and prevent scarring from acne.
- Hirsutism can be the only clinical presentation of depression or stress in adolescents; warrants psychosocial workup.

ABBREVIATIONS

- ACTH—Adrenocorticotropic hormone
- CAH—Congenital adrenal hyperplasia
- DHEA/DHEAS—Dehydroepiandrosterone-DHEAS sulfate
- DHT—5 α -dihydrotestosterone
- FAS—Fetal alcohol syndrome
- FSH—Follicular stimulating hormone
- HEENT—Head, eyes, ears, nose, throat exam
- IGF-1—Insulin-like growth factor
- LH—Luteinizing hormone
- OCP—Oral contraceptive pill
- PCOS—Polycystic ovarian syndrome
- SHBG—Sex hormone binding globulin
- TSH—Thyroid stimulating hormone

CODES

ICD9-CM
704.1 Hirsutism

**PATIENT TEACHING**

- Diagnosis of idiopathic hirsutism or familial hirsutism should be considered after a thorough workup for all other causes such as hormonal, oncologic, and syndromic agents have been ruled out.
- Current medical therapies have their pros and cons. No drug is yet FDA approved. Cosmetic remediation or counseling and education may also be helpful.

PREVENTION

- Exercise for weight control and stress reduction may improve PCOS.
- Careful use of medication such as steroids, antiepileptics, vasodilators with awareness of hirsutism as side effect