DR.FIRAS AL-RSHOUD

ASSOCIATE PROFESSOR OF REPRODUCTIVE MEDICINE AND INFERTILITY

Hirsutism

Hirsutism

- **Definition**

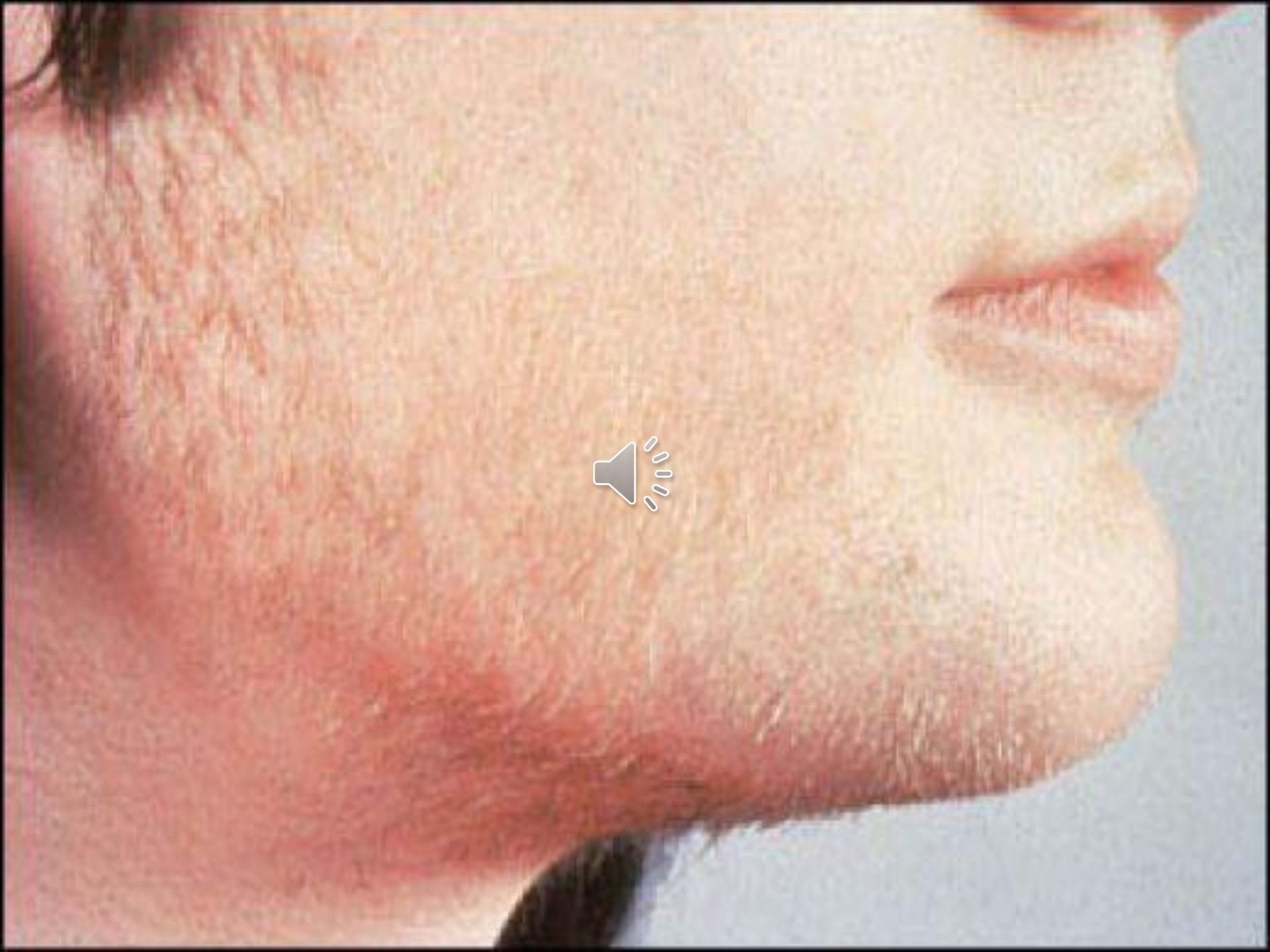
Male pattern (terminal)hair growth in a female due to

Increased androgen production or increased sensitivity

- **Hypertrichosis**:

Generalised non-sexual (vellus) hair growth

  - **hereditary**
  - **medication**
  - **malignancy**



Virilism

Hirsutism and other symptoms of defeminization.

Other S&S include:

- 2º Amenorrhea
- Male pattern baldness
- Clitoromegaly
- Deepening of voice

Causes of virilism

- Androgen producing ovarian & adrenal tumours
- Adult onset CAH "21-hydroxylase deficiency"
- Cushing's syndrome and acromegaly
- Iatrogenic

Hirsutism

NOT a Diagnosis but a manifestation

Physiology of hair growth

- Adult hair 2 types
- Hair growth is dynamic
- Anagen - growing phase

  active mitoses in basal matrix

  e.g. scalp hair, face
- Catagen – hair growth ceases
- Telogen –Resting phase

Incidence

- Variable-ethnicity
- 5-10% of women of reproductive age

Female androgens

- **Dehydroepiandrosterone (DHEA)**- weak carbon-5 androgen secreted principally by andrenal gland
- **DHEAS** almost 100% by adrenal gland
- **Androstendione (A)** - weak carbon-4 androgen secreted in equal amounts by adrenal glands and ovaries
- **Testosterone (T)-** potent carbon-4 androgen secreted by the adrenal glands and ovaries and produced in adipose tissue from the conversion of androstendione
- **Dihydrotestosterone (DHT)**- more potent than testosterone.The conversion from testosterone is the result of action of 5 α–reductase

Ovary → T, A

T Theca cell (LH, insulin/IGF-1)

↓

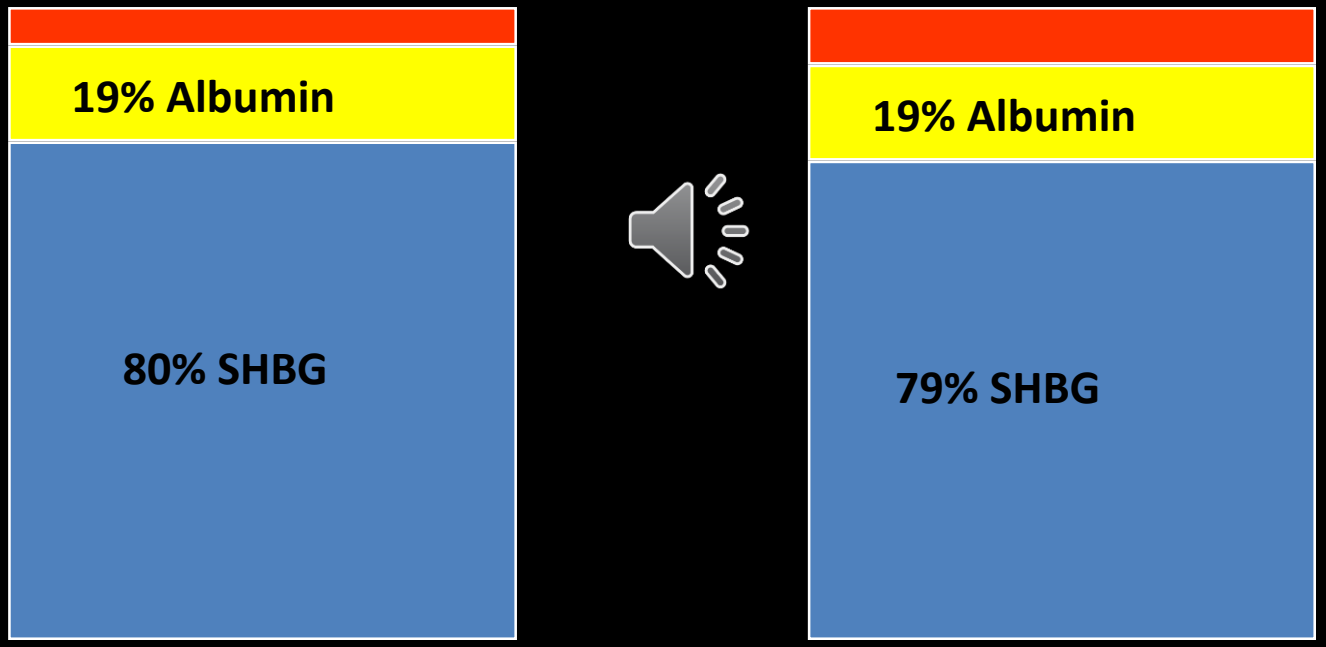
Granulosa cell

E

Adrenal → A, DHEA

T → 5α reductase → DHT

Testosterone



Normal women

Hirsute women

Causes

- **Increased production of androgens**

  Adrenal: Cushing's, CAH, tumours

  ovarian: PCOs
- **Increase free testosterone**

  decreased SHBG but normal T

  increased insulin due to insulin resistance - PCOs
- **Increase local activity of 5αreductase**

  Insulin & IGF
- **Iatrogenic**

Causes of hyperandrogenism:

- PCOS 75%
- Idiopatic hirsutism 15%
- Adrenal hyperplasia 3%
- Cushing's disease 1%
- Hyperprolactinemia 1%
- Tumor of the ovary 1%
- Tumor of the adrenal 0,1%
- After medications 1%

Drugs, e.g.

Androgens, danazol, anabolic steroids, minoxidil, phenytoin, sodium valporate, diazoxide, cyclosporin

Clinical assessment of hirsutism

- **History-detailed**
  - Onset-duration, severity
  - Other symptoms of virilization
  - Menstrual hx
  - Infertility
  - Hx suggestive of other medical conditions ,e.g. Cushing's syndrome or CAH
- **Medications**

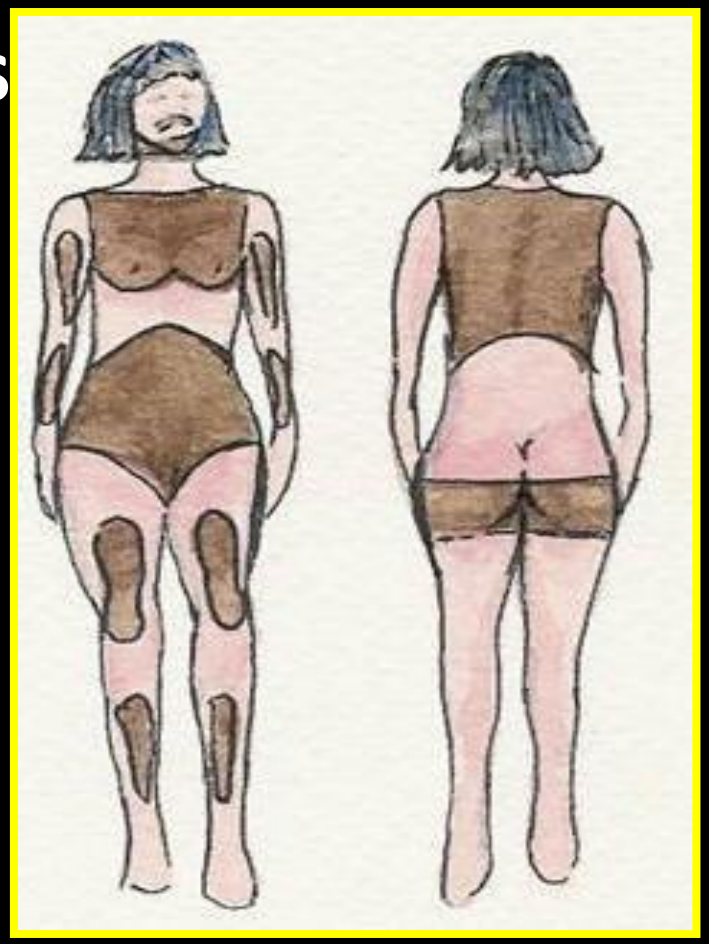
Examination

- **Evaluate severity using Ferriman-Gallwey scoring system**

9 androgen sensitive areas

0-4 for each area

≥ 8 for diagnosis

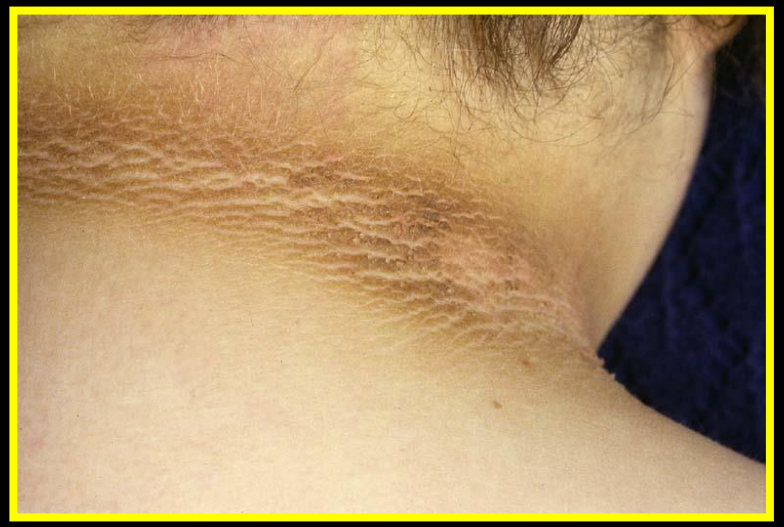


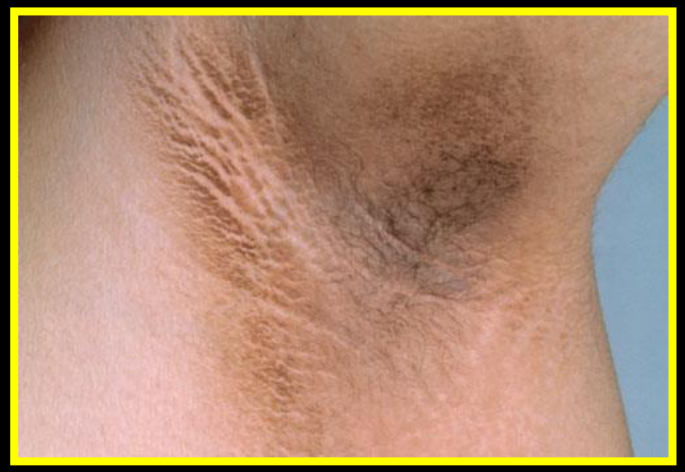
Disadvantage

- focal hirsutism
- ignores some androgen sensitive areas as buttocks

Examination…

- Acne& signs of virilization
- Acanthosis nigricans
- Pelvic exam





Investigations

- **Testosterone concentration**
  mild isolated hirsutism-debatable
- **FAI(Total T*100/ SHBG)**
  Reflects SHBG & T
  Obese & PCOS pts-elevated but normal T
- **DHEA**
- **Baseline 17-OH progesterone**
- **Dexamethasone suppression test/24 hr urinary free cortisol**
- **Pelvic imaging**
  US, CT/MRI

Treatment

- **Manage symptom**

  Electrolysis, plucking, waxing, shaving &laser

- **Treat cause**

Pharmacological agents

- **OCP**
- Increase SHBG
- Antagonise LH stimulated androgen
- Mild decrease in adrenal androgen
- Mild blockage of androgen receptors
- Desogestrel, gestodene, norgestimate (estrogen dominant effect)
- levonorgestrel, norethistrone

- **Androgen antagonists**
- 2nd line monotherapy or in combination with OCP in severe cases
- Competitive inhibition at the level of the testosterone receptor.
- All are equally effective.
- Should be combined with effective contraceptive to avoid feminization of a male fetus.
  - Cyproterone acetate
  - Spironolactone
  - Flutamide
  - Finasteride

Cyproterone acetate

- CPA(2 mg/day) and ethinyl oestradiol (35 µg/day) (Diane) is very effective treatment when given cyclically.
- The addition of CPA 10–100 mg/day on the first 10 days of the combined medication has proved effective for more severe cases.
- Mechanism of action:

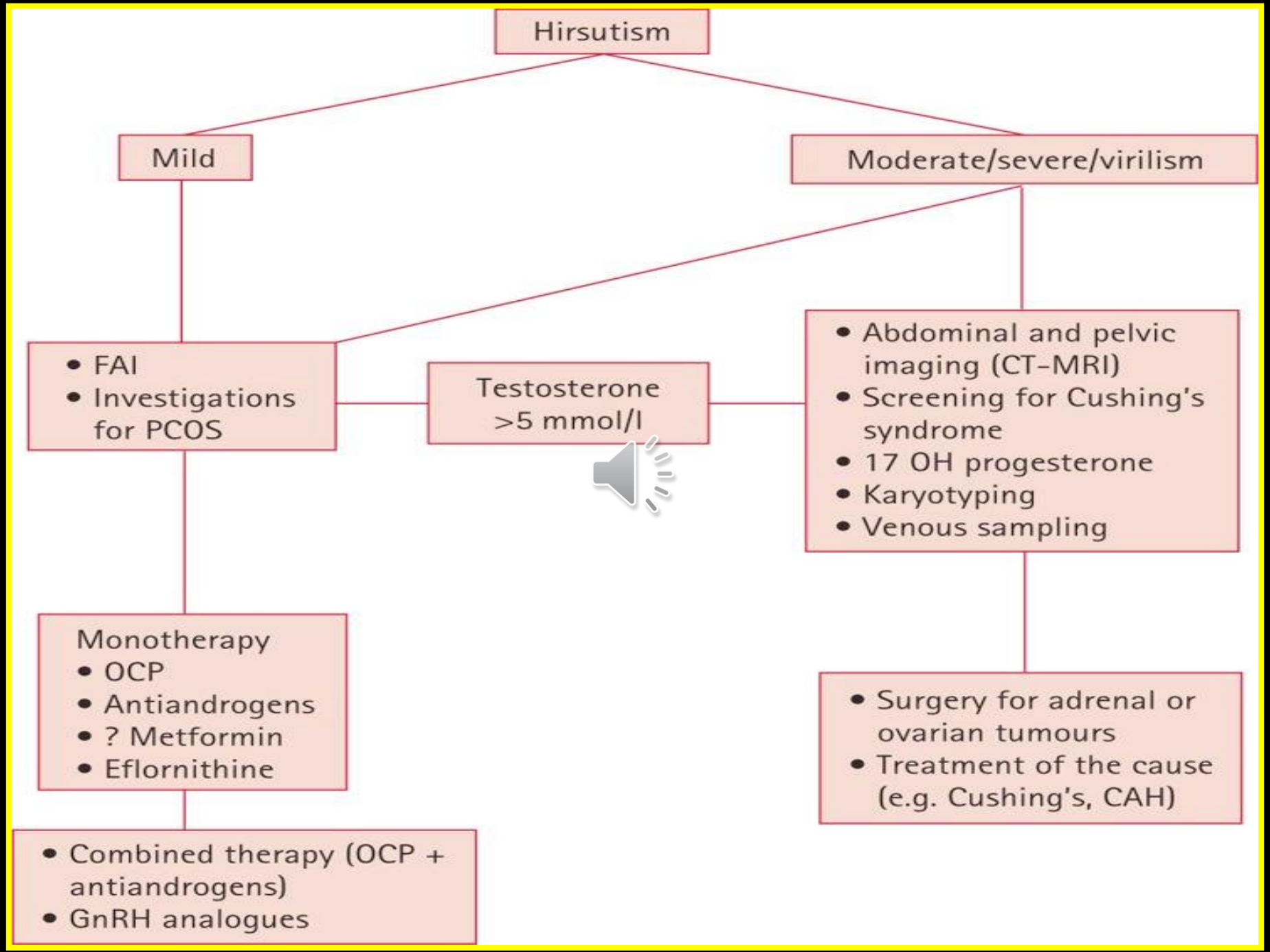
1. suppression of LH release
2. Blocks androgen receptors
3. as a progestogen in suppressing the action of 5α reductase
4. in combination with ethinyl oestradiol, it increases SHBG concentrations.

Eflornithine(Vaniqa®)

- Topical antiprotozoal
- Acts locally to inhibit hair follicle ornithine decaboxylase enzyme
- If no improvement after 12weeks...stop
- Regrowth of hair when stopped
- S.E obstruction of sebaceous glands and hence worsening of acne
- Enhances effect of laser treatment

- **Insulin sensitizing agents**

  Metformin- Studies controversial
- **GnRH agonists**
- **Weight loss**
- **Surgical**


Hirsutism
Mild
Moderate/severe/virilism
• FAI
• Investigations for PCOS
Testosterone >5 mmol/l
• Abdominal and pelvic imaging (CT–MRI)
• Screening for Cushing's syndrome
• 17 OH progesterone
• Karyotyping
• Venous sampling
Monotherapy
• OCP
• Antiandrogens
• ? Metformin
• Eflornithine
• Surgery for adrenal or ovarian tumours
• Treatment of the cause (e.g. Cushing's, CAH)
• Combined therapy (OCP + antiandrogens)
• GnRH analogues

Thank you