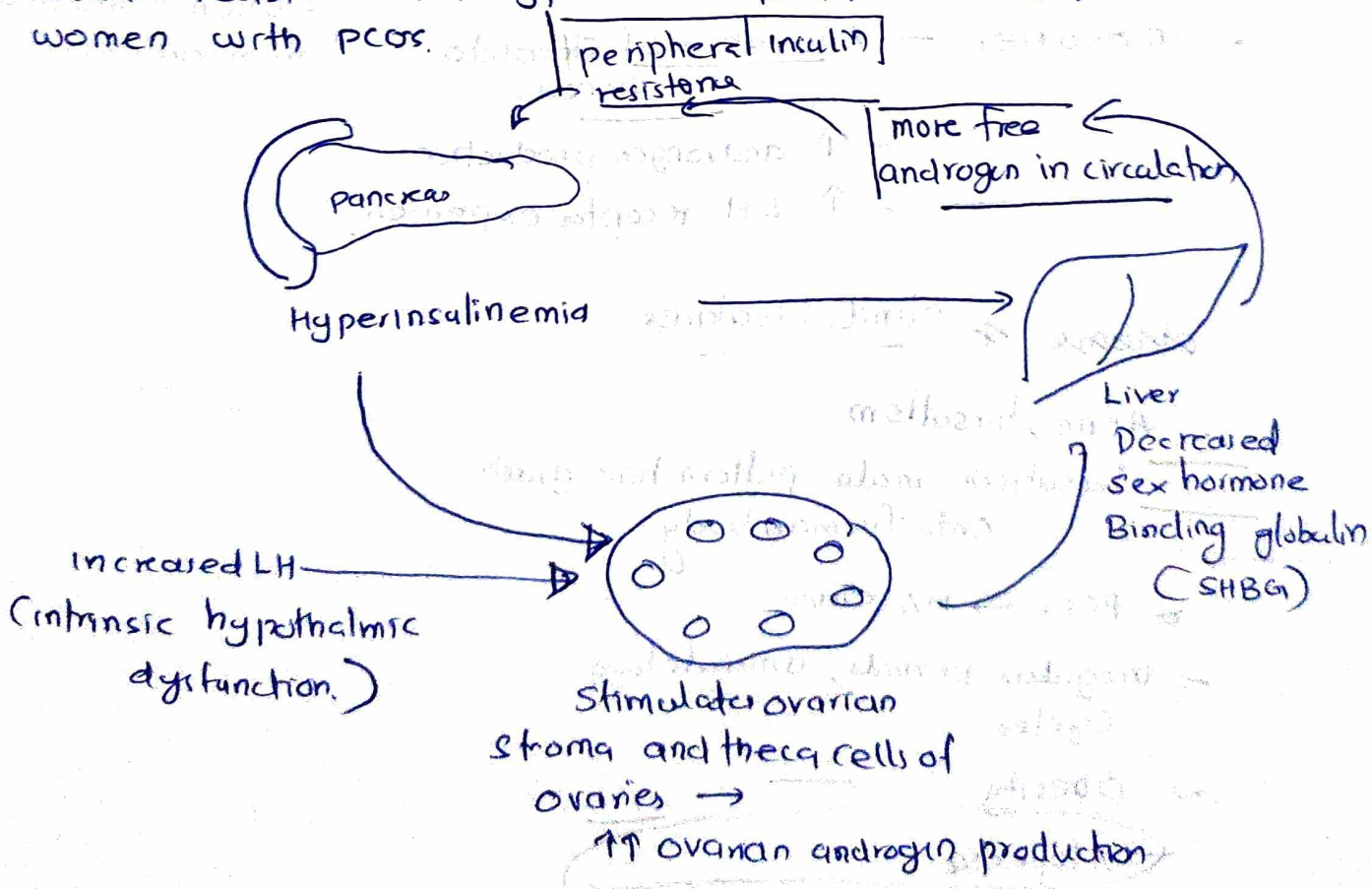
PCOS a.k.a Stein Leventhal syndrome

- It is a heterogenous condition characterised, by menstral irregularity hyperandrogenism, obesity and polycystic ovary seen on ultrasound
- most common cause of secondary amenorrhea
- 6-10 % prevalence globally.

Pathogenesis.

- Heterogenous disorder – Genetic, familial, environmetal factors
- PCOS is a complex disorder involving abnormalities in
  - → gonadotropin secretion
  - → insulin secretion, action.
  - → Androgen secretion and
  - → Ovarian function.
- Both the frequency and amplitude of LH pulse are increased – not found in all patients
- Insulin resistance and hyperinsulenemia found 50-70% women with PCOS.

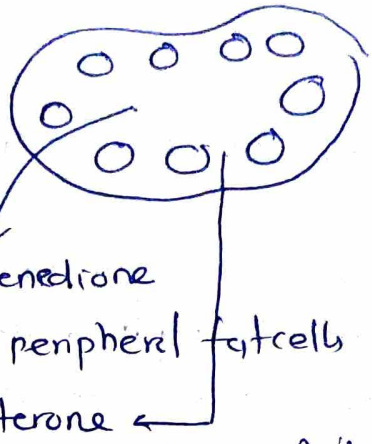


- obesity is a common clinical feature. It also worsen insulin resistance and ↑ cardio vascular risk
- however pcos also found in women with Normal BMI

- Increase androgen by ovaries.
  adrenals are also contribute to androgen production

Excess androgen in pcos

- production of ~~a~~ androstene dione & testosterone by ovary



- clinical symptoms of androgen excess
  ↓
  hirsutism, hairloss

* in adrenals gland androgen production also contribute. androgen envinorment inside ovaries

- Androgens —Aromatase→ Estrogen
  (excess) ⊖
  ↓
  5α androgens — It is not get aromatized.

; Levels of DHEA & DHEA-S also be ↑sed
; - DHEA-S produced from adrenals

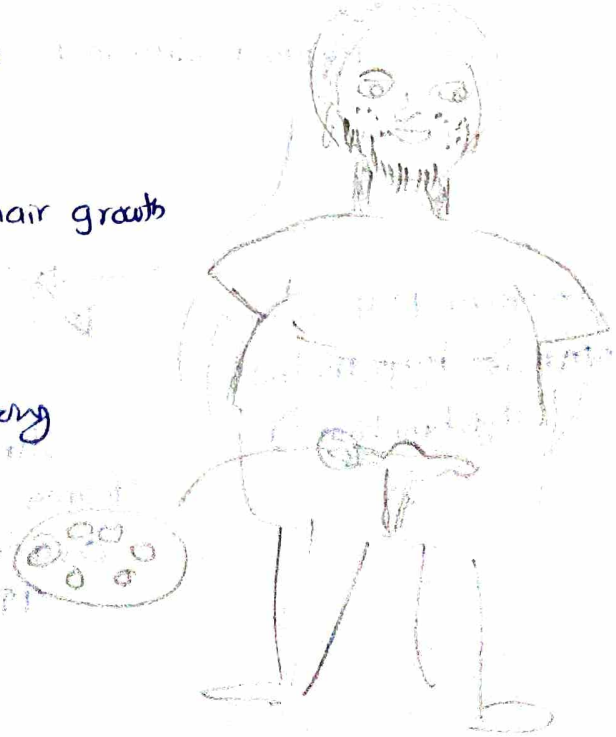
- in ovaries — Alternation of steroido genesis
  - ↑ androngen production
  - ↑ LH recepter expression.

~~disease~~ & clinrCal features

- Acne, hirsutism
  - hirsutism : male pattern hair growth onto fuoman body

✿ PCOS → m/c cause.

- irregular periods, anovulatory cycles
- obesity
- Alopecia.
- infertility.



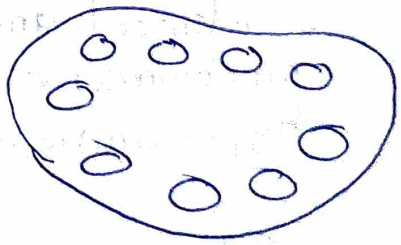
- increase androgen levels
- Acanthosis nigricans
  - Dark velvety pigmentation under nape of the neck.
  - feature of underlying insulin resistance
- feature of metabolic syndrome
  - Hypertension
  - Abnormal glucose tolerance
  - Dyslipidaemia

→ chronic anovulation in pcos

→ Excess androgen in ovaries
- Dominant follicles not allow follicular growth to progress
- For follicular growth
  - Estrogen environment inside ovary required
- Disrupted growth of follicles
  - No developed follicles seen.
  - small follicles in various stages of development seen
- Polycystic appearance of ovaries

Excess androgen in circulation
↓ Aromatized in peripheral fat cells
Estrone E1 ↑
chronically elevated elevated estrogen level
↓
No LH surge
↓
Anovulation
↓
PCOS.

Inhibin B → Inhibit FSH.
↓
↓ FSH
(On lower side of normal range)



Hormonal disturbance in PCOS

- ↑ androgens
- LH: FSH ratio elevated
- ↑ serum AMH (Anti mullerian hormone) ≥ 5ng/dl - AMH secreted by preantral or antral follicles
- ↓ SHBG.
- E2 : E1 ratio revised

- Tasting blood glucose: Fasting insulin level < 4.5
  - fecture of underlying insulin resistan

- Elevated LH

Long term consequence of PCOS

- Diabetes Mellitus
- Dyslipedemia
- Metabolic syndrome
- coronary artery disease
- Endometrial hyperplasia & cancer.
- non alcoholic steatohepatitis
- obstructive sleep apnea
- 7-10% can be develop diabetes type 2 DM < 40yrs
- impaired glucose tolerance - 35% PCOS cases

Diagnosis

Rotterdam criteria. - clinical dx

- Oligo anovulation - Irregular cycles, oligomenorrhea, delayed cycle followed heavy bleeds amenorrhea, Polymenorrhea.

- clinical and/or biochemical evidence of hyperandrogenism
  - Hirsuitsm
  - serum androgen levels

- Polycystic ovarian morphology on ultra sound
  - Ovarian volume > 10ml and or 12 follicles, measuring 2-9 in atleast one ovary (Necklace sign)

- 2/3 are present → Dx PCOS

PCOS - morphology

- multiple follicle on Ultrasonography — string of pearls app. or Necklace app.
  - Stromal hyperplasia may be seen
  - No. of follicles & ovarian volume are noted — part of Dx criteria

Rule out other cause of anovulation

- Serum TSH - rule of hypothyroidism
- serum prolactin - rule out hyperprolactinemia

clinical management
- Immediate concerns
  - Menstrual problem
  - Hirsutism
  - → infertility.
- Long term concern
  - screen risk factor for CVD
  - check BP
  - 75mg OGTT
  - Lipid profile
  - Education of long term consequences

- life style modifications
  - ✓ Healthy Eating habits
  - ✓ Weight loss
  - ✓ Exercise.
  - ✓ quit smoking.

- Medical management.

Woman not wishing to receive at present

1st line - OCPs (Combined)
- Help to regularise the cycle
- Tx of hirsuitism
- contraception benefit.

Preference to given : anti-androgen progesterone containing pill
Cyproterone acetate and Drosperinone.

Woman trying to conceive
- Ovulation induction : Letrozole, clomiphene citrate.
- Metformin - insulin sensitizer
- Nutritional supplements — inositol : myo-inositol, D-chiro inositol.
  - can provide some metabolic benefits.

Laproscopic d oranan drilling

- destroy the ovarian stroma. → ↓ androgen production
  Short term relief
  - longterm disadvantage
    follicular damage
    pelvic adhesion.
- utility limited → became IVF options