

HORMONAL TREATMENT OF ACNE

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What is Acne...?

- **Acne** is thought to be initiated by the effect of masculinising hormones called "ANDROGENS" on sebaceous glands that during PUBERTY enlarge and become increasingly sensitive.
- This results in excessive oil secretion and blockage of pores, which leads to the initial Non-inflamed spots of acne(white and black heads).
- As the acne bacteria (*Propionibacterium acnes*) proliferate, the oil-rich environment in the pores leads to inflammation, which becomes visibly apparent as red pimples, pustules, and nodules.

ANDROGENS THAT PLAY A PART IN CAUSING ACNE INCLUDE:

- 1- Testosterone (T)
- 2- 5-Dehydrotestosterone(DHT)
- 3- Androstenedione(A)
- 4- Dehydroepiandrosterone-sulfate(DHEA-S)

Acne can be the presenting sign of over production of Androgens (Polycystic ovary syndrome, An ovulation, Cushing's disease, Androgen-secreting tumors) .

ANDROGENS

LH,ACTH(pituitary hormones)stimulate androgen production:

- 1-Testosterone(testes,ovaries)
- 2-DHEA-S(Adrenal gland)-----*Testosterone
- 3-DHT (T--5-alpha reductase--*DHT)at target tissue(Hair follicle,Sebocyte).

T and DHT :bind to the same Androgen Receptor on Sebocytes.

Free Testosterone (fT): is the active fraction of T and determines the plasma Androgenicity.

fT and DHEA-S: are the most important hormones in the Pathogenesis Of Acne.



Figure 7-16 Cystic acne. The lesions in this patient are primarily cystic. Only a few pustules and comedones are present.



Figure 24-9 Hirsutism (grades II and III). Growth of terminal hair on the chin and neck of a young woman.



Figure 24-10 Hirsutism. A prominent escutcheon in a woman.



Figure 7-7 Comedones (blackheads) are occasionally inflamed.



Figure 7-8 Closed comedones (whiteheads). Tiny, white, dome-shaped papules with a small follicular orifice. Stretching the skin accentuated these lesions.

WHEN TO ORDER HORMONE TESTS:

Women presenting with:

- 1-Rapid onset of acne(1-4monthes).
- 2-Hirsutism.
- 3-Androgenetic alopecia.
- 4-Signs of virilization (low voice, increased muscle mass, increased libido, clitoromegaly)
- 5-Obesity
- 6-Cushing"s syndrome

TESTS TO ORDER

1-Total and fT.

2-DHEA-S.

3-LH,FSH.

4-ACTH.

5-Prolactin.

6-Lipid profiles.

7-Glucose Tolerance Tests(DM).

HORMONE LEVELS

- 1-Total T>200 ng/dL(7 nmol/L) suggest possible ovarian tumors.
- 2-Serum T=160 ng/dL(6nmol/L)---*PCOD
- 3-Plasma DHEA-S>800micro g/dL(normal 350)---
*Adrenal tumor.

Note:

Serum Androgens may or may not be elevated.

TREATMENT INDICATIONS

- 1-Increased facial oiliness(Seborrhea).
- 2-Pre-menstrual acne flare-ups.
- 3-Inflammatory acne on mandibular line or neck.
- 4-Acne onset as adult.
- 5-Resistant to Antibiotics.
- 6-Resistant to Accutane.
- 7-Irregular menses.
- 8-Ovarian cyst.
- 9-Hirsutism.
- 10-Androgenetic alopecia.

HORMONAL TREATMENT (Anti Androgenic Therapy)

1-Oral Contra Ceptives(OCS)

INDICATIONS:

- a)No response to Antibiotics
- b)No response to Prednisone or Dexameth.
- c)Elevated fT

ACTION:

1. Inhibits ovarian androgen secretion(A,T).
2. Decreased production of Adrenal androgens(DHEA-S).
3. Inhibition of the enzyme 5-alpha reductase (lowers DHT).
4. SHBG increase, which reduces levels of T Lower levels of LH.
5. The level of T in women with acne is within the normal range, But is lowered in those on OCC.
6. Prevent ovulation and implantation
7. Make contraception during treatment with oral Isotretinoin (Accutane).

COMMON SIDE EFFECTS:

- a) Breast tenderness.
- b) Headache.
- c) Nausea.

DURATION OF TREATMENT

6-18 months.

2-SPIRONOLACTONE:

(A synthetic steroid, and anti androgen,
Aldactone 20-200mg tab.)

INDICATIONS:

- a) No response to Antibiotics
- b) Acne ,Androgenenetc alopecia ,Hirsutism.

ACTION:

- a) Androgen receptor blockade (blocker)
- b) Inhibits 5-alpha reductase enzyme
- c) Reduces Androgen biosynthesis.
- d) Decreases sebum production by 75%
- e) Can be combined with OCC (BCP) and used for one week before period to minimise a pre-menstrual flare-up of acne.

SIDE EFFECT

Menstrual irregularity.

CONTRA INDICATIONS

- a)Pregnancy
- b)Renal insufficiency
- c)Abnormal menstrual bleeding
- d)Family history of ovarian ,breast and uterine cancer.

DURATION OF TREATMENT

4-6 monthes

3-Prednisone

or dexamethasone
(5-10mg or 0.25-0.5mg)

INDICATION:

No response to any treatment above

ACTION:

Inhibits adrenal androgen secretion

DURATION OF TREATMENT:

6-12 months

Acne Approved Hormone Therapy

1-Alesse

- 0.020EE+0.10 levonorgestrel.
- Lower estrogen dose.
- Low potential cardiovascular side effects of estrogen.
- No weight gain.
- 700 women after 6months.
- 46% complete clearing.

2-Ortho-Tricyclen

- 0.035mgEE + Norgestimate(0.180mg,0.215,0.250mg).
- 507 women with moderate acne after 6 months.
- 53% complete clearing.

3-Diane-35

- 0.035EE(Ethinyl Estradiol) +2.0mg cyproteron acetate.
- Cyproteron Acetate (Progestine) acts as anti androgen (And.recep.blocker in the skin).
- *Diane is as effective as Tetracycline after 6 monthes of use.

SIDE EFFECTS OF HORMONE THERAPY

COMMON SIDE EFFECTS :

- 1-Nausea.**
- 2-Vomiting.**
- 3-Cyclical weight gain.**
- 4-Bloating.**
- 5-Breast tenderness.**
- 6-Depression.**
- 7-Mood swings.**
- 8-Headaches.**

RARE SIDE EFFECTS

- 1-Blood clots.**
- 2-Thromboembolism.**
- 3-Stroke.**
- 4-Retinal artery thrombosis.**
- 5-Benign liver tumors.**
- 6-Gallstones.**
- 7-Hypertension.**
- 8-Failure of birth control.**
- 9-Heart attacks.**
- 10-A link with breast cancer remains controversial.**

CONTRA INDICATIONS

- 1-History of coronary heart disease.**
- 2-Very high cholesterol level.**
- 3-History of clots or stroke(CVA).**
- 4-Renal failure.**
- 5-Jaundice.**
- 6-Symptomatic heart valve disease.**
- 7-Smokers.**
- 8-Breast cancer.**

THANK YOU
For Listening...!