MSS

Pharmacology

LEC no. 5

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Skin Pharmacology

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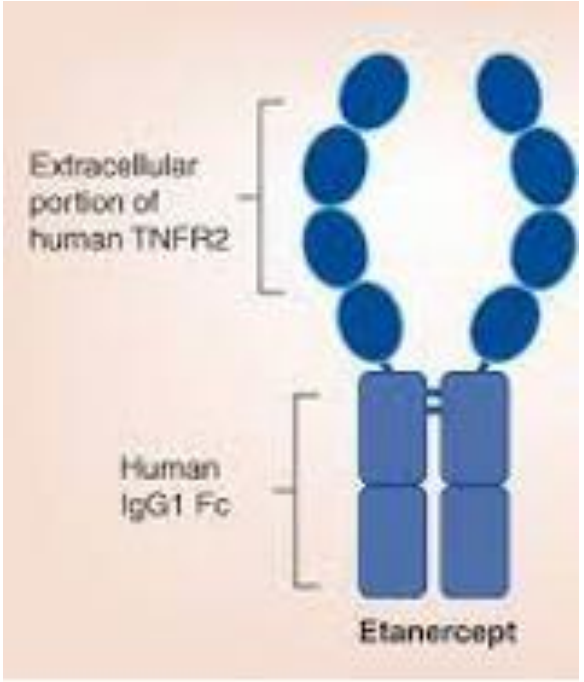
Drugs for Psoriasis

- **Biologic Agents:**

They are usually immunoglobulins

  - **Etanercept:**
    - **Dimeric fusion protein of TNF receptor linked to the Fc portion of human $IgG_{.1}$**
    - **approved for the treatment of psoriasis, psoriatic arthritis and ankylosing spondylitis (**type of arthritis that causes inflammation in the joints and ligaments of the spine.**) in adults**



Anti-inflammatory Agents

- **Topical Corticosteroids:**
  - **Hydrocortisone.**
  - **Prednisolone and Methylprednisolone.**
  - **Dexamethasone and Betamethasone.**
  - **Triamcinolone.** Can be given as intralesional injection that can treat keloids scars
  - **Fluocinonide.** Can be used as inhalers, causes anti-inflammatory actions.

As we know it is the first choice of treatment for the mild psoriasis
Corticosteroids work on inhibit phospholipase A2 which prevents the arachidonic acid formation which central component of inflammatory pathways.

Anti-inflammatory Agents

- **Topical Corticosteroids:**
  - **Absorption:**
    - **%1of hydrocortisone applied to the ventral forearm.**
    - **0.14times of hydrocortisone applied to the plantar foot.**
    - **0.83times of hydrocortisone applied to the palm.**
    - **3.5times of hydrocortisone applied to the scalp.**
    - **6times of hydrocortisone applied to the forehead.**
    - **9times of hydrocortisone applied to the vulvar skin.**

The doctor said to skip this slide it basically emphasizes the percentage of absorption of hydrocortisone applied to different regions of the skin of different thicknesses.

Anti-inflammatory Agents

- **Topical Corticosteroids:**
  - **Absorption:**
    - **Absorption increased with inflammation.**

      Inflammation can induce changes in blood flow to the affected area. During inflammation, blood vessels in the region dilate, leading to increased blood flow to the site. This increased blood flow can enhance drug absorption by delivering a greater amount of the drug to the area, thereby facilitating its uptake into the bloodstream

      This causes a lot of systemic side effects in our body if it is absorbed a lot.

    - **Increasing the concentration does not proportionally increase the absorption.**
      However the penetration increases
    - **Can be given by intralesional injection.**

Anti-inflammatory Agents

- **Topical Cortcosteroids:**
  - **Dermatologic disorders very responsive to steroids:**
    - **Atopic dermatitis.**
    - **Seborrheic dermatitis.**
    - **Lichen simplex chronicus.**
    - **Pruritus ani.**
    - **Allergic contact dermatitis.!** Corticosteroids work by suppressing the immune system and reducing inflammation in the affected skin.
    - **Eczematous dermatitis.**
    - **Psoriasis**

Anti-inflammatory Agents

- **Topical Cortcosteroids:**
  - **Adverse Effects:**
    - **Suppression of pituitary-adrenal axis.**
    - **Systemic effects.**
    - **Skin atrophy.**
    - **Erythema.**
    - **Pustules.**
    - **Acne.**
    - **Infections.**
    - **Hypopigmentation.**
    - **Allergic contact dermatitis. !**

Focus on the side effects which are related to skin

It Suppresses the immunity wich increases the infections.

adrenocorticotropic hormone (ACTH), which stimulates the adrenal glands to produce cortisol. And it is regulated through a negative feedback mechanism. So, When cortisol levels in the body are low, we release ACTH.
When we take cortisone externally, it interferes with this normal feedback mechanism and causes suppression of the normal functioning of the pituitary-adrenal axis.
هذا مش مطلوب بس الدكتورة شرحته للزيادة بس ان شاء الله رح نوخذه لقدام.

Although it is topical administration, but it can cause systemic side effects.

While steroids are commonly used to treat allergic contact dermatitis, there is a risk of developing an allergic reaction to the steroid itself.

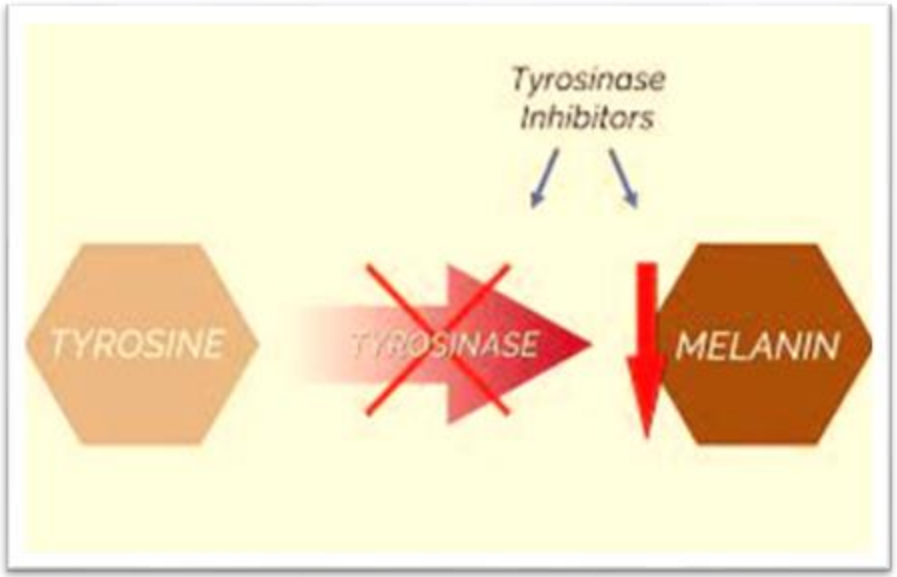
Agents affecting Pigmentation

- **Hydroquinone.**
- **Monobenzone.**

Affect melanocytes

Increasing the excretion of melanin from the melanocytes. It may also cause destruction of melanocytes and permanent depigmentation -google

- **Monobenzone may be toxic to melanocytes resulting in permanent depigmentation.**
- **Mequinol**
  - **Reduce hyperpigmentation of skin by inhibiting the enzyme tyrosinase which will interfere with biosynthesis of melanin.** But it is reversible unlike Monobenzone.



Agents affecting Pigmentation

- **Trioxsalen.**
- **Methoxsalen.**

Increase pigmentation

- **Are psoralens used for the repigmentation of depigmented macules of vitiligo .**
- **Must be photoactivated by long-wave-length ultraviolet light (320-400nm) to produce a beneficial effect.**
- **They intercalate with DNA.** Methoxsalen molecules insert themselves in between the base pairs of the DNA double helix, this may cause mutations in DNA that leads to cancer.
- **Can cause cataract and skin cancer.**

Psoralens: drugs that get activated when exposed to ultraviolet light.
Vitiligo: بهاق, condition characterized by depigmented macules on the skin.

Trichogenic and Antitrichogenic Agents

"Trichogenic" refers to hair growth. The term is derived from the Greek word "trichos" = hair, and "genic" =generating.

أدوية لعلاج الصلع وأدوية لعلاج كثافة الشعر الزائد

1. Minoxidil (Rogaine:)

Tip to memorize:
Min = men
= balding 

- **Designed as an antihypertensive agent.**
- **Effective in reversing the progressive miniaturization of terminal scalp hairs associated with androgenic alopecia .**
- **Vertex balding is more responsive than frontal balding.**

Minoxidil is potassium K^+ channel opener. By opening the potassium K^+ channels in the blood vessels, it may hyperpolarize the cell membranes and inhibit calcium channels. Which causes relaxation and vasodilation of blood vessels and increase the blood flow to hair follicles.
Q: what is the suspected systemic side effect to minoxidil?
Ans: hypotension.

Trichogenic and Antitrichogenic Agents

1. **Minoxidil.**
2. **Finasteride (Propecia:)**
   - **5ά-reductase inhibitor which blocks the conversion of testosterone to dihydrotestosterne.**
   - **Oral tablets.** It causes systemic effects.
   - **Can cause decreased libido, ejaculation disorders, and erectile dysfunction** related to sexual function

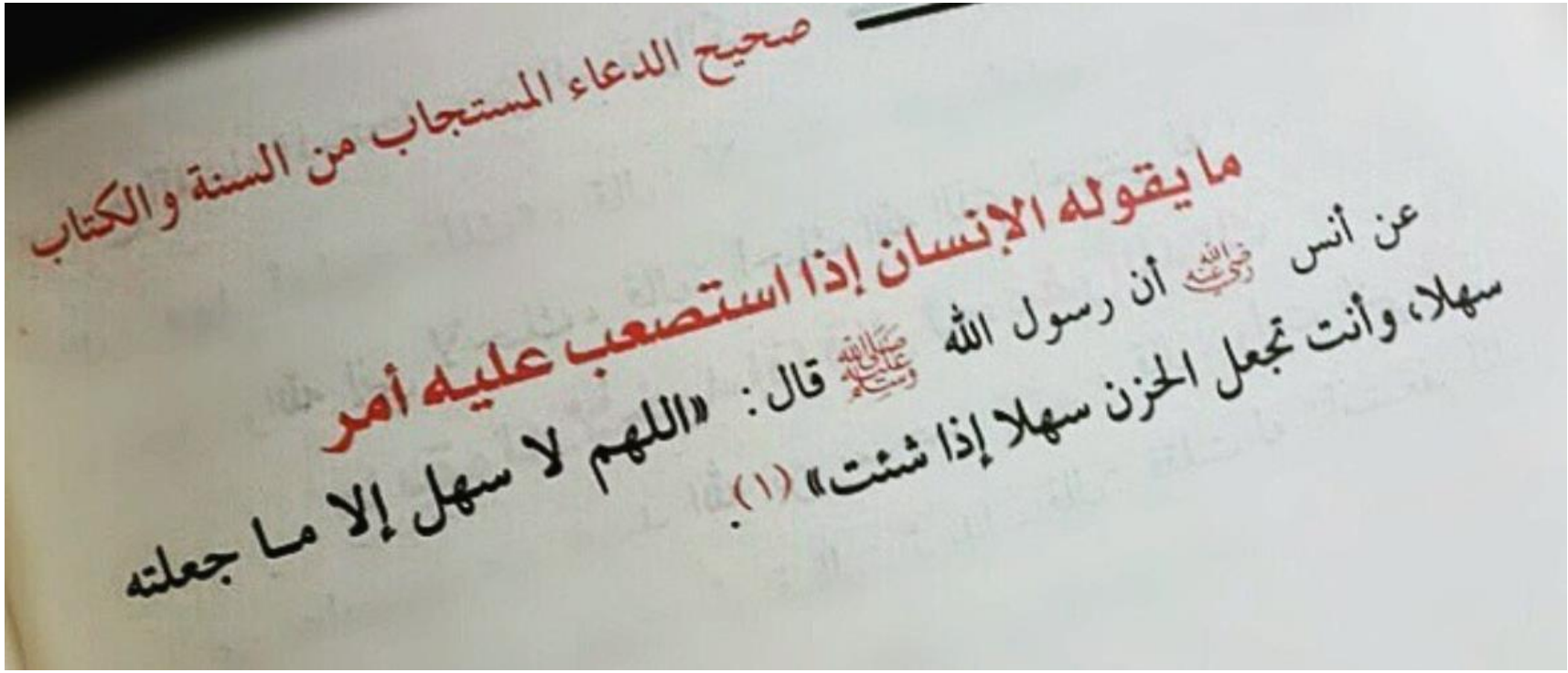
Trichogenic and Antitrichogenic Agents

1. **Minoxidil.**
2. **Finasteride.**
3. **Eflornithine:**

Tip to memorize:
Eflornithine = ornithine decarboxylase inhibitor

- **Is an irreversible inhibitor of ornithine decarboxylase, therefore, inhibits polyamine synthesis. Polyamines are important in cell division and hair growth.**
- **Effective in reducing facial hair growth in 30% of women when used for 6 months.**

V1



صحيح الدعاء المستجاب من السنة والكتاب

ما يقوله الإنسان إذا استصعب عليه أمر

عن أنس رضي الله عنه أن رسول الله ﷺ قال: «اللهم لا سهل إلا ما جعلته سهلا، وأنت تجعل الحزن سهلا إذا شئت» (١).