

INFLAMMATORY CONDITIONS

ATOPIC DERMATITIS

Inflammation of the skin with unknown/ various causes

Control itching Reduce Swelling Maintain hydration

Reduce Inflammation

Corticosteroids

Inhibit synthesis of inflammatory molecules

AND

increase expression of anti-inflammatory **lipocortin**

Clobetasol

Fluocinonide

Triamcinolone

Desonide

Hydrocortisone

Calcineurin Inhibitors

Tacrolimus - Inhibits T-cell activation and subsequent inflammatory response

• More targeted effect - does not cause skin atrophy

Toxicities: **skin atrophy** - decreased keratin expression weakens structure

URTICARIA

Hives

Control itching Reduce Swelling

ANTIHISTAMINES - H1 Receptor Antagonists

Block action of histamine

Histamine release by mast cells stimulates itch and pain neurons. causes capillary dilation and permeability

1st generation - cross BBB 2nd generation - don't cross BBB

Diphenhydramine - benedryl

Loratadine - claritan

Promethazine

Fexofenadine - allegra

Histamine promotes wakefulness →

drowsiness

Cetirizine - zyrtec

AUTOIMMUNE CONDITIONS - PSORIASIS

hyperproliferation of skin cells

Autoimmune response → inflammation → cytokines → keratinocyte proliferation → Symptoms

IMMUNOSUPPRESSANTS

Cytokine Inhibitors - reduce inflammation

Adalimumab
TNF- α inhibitor

Secukinumab
IL-17 inhibitor

Guselkumab
IL-23 inhibitor

Toxicities: **cardiovascular** - Afib, cardiac arrest, MI, angina, dysrhythmia. May activate latent infections (ex. TB)

Calcipotriene (t)

Vitamin D analog

MOA: binds vitamin D receptor to regulate transcription and suppress T-cell activation

Clobetasol

Corticosteroid

MOA: inhibit inflammatory response

Methotrexate

Folate inhibitor

MOA: inhibits dihydrofolate reductase to block folate synthesis and DNA synthesis in T cells

Apremilast

PDE4 inhibitor

MOA: inhibit synthesis of inflammatory cytokines AND increase expression of anti-inflammatory cytokines

NEOPLASTIC SKIN CONDITIONS

Squamous cell Carcinoma
non-invasive

5-fluorouracil
pyrimidine analog

MOA: interfere with DNA/RNA synthesis
• inhibits **thymidylate synthase** enzyme required for thymidine synthesis. **Preg X**

Actinic Keratosis

Basal Cell Carcinoma
superficial

Imiquimod
TLR7 stimulator

MOA: binds **toll-like receptor 7** to activate local immune system in order to shrink tumor

INFECTIVE SKIN CONDITIONS

① ACNE

Increased androgen levels

Spiroglactone
anti-androgen

MOA: inhibits testosterone synthesis and competes for binding to androgen receptors.

Toxicities: **PREGNANCY X**
dryness, burning, itching, redness

Tretinoin t - photoliable apply @ night

Isotretinoin o

Adapalene t - NOT photoliable
MOA: transcriptional regulator in keratinocytes, immune cells, and sebocytes
Retinoids

Stimulates

Sebaceous glands

MOA: inhibit comedone proliferation by removing dead keratinocytes and killing bacteria

+ **Benzoyl Peroxide**

↑ **Oil production**

↓
Clogs gland inhibiting follicular growth and secretion

↓
Colonization of **P. acnes** bacteria

↓
INFLAMMATION

Used in Combo w/
Retinoids or Benzoyl peroxide

Doxycycline (o) protein synthesis inhibitors
Clindamycin (t)

MOA: target **Cutibacterium acnes** - gram⁺, facultative anaerobic bacillus

Antibiotics

gram⁺
anaerobic
bacillus

② **HERPES SIMPLEX VIRUS** - dsDNA virus (1 → oral. 2 → genital)

Valacyclovir (and acyclovir)

guanosine analog (purine)

MOA: DNA polymerase inhibitor → inhibits viral DNA synthesis

① compete with NTPs for binding to viral DNA polymerase

② incorporate into new viral DNA causing defects

③ **SCABIES** - parasitic. MOA - invertebrate paralytics. Inhibit neuronal signaling in parasite

Permethrin

MOA: activation of presynaptic Na⁺ channels, and overstimulation of signaling.

Ivermectin (oral administration)

MOA: activation of glutamate-induced Cl⁻ channels → exhausts synapse and interrupts signal.

② **FUNGAL SKIN INFECTIONS** - drugs target fungal cell wall

AZDLES - inhibit ergosterol synthesis by inhibiting enzymes involved

Clotrimazole

Fluconazole

Ketoconazole

Inhibit enzyme
lanosterol demethylase
↳ found in fungal cells

Polyenes - binds ergosterol to damage cell wall

Nystatin

griseofulvin - inhibits fungal microtubules during mitosis