

Steroids (Topical)

Topical steroids remain a cornerstone of treatment in dermatology, offering effective management for a variety of skin conditions. As the largest and most accessible organ, the skin allows for the direct application of medications, making topical therapies particularly advantageous. Topical steroids, used appropriately, are associated with a lower risk of systemic side effects compared to oral steroids. However, their effectiveness depends on patient compliance, as well as the strength and formulation of the steroid used. This article will discuss the mechanisms of action of topical steroids, the different classes and vehicles available, and the potential side effects and considerations in their use.

Mechanism of Action

Steroids, which include naturally occurring hormones like cholesterol, estrogen, and cortisone, play a crucial role in regulating the immune response during stress or disease. Topical steroids are synthetic derivatives of these naturally occurring compounds and are designed for local application to the skin. They exert their therapeutic effects by penetrating the cell membrane and binding to specific intracellular receptors. This binding can either promote the production of anti-inflammatory proteins or inhibit the production of inflammatory mediators, thereby reducing inflammation and controlling immune responses at the site of application. The potency of a topical steroid depends on its ability to penetrate the skin and the specific formulation used, with stronger steroids penetrating more deeply and exerting more pronounced effects.

Classes of Topical Steroids

In the United States, topical steroids are classified into seven categories based on their potency, which is determined by their ability to constrict blood vessels (vasoconstriction) in the skin. Class I steroids are the most potent, approximately 600 to 1000 times stronger than the common over-the-counter hydrocortisone 1% (Class VII), which is generally considered the least potent. It is essential to note that the strength of a steroid is not directly proportional to the concentration listed on the label. For instance, a 0.01% steroid from Class I may be much more potent than a 3% steroid from Class VII. The appropriate class of steroid for treatment depends on the severity of the dermatologic condition and the area of the body being treated.

Topical Steroid Vehicles

The vehicle is the non-active component of a topical steroid preparation that helps deliver the medication to the skin. The choice of vehicle is crucial, as it affects both the potency of the steroid

and the patient's compliance. Common vehicles include ointments, creams, lotions, gels, and powders.

- **Ointments:** Ointments are petroleum-based, semi-occlusive preparations considered the most potent vehicle for topical steroids. Their occlusive properties reduce water and moisture loss from the skin, enhancing absorption. Ointments are most effective for treating dry, scaly conditions like eczema and psoriasis but are less favored in areas with hair or where a greasy texture may be undesirable.
- **Creams:** Creams are water-in-oil emulsions that offer a balance between the potency of ointments and the cosmetic appeal of lotions. While generally weaker than ointments, creams are highly favored for their ease of application and better cosmetic acceptability, making them ideal for a wide range of conditions, including those in skin folds (e.g., intertrigo) and other areas where patient adherence is important.
- **Lotions:** Lotions are water-based, less greasy preparations that are well-suited for larger surface areas or areas with thick hair. They are generally the least potent vehicle and are primarily used for acute inflammatory conditions, such as contact dermatitis and seborrheic dermatitis, where cooling and soothing effects are desired.
- **Gels:** Gels are clear, water-based formulations that dry quickly upon application. They are particularly useful for conditions affecting the scalp, as they do not cause matting of hair like ointments or creams. Gels offer a balance of potency and cosmetic benefits, making them suitable for conditions like psoriasis and seborrheic dermatitis on the scalp.
- **Powders:** Powders are used to absorb moisture, reduce friction, and cover large areas of the skin. While they are generally not potent vehicles for topical steroids, they are useful for conditions such as diaper dermatitis and fungal infections, where moisture control is crucial.

Side Effects and Considerations

Despite their efficacy, topical steroids have potential side effects, which can be minimized by following proper usage guidelines. The key principle in avoiding adverse effects is using the lowest potency steroid that remains effective for the condition at hand. Additionally, weaker steroids should be used on thinner skinned areas, such as the face, armpits, groin, and genital regions. Adherence to these guidelines can reduce the risk of common side effects, including:

- **Skin Thinning (Atrophy):** Prolonged use of topical steroids, especially in high-potency formulations, can lead to thinning of the skin. This results in increased fragility, easy bruising, and delayed wound healing.
- **Stretch Marks (Striae):** Stretch marks can develop when steroids are applied over prolonged periods or on areas subject to stretching (e.g., the abdomen, thighs). These marks are a sign of skin atrophy and can be distressing to patients.

- **Blood Vessels (Telangiectasia):** Chronic steroid use may lead to the development of visible blood vessels (telangiectasia) due to prolonged vasoconstriction, particularly in the facial areas.
- **Pigmentary Changes:** Topical steroids can cause hypo- or hyperpigmentation, particularly in darker-skinned individuals. The risk is greater with higher-potency steroids and prolonged use.
- **Systemic Effects:** In rare cases, especially when potent steroids are applied over large body areas or for prolonged periods, there is a risk of systemic absorption, which can lead to adrenal suppression. This suppression may result in side effects such as diabetes, hypertension, osteoporosis, and fluid retention.
- **Glaucoma and Cataracts:** Chronic use of topical steroids near the eyes, particularly in high-potency formulations, can increase the risk of developing glaucoma and cataracts, conditions that can lead to vision impairment if left untreated.

Conclusion

Topical steroids are a fundamental treatment for a wide range of dermatologic conditions due to their potent anti-inflammatory effects. Their success depends on appropriate selection based on the condition, the location of the lesion, and the potency required. Careful consideration of the vehicle, along with adherence to recommended guidelines regarding potency and duration of use, can minimize potential side effects. As with all medications, it is essential for patients to follow the instructions of their healthcare provider to ensure the most effective and safe use of topical steroids.

References

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