Topical corticosteroids in clinical practice

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SUMMARY

Topical corticosteroids are common medications prescribed for skin problems encountered in the primary care or dermatology clinic settings. As skin conditions comprise of around 20% of cases seen in primary care, this article written to guide readers, especially non-dermatologists on the appropriate potency of topical corticosteroids to be chosen for skin problems of patients and to list the side effects both local and systemic.

INTRODUCTION

Many skin conditions are treated with topical corticosteroids. This includes eczema, psoriasis, lichen sclerosus, lichen planus, nodular prurigo, discoid lupus erythematosus and vitiligo; to name a few.[1-3] There are variety of factors to consider when choosing a topical corticosteroid including the correct potency based on severity of clinical presentation, age group of patients, parts of the body affected, and the balance between benefits versus side effects.

More importantly, is the need for accurate clinical diagnosis to ensure the correct use for the indication of topical corticosteroid and the need to exclude primary or secondary skin infection prior to prescription. Microscopic examination of skin scraping with potassium hydroxide can help in identifying superficial fungal skin infection as the condition may be worsened by the use of topical corticosteroid.[4] As skin conditions comprise of one fifth of the cases seen in primary care, this article will offer guidelines to readers on the proper choice of corticosteroid for dermatological conditions commonly seen by clinicians.[5]

CHOOSING THE RIGHT POTENCY

Topical corticosteroids come in either ointment (for dry or scaly lesions) and lotion or cream formulation for wet lesions; with the ointment formulation having the highest potency. The potency of steroids is increased if occlusive dressing is used, especially in a hydrated area of the body, damaged skin or in flexures such as axilla or groin. Skin absorption of topical corticosteroid varies greatly with the variation in skin thickness at different body regions. Very thick skin at palms and soles necessitates the use of potent topical corticosteroid due to reduced absorption. Conversely, increased absorption in very thin skin at eyelids, face and genitalia leads to high risk of adverse effects when even mild to moderately potent topical corticosteroid is used at these areas for prolonged period.[4] Table I highlights the potencies of various topical corticosteroids, indications for use and areas to avoid.[6-8]

Generally, the use of topical corticosteroids should not be continued beyond two weeks without further recommendation by the physician to minimise the risk of side effects.

Most guidelines will suggest only low potency topical corticosteroids to be used in children due to increased risk of side effects due to higher body surface area in paediatric patients. A useful guide in prescribing steroids is adhering to the step-ladder method akin to prescription to anaesthesia. This include coming down the ladder to a less potent corticosteroid once the skin inflammation and pruritus improves, or going up the ladder for ineffective response with a weaker corticosteroid, albeit for a maximum of two weeks duration before reviewing. There is also a need to be cautious about the correct potency corticosteroids that are prescribed, e.g., hydrocortisone acetate 1% is safe for use over the face or in children but not hydrocortisone butyrate 0.1%.

Most corticosteroid preparation will recommend a daily or twice-daily application dose, with no further improvements noted with more frequent applications.[4] To ensure that the appropriate amount of corticosteroid is applied, the usage of fingertip unit method is recommended, which is defined as the amount squeezed from fingertip to the first crease of the finger.[4]

Table II shows the number of fingertip units needed to for different regions of the body.[4] For example, the palm of a hand will require 0.5 fingertip units or 0.25g of corticosteroids.[4] This will help physicians in dispensing the right amount of topical corticosteroids.

BALANCING BETWEEN BENEFITS AND SIDE EFFECTS OF USING TOPICAL CORTICOSTEROIDS

Obvious benefits can be derived from topical corticosteroids if used in the correct potencies for the right indications. It can bring dramatic recovery to inflammatory dermatoses thereby bringing relief to patients. However, there exists many side effects in the use of topical corticosteroids especially with inappropriate and prolonged use. This includes:[9,10]

1. Systemic effects (especially with high or ultra-high potency formulation for prolonged duration of therapy)

a) Endocrine – Iatrogenic Cushing's syndrome, Hypothalamic-pituitary-adrenal suppression

b) Metabolic- Aseptic necrosis of femoral head, hyperglycaemia, short stature in children

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Table I: Potencies, main indications and areas to avoid use of various topical corticosteroids

Potency	Examples (Strength Of Corticosteroids)	Main Indications	Areas To Avoid
Ultra Highly Potent	Clobetasol propionate cream (0.05%) Diflorasone diacetate ointment (0.05%)	- Relief of the severe inflammatory and pruritic manifestations of many inflammatory skin conditions - Moderate to severe forms of psoriasis (scalp, plaque)	Face, axilla, groin and any skin area with atrophic changes or infection
Highly Potent	Betamethasone dipropionate ointment (0.05%) Betamethasone dipropionate cream (0.05%) Betamethasone valerate ointment (0.1%) Diflorasone diacetate cream (0.05%) Triamcinolone acetonide ointment (0.1%)	- Relief of steroid responsive dermatoses - Mild to moderate plaque psoriasis	Face, axilla, groin or any skin area with infection
Moderately Potent	Hydrocortisone valerate ointment (0.2%) Triamcinolone acetonide cream (0.1%) Betamethasone dipropionate lotion (0.02%) Betamethasone valerate cream (0.1%) Fluocinonide acetonide cream (0.025%) Hydrocortisone butyrate cream (0.1%) Hydrocortisone valerate cream (0.2%)	Relief of steroid responsive dermatoses	Avoid prolonged use over face, groin or axilla Avoid use in skin site with infection
Low Potency	Betamethasone valerate lotion (0.05%) Hydrocortisone acetate cream (1%)	- Relief of steroid responsive dermatoses - Atopic dermatitis in children - Mild to moderate plaque psoriasis	Avoid use in skin site with infection Safe to use in children

Table II: Quantity of topical creams/ointments based on fingertip unit method

Region of the body	Fingertip unit required for one off application	Weight of ointment required for one off application (g)	Weight of ointment required for an adult male to application twice daily for one week (g)
Face and neck	2.5	1.25	17.5
Trunk (front or back)	7	3.5	49
One arm	3	1.5	21
One leg	6	3	42
One hand (one side)	0.5	0.25	3.5

One fingertip unit = approximately 0.5 g

c) Renal/electrolyte- Peripheral oedema, hypertension, hypocalcaemia
2. Local/cutaneous effects
a) Skin atrophic changes- purpura, easy bruising, striae, telangiectasia, ulceration
b) Skin infection – aggravation of existing infection, secondary infection, masking of tinea incognito, folliculitis
c) Ocular effects- cataract, glaucoma, ocular hypertension (with use of topical steroid eye drops)
d) Other effects – hyper- or hypopigmentation, hirsutism, delayed wound healing, perioral dermatitis, steroid induced acne or rosacea

The combination of topical corticosteroid and antifungal agents should be used cautiously in inflamed fungal skin infections, as prolonged use (more than two weeks) may reduce local immune response and hence aggravate the fungal infection.[4]

Precaution should also be exercised during pregnancy and lactation. Animal studies have shown that when used for long duration or under occlusive dressing in large amounts, birth defects can result.[4] It is unclear whether this preparation is excreted in breast milk, therefore as a precaution, if topical application is needed over the breast, it should be applied in the longest possible interval before the next feeding, i.e. immediately following a feeding session.[4]

Thus it is important for physicians to learn the correct and appropriate usage of topical corticosteroids in order to maximise the benefits and minimise the risks.

CONCLUSION

Topical corticosteroid can be either an ally or foe when prescribed for the treatment of a skin condition. Protocols exists for the proper use of corticosteroids taking into account potency of the steroids, age of the patient, severity of the dermatoses and patient preference. Primary care physician should empower themselves and their patients about the indications of usage of topical corticosteroids and the anticipated benefits and risks.

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