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5 | Corticosteroid-induced atrophy and barrier impairment measured by non-invasive methods in human skin.

Kolbe L, Kligman AM, Schreiner V, Stoudemayer T.; Skin Res Technol. 2001 May;7(2):73-7.

ABSTRACT

BACKGROUND/AIMS: Atrophy is a distressing side effect of potent corticosteroids. After open application of a high potency steroid, we monitored atrophogenicity by a variety of non-invasive methods.

METHODS: Volar forearms were treated twice daily for 3 or 4 weeks, with clobetasol propionate cream (Temovate). The following methods were used: 1) confocal microscopy, 2) transepidermal water loss (TEWL), 3) dimethyl sulfoxide whealing, 4) sodium hydroxide erosions, 5) analysis of stratum corneum lipids, and 6) B-scan ultrasound.

RESULTS: Confocal microscopy revealed thinning of the epidermis, decreased microvasculature and decreased size of keratinocytes. Evaporimetry demonstrated transepidermal water loss.

Whealing to dimethyl sulfoxide was enhanced. Sodium hydroxide erosions formed more quickly. The amount of ceramides, cholesterol, and free fatty acids was reduced. Ultrasound showed thinning of the dermis.

CONCLUSION: Non-invasive methods are very useful for quantifying the atrophogenicity of topical corticosteroids.