Comparing the effect of tacrolimus (0.1%) ointment and betamethasone valerate (0.1%) cream on the epidermal barrier: a two-weekly maintenance dose

John Chittock1, Kirsty Brown1, Michael J. Cork2 and Simon G. Danby1
1The Academic Unit of Dermatology Research, Department of Infection and Immunity, The University of Sheffield Medical School, Sheffield, UK; The Paediatric Dermatology Clinic, Sheffield Children’s Hospital, Sheffield, UK.
* Corresponding Author: s.danby@sheffield.ac.uk

INTRODUCTION

Atopic dermatitis (AD) is a multifactorial disease arising from a primary epidermal barrier defect, immunological dysregulation and negative environmental insults. AD is considered a lifelong condition, the natural progression of which alternates between periods of active disease and remission.2 The AD remission phase is characterised by a subclinical epidermal barrier defect accompanied by the presence of subclinical inflammation.3 The proactive topical anti-inflammatory therapy is an effective method of addressing the subclinical inflammation associated with the remission phase of atopic dermatitis. Both topical corticosteroids (TCS) and topical calcineurin inhibitors (TCI) have comparable efficacy when used in this manner,4 although to date, the interaction of a proactive treatment dose with the remission phase of atopic dermatitis has not been studied. The purpose of this study was to compare the anti-inflammatory properties of TCS and TCI treatments in the remission phase of AD. Both treatment approaches are the natural progression of which alternates between periods of active disease and remission.5,6

AIM

1) To perform a randomised, observer-blind functional and biological assessment of topical corticosteroids (TCS) and topical calcineurin inhibitors (TCI) with the remission phase of atopic dermatitis. Both treatment approaches are the natural progression of which alternates between periods of active disease and remission.5,6

METHODS

Subjects and Treatment
35 volunteers with a self-reported, recent history of AD (no symptoms in the last 6 months) were recruited. Basic exclusion criteria included pregnancy, breast feeding and being under the age of 18. Informed consent was obtained prior to participation. Volunteers applied 2FTU (finger-tip units) of betamethasone valerate 0.1% cream (BMVc) to one forearm and 2FTU of tacrolimus 0.1% ointment (TACo) to the opposing forearm twice-per-week for 8 weeks. 17 volunteers successfully completed the study.

Biophysical measurements
Skin barrier function, integrity and cohesion were determined by measuring transepidermal water loss in a climate controlled room (21 ± 2°C, 35-50% RH) with an AquaFlux TEWL machine (Biox, UK), tape-stripping and IR densitometry.7 Volunteers were acclimatised to the room conditions for 30 minutes prior to the assessments being made. All measurements were performed by the same, suitably trained technician.

Biological assessments
Specific cascinicic acid, chymotrypsin-like and trypsin-like protease activity were determined using the ex vivo analysis through adaptation of a previously published assay.8

RESULTS

Conclusions


ACKNOWLEDGEMENTS: We thank Les Hunter for volunteer recruitment

FUNDING: This study was funded by Aestelas Pharma Europe Ltd who manufacture TACo.

CONFLICTS OF INTEREST: Professor Cork and Dr Danby have held sponsored grants from Aestelas, Novartis and Shielad-GLS who manufacture TACo, pimecrolimus and BMVc.