Combining narrowband UVB phototherapy with Calcipotriol and Betamethasone Dipropionate foam modulates dendritic cell activity in psoriasis skin

AUTHORS

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INTRODUCTION

1. Despite numerous treatment options, many psoriasis patients experience inadequate disease control
2. Achieving sustained remission requires a deeper understanding of effective therapeutic strategies
3. Topical treatments are a key component in psoriasis management and should be evaluated alongside more advanced therapies
4. A combined treatment approach may help patients achieve long-term disease control

METHODOLOGY

Phase 4, non-randomised, single group, split-body, prospective cohort study

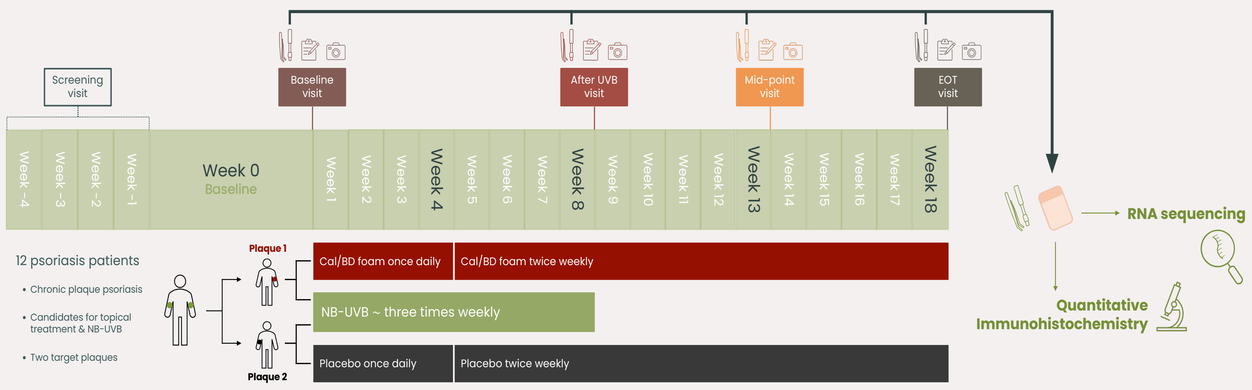

Figure 1. Schematic overview of study design

OBJECTIVE

To investigate the mechanistic effects of combining NB-UVB with Cal/BD foam versus placebo in psoriasis skin, building on initial clinical results demonstrating superior efficacy with Cal/BD.

RESULTS

Cal/BD foam treatment resulted in a more pronounced downregulation of genes associated with dendritic cell function and antigen presentation in psoriasis plaque compared with placebo (Figure 2).

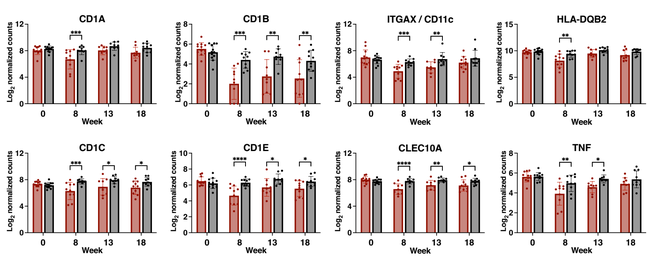

Figure 2. Analysis of log2 normalized counts of selected DEGs. Data are shown as mean ± SD. *P ≤ .05, **P ≤.01, ***P ≤ .001 and ****P ≤ .0001

Reduced enrichment scores for dendritic cells, including different subtypes in plaques treated with Cal/BD foam versus placebo (Figure 3a).

Decreased infiltration of CD1a+, CD11c+, and langerin+ cells (dendritic markers) in Cal/BD foam-treated plaques compared with placebo (Figure 3b).

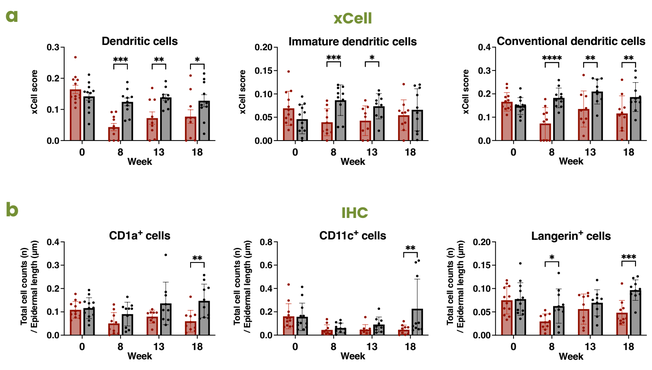

Figure 3. (a) Cell type enrichment analyses of RNA sequencing data. Bar plots show xCell enrichment scores within lesional skin. Mean ± SEM depicted. *P ≤ .05, **P ≤.01, ***P ≤ .001, and ****P ≤ .0001. (b) Quantitative immunohistochemistry results. Bar plots illustrate total cell counts per epidermal length. Mean ± SD depicted. *P ≤ .05, **P ≤.01, ***P ≤ .001 ,and ****P ≤ .0001

A more pronounced reduction in key inflammatory pathways and a shift toward the non-lesional skin profile were observed in Cal/BD foam-treated plaques (Figure 4a).

Pathways related to dendritic cell activity were significantly downregulated in Cal/BD-treated plaques compared with placebo (Figure 4b).

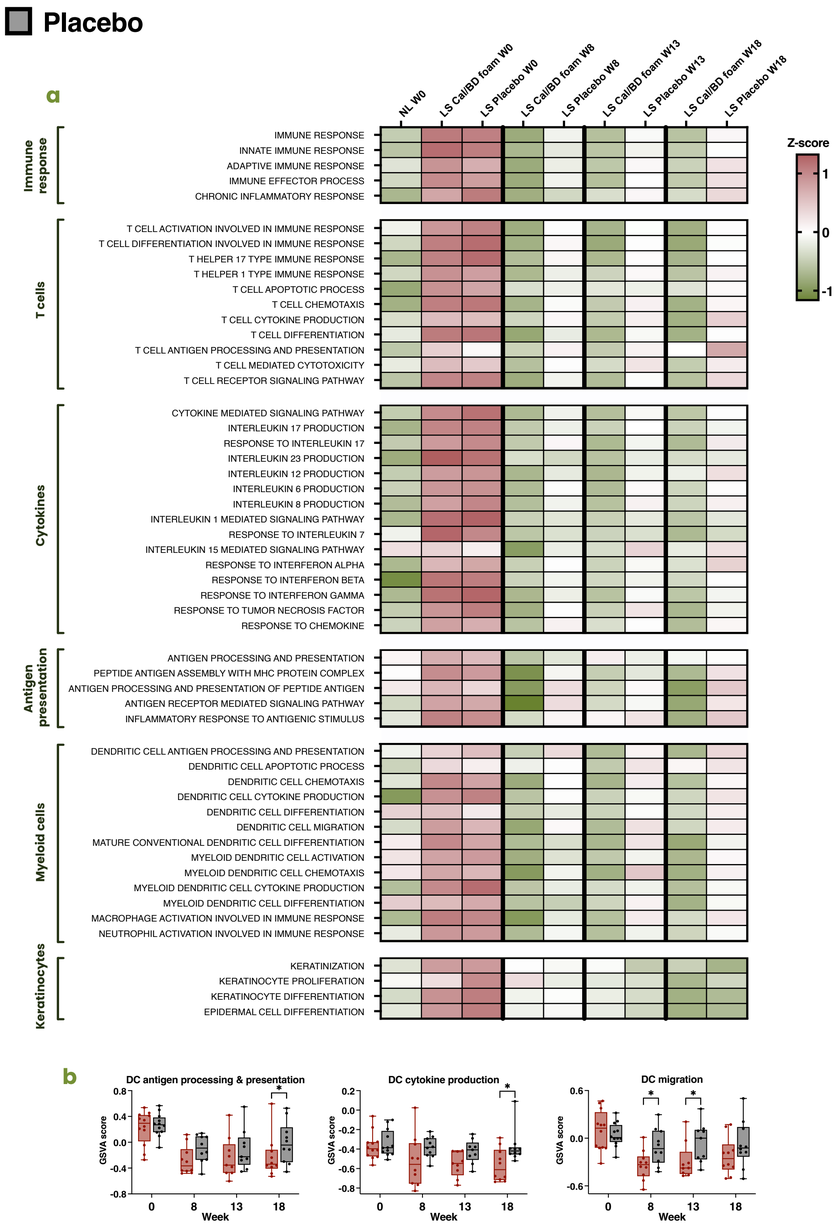

Figure 4. Gene Set Variation Analysis (GSVA) of key immune pathways using RNA sequencing data and GO:BP gene sets. (a) Heatmap showing Z-scores of selected inflammatory pathways. NL, non-lesional skin; LS, lesional skin; W, week. (b) Box and whisker plots, ranging from min. to max., showing GSVA scores of dendritic cell-related pathways. *P ≤ .05. DC, dendritic cell.

CONCLUSION

These findings suggest that the superior clinical efficacy of combining NB-UVB with Cal/BD foam may reflect dendritic cell modulation in psoriasis plaques.

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