Dupilumab Treatment Significantly Improves Skin Barrier Structure and Function in Adult and Adolescent Patients With Moderate-to-Severe Atopic Dermatitis

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INTRODUCTION

• Interleukin-4 and interleukin-13 are key drivers of skin barrier dysfunction in atopic dermatitis (AD) impacting composition of lipids, filaggrin (FLG) expression, and natural moisturizing factors (NMF)1

OBJECTIVE

• To assess the effect of dupilumab on the regulation of skin barrier function and lipid composition in adults and adolescents with moderate-to-severe AD

METHODS

• The dupilumab skin barrier function and Lipidomics Study in Atopic Dermatitis (BALISTAD [NCT04447417]) was an open label, exploratory study on skin barrier function in patients with AD aged 12 to 65 years
• Adult AD patients received dupilumab 300 mg every 2 weeks (q2w); adolescent AD patient received dupilumab 200 mg q2w if baseline weight < 60 kg and 300 mg if ≥ 60 kg
• Transepidermal Water Loss (TEWL) was assessed before and after skin tape stripping (STS) from lesional and nonlesional skin of 26 matched healthy volunteers over 16 weeks; measurements were used for TEWL area under the curve (AUC) calculations
• TEWL (g/m²/h) AUC up to 10 STS, median (95% CI)

RESULTS

• Dupilumab treatment significantly improved the epidermal barrier and normalized skin barrier function in patients with moderate-to-severe AD as assessed by TEWL, lipid composition, and FLG breakdown products

CONCLUSION

• Dupilumab treatment significantly improved the epidermal barrier and normalized skin barrier function in patients with moderate-to-severe AD as assessed by TEWL, lipid composition, and FLG breakdown products

Figure 1. Improvement in median (95% CI) TEWL AUC after 10 STS over time.

Figure 2. Total NS-ceramides over time.

Figure 3. Example of AD patient before and after 16 weeks of dupilumab treatment.

Safety

• The safety results were consistent with the known dupilumab safety profile; no patients discontinued treatment due to adverse events

FLG breakdown product analysis (NMF components)

• At baseline, levels of uracil (UCA) and pyrrolidone carboxylic acid (PCA) were significantly lower in STS samples from AD lesions compared with the skin of healthy controls (P < 0.0001)
• At Week 16, with dupilumab treatment, levels of UCA and PCA found in AD lesions were not significantly different than those in the skin of healthy volunteers (P > 0.05 for both)

REFERENCE


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