Use of Dupilumab in Children with Atopic Dermatitis: A Retrospective Study

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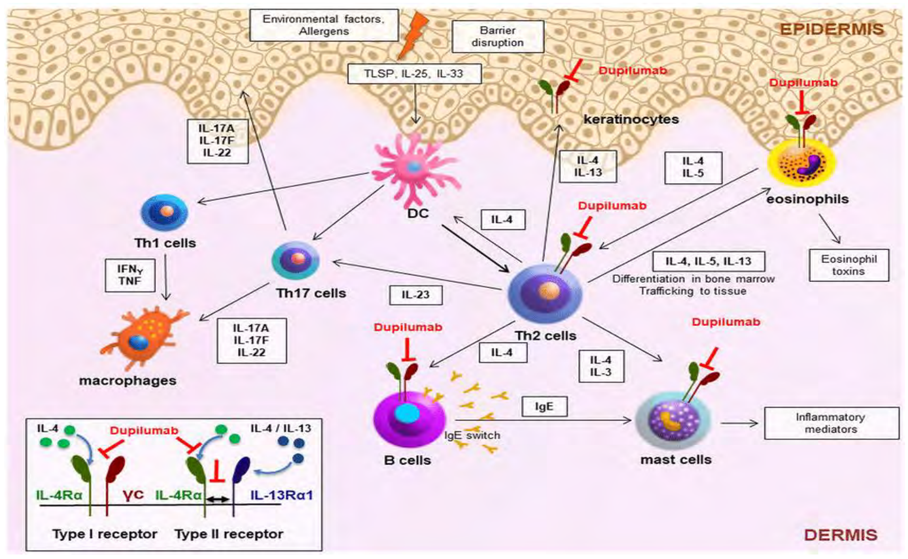
Background

- Atopic dermatitis (AD) is a chronic, relapsing, non-infectious inflammatory skin condition characterised by eczematous, severe pruritic skin lesions. It is caused by skin barrier dysfunction and T helper 2 (Th2) cell mediated immunity.[1] The Th2 response involves IL-4, IL-5, IL-9 and IL-13 cytokines and epithelial derived cytokines.[2]
- AD is one of the most prevalent skin disorders in children (12% compared with 7.2% of adults)[3] and it is a leading contributor to the universal burden of skin disease.[4]
- Current treatment options for moderate to severe AD are limited due to non-specificity, conflicting efficacy, unknown aetiology and adverse effects.
- Dupilumab is an emerging monoclonal antibody that is directed against IL-4Rα, the common chain of IL-4 and IL-13 receptors, thereby blocking IL-4/ IL-13 activity.[2]
- Dupilumab has regulatory registration for use in children with moderate to severe AD from 6 years.

Figure 1. Mechanism of action of dupilumab[2]



Aim

- To evaluate the safety and efficacy of dupilumab in children less than 6 years of age with moderate to severe AD at a tertiary paediatric hospital.

Method

- An ethics application was submitted to The Sydney Children's Hospitals Network Human Research Ethics Committee (2023/ETH01610).
- Data from the hospital pharmacy dispensing software (iPharmacy) was retrospectively reviewed over a period of 18 months (January 2022 to June 2023) to identify patients treated with dupilumab.
- Medical records were reviewed to determine indication, dose and frequency, age at first treatment, duration of treatment, adverse effects and efficacy.

Results

- 21 patients received dupilumab for moderate to severe AD. 9 patients (5 male) were less than 6 years old with median age 4.6 years (range 1.2 to 5.8 years) at the start of treatment.
- All patients were initiated on a weight-based regimen of dupilumab of 300 mg monthly (n=7/9) or 200 mg monthly (n=2/9) over a median duration of 274 days (range 30 to 403 days).
- Prior to treatment, all patients had similar baseline characteristics and all patients with severe AD had trialled emollients, topical corticosteroids, topical calcineurin inhibitors and wet dressings.
- The Physician's Global Assessment (PGA) score decreased for all patients from PGA 4 (severe) to PGA 1 (almost clear).
- The Eczema Area and Severity Index (EASI) score was documented pre and post treatment for 3 patients. At least a 50% reduction from baseline was achieved for all patients.
- The Dermatology Life Quality Index (DLQI) score was documented pre and post treatment for 2 patients and showed a significant reduction to the minimum, or close to the minimum score of zero.
- Patient 8 showed a considerable benefit as demonstrated by the EASI and DLQI score reductions.
- No adverse effects were reported for 56% (n=5/9) patients.

Figure 2. EASI score

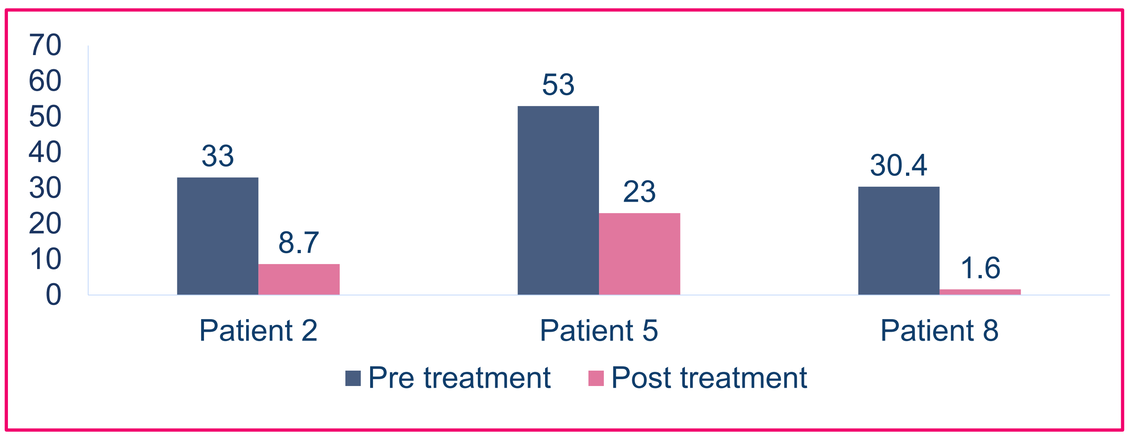


Figure 3. DLQI score

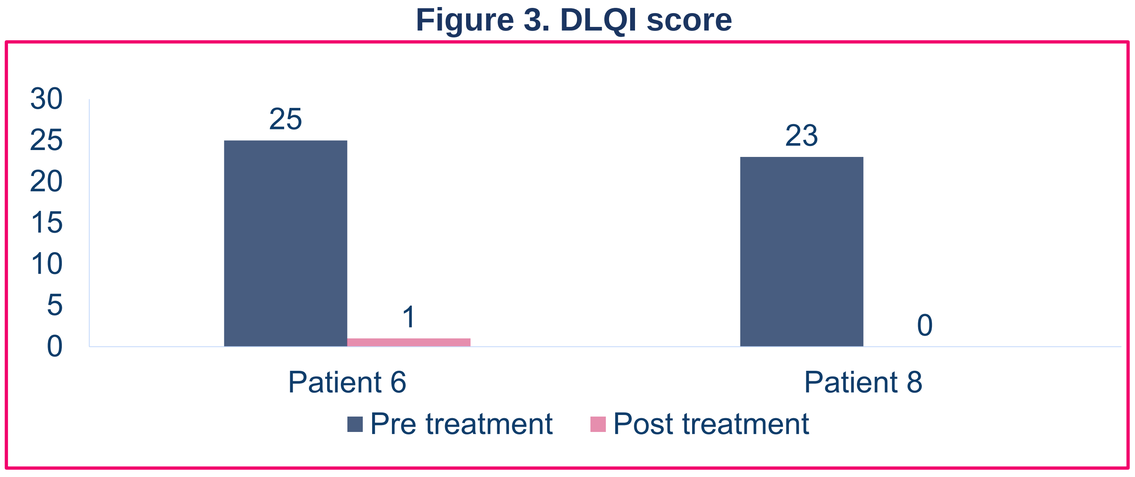


Figure 4. Reported benefits

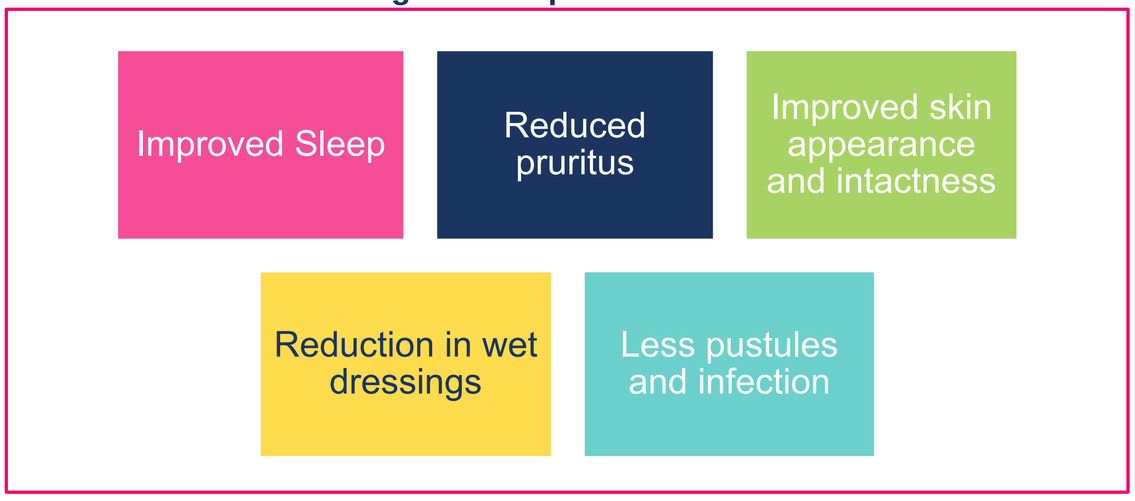


Table 1. Safety and tolerability

Adverse Effect	Number of Patients
Swelling at injection site	3/9
Mild conjunctivitis	1/9
Nil reported adverse effect	5/9

Conclusion

- Dupilumab was found to be safe and effective for children less than 6 years with moderate to severe AD.
- Further investigation on long term safety, benefits and cost-effectiveness is required to support future access and funding.

References

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