

LETTER TO THE EDITOR

Case of alopecia areata during dupilumab treatment for atopic dermatitis

Dear Editor,

Dupilumab is a human anti-interleukin-4 receptor- α antibody, approved as a treatment for atopic dermatitis (AD). Conflicting cases have been reported: some developed alopecia areata (AA)^{1,2} but others showed AA improvement^{3,4} during dupilumab

therapy. We encountered an AD patient who developed AA during dupilumab therapy.

A 35-year-old Japanese man had been treated for severe AD. He had itchy papules coalescing on his lower legs (Fig. 1a). We started dupilumab therapy, 600 mg s.c. then



Figure 1. (a) Itchy papules coalesced on the lower legs before dupilumab therapy. (b) After 6 weeks of dupilumab therapy, the papules flattened; (c) however, patchy hair loss appeared on the scalp.

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300 mg biweekly. His AD improved at week 6 (Fig. 1b); however, enlarging patches of hair loss appeared on the right frontal, occipital and bilateral temporal scalp (Fig. 1c). The pull test was positive, and dermoscopy revealed black dots and broken hair. AA was diagnosed, affecting 23% of the whole scalp. At week 13, methylprednisolone (0.5 g/day) was administered for 3 days for the AA. Four months later, the AA had improved with a 78% area reduction.

It is indicated that dupilumab might have triggered AA in this patient. AA is an autoimmune disease in which T-helper (Th)1 cells target the hair follicles. Dupilumab-induced downregulation of Th2 cytokines may cause a Th1 shift and promote type 1 responses to hair follicles.

Increased Th2 cytokine expression in AA lesions has been reported.⁵ The roles of Th2 cytokines in AA may vary among patients. Th2 cytokines may regulate AA in patients in whom dupilumab causes AA, or may promote AA in patients in whom dupilumab improves AA. Clinicians should be aware of adverse reactions to dupilumab, which may help in elucidating the pathogenesis of AA.

CONFLICT OF INTEREST: None declared.

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REFERENCES

- 1 Mitchell K, Levitt J. Alopecia areata after dupilumab for atopic dermatitis. *JAAD Case Rep* 2018; **4**: 143–144.
- 2 Barroso-García B, Rial MJ, Molina A, Sastre J. Alopecia areata in severe atopic dermatitis treated with dupilumab. *J Invest Allergol Clin Immunol* 2018; **28**: 420–421.
- 3 Alniemi DT, McGevna L. Dupilumab treatment for atopic dermatitis leading to unexpected treatment for alopecia universalis. *JAAD Case Rep* 2019; **5**: 111–112.
- 4 Darrigade AS, Legrand A, Andreu N *et al*. Dual efficacy of dupilumab in a patient with concomitant atopic dermatitis and alopecia areata. *Br J Dermatol* 2018; **179**: 534–536.
- 5 Suárez-Fariñas M, Ungar B, Noda S *et al*. Alopecia areata profiling shows TH1, TH2, and IL-23 cytokine activation without parallel TH17/TH22 skewing. *J Allergy Clin Immunol* 2015; **136**: 1277–1287.