

Dupilumab for the treatment of alopecia areata in children with atopic dermatitis



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INTRODUCTION

Alopecia Areata (AA) often co-occurs with atopic dermatitis (AD), with up to one-third of patients with AA also affected by AD.^{1,2} Dupilumab, an interleukin 4 receptor antagonist, Food and Drug Administration-approved for the treatment of moderate-to-severe AD in patients 6 years and older, has begun to receive some interest for a potential role in the treatment of AA. While some case reports and series have demonstrated improvement of AA with dupilumab,³⁻⁶ there are also reports of patients developing new-onset hair loss during treatment.⁷⁻⁹ Given that the treatments for AA are limited, especially for children, dupilumab represents an intriguing therapeutic option.

Here, we present 6 pediatric patients (4 girls and 2 boys) aged 7 to 12 years with both AA and AD treated with dupilumab.

CASE SERIES

Patient clinical characteristics and response to treatment are detailed in [Table I](#). All patients had moderate-to-severe AD starting in infancy, and 4 patients had other atopic comorbidities, including asthma and food allergies. The median age of onset of AA was 5.5 years (standard deviation, 2.9 years) with a median initial severity of alopecia tool score of 62.5 (range, 25-100). All patients had shown suboptimal response to multiple prior therapies for both AA and AD. Four patients received concomitant treatment for AA along with dupilumab.

Five of 6 patients demonstrated improvement in AA. Patient 1 had a 73% improvement in the severity

Abbreviations used:

AA: alopecia areata
 AD: Atopic dermatitis

of alopecia tool score on dupilumab monotherapy ([Fig 1](#)), while 4 patients (patients 2, 3, 4, and 5) had complete regrowth, 3 of whom received concurrent treatment for AA. Patient 6 did not have any regrowth despite being on dupilumab for 16 months and concomitant oral minoxidil and topical corticosteroids. One patient (patient 3) experienced mild, transient conjunctivitis controlled with corticosteroid and antihistamine eye drops. One patient (patient 2) discontinued treatment after 6 months secondary to severe anxiety related to injections; dupilumab was otherwise well tolerated by all the patients.

DISCUSSION

While the sample size is small and some patients received concurrent AA treatments, these results contribute to the small but growing body of literature that dupilumab may be an effective treatment option for AA among a subset of patients with AD. While the mechanism of action of dupilumab in AA remains unknown, it has been hypothesized that some patients with AA and AD may exhibit more Th2 skewing.^{10,11} Prior reports have suggested that those with more severe and long-standing AD may be more likely to experience hair regrowth with dupilumab; however, that is not a trend that we observed.^{6,10} Additional studies will be necessary

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Table I. Characteristics and outcomes of pediatric patients with AA on dupilumab

Age at dupilumab initiation (y)	Age of AA onset (y)	Sex	Comorbidities	Prior AA therapies	Prior AD therapies	Concomitant AA treatment	Initial AD IGA	Latest AD IGA	Initial SALT	Latest SALT	Duration of therapy (months)
12	3	M	Asthma, food allergies	TCS, TM	TCS, pimecrolimus, tacrolimus	None	4	1	75	20	24
7	5	M	Asthma	TCS	TCS, tacrolimus, crisaborole	None	3	1	25	0	6
7	6	F	Food allergies	TCS, ILTAC	TCS, tacrolimus	Pulsed prednisone 5 mg/kg monthly x 6 doses, OM	4	1	90	0	16
8	3	F	None	Pulsed prednisone, TCS, anthralin, topical tofacitinib, OM	TCS, tacrolimus, crisaborole	OM, topical tofacitinib	2	0	25	0	6
7	6	F	None	TCS, TM, topical tofacitinib	TCS, pimecrolimus	Topical tofacitinib, TM	2	1	50	0	6
12	11	F	Food allergies	Pulsed prednisone, ILTAC, TCS	TCS, tacrolimus	OM, TCS	3	1	100	100	16

AA, Alopecia areata; AD, atopic dermatitis; IGA, Investigator's Global Assessment; ILTAC, intralesional triamcinolone; OM, oral minoxidil; SALT, severity of alopecia tool score, TCS, topical corticosteroids; TM, topical minoxidil.



Fig 1. Response of alopecia areata to dupilumab monotherapy. Patient 1 at baseline (**A, B**) and after 16 months (**C, D**).

to further investigate the role of dupilumab for the treatment of AD, including its mechanism and whether certain clinical characteristics may correlate with treatment response. The favorable safety profile associated with dupilumab, coupled with its Food and Drug Administration approval for AD in children as young as 6 years of age, makes it a reasonable option to consider for pediatric patients with AA who have concomitant AD. Combining dupilumab with other AA treatments such as topical corticosteroids, topical Janus kinase inhibitors, and/or topical or oral minoxidil may possibly improve efficacy.

Conflicts of interest

Dr Craiglow has received honoraria and/or fees from Aclaris, Arena Pharmaceuticals, Eli Lilly, Regeneron, Sanofi-Genzyme, and Pfizer. Ms Cho has no conflicts of interest to declare.

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