Time to loss of response for dupilumab in ophiasis-pattern alopecia areata

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INTRODUCTION
Alopecia areata is a common nonscarring hair loss on the scalp or other areas of the body. We report the time to loss of clinical response in a nonatopic patient who was successfully treated for ophiasis-pattern alopecia areata with dupilumab.

CASE REPORT
A 33-year-old healthy woman presented to our clinic for worsening alopecia areata. She had a history of alopecia totalis at the age of 19, which was successfully treated at the time with squaric acid dibutylester sensitization. Between the ages of 19 and 32, the patient experienced occasional, small, localized lesions of alopecia areata that self-resolved. One year prior to her presentation at our clinic, she developed a persistent and expanding band-like pattern of nonscarring alopecia affecting the occipital, parietal, and temporal areas. Additionally, there were patches of focal alopecia areata on the central portion of her scalp. The diagnosis of ophiasis-pattern alopecia areata was made based on clinical findings, and no biopsy was taken. She had no history of atopic dermatitis, autoimmune disease, or asthma. Her laboratory findings (complete blood cell count, basic metabolic panels, vitamin D, iron panel, and alkaline phosphatase) were within normal limits, and she was not taking any medications or supplements. She had not received medical treatment for her new ophiasis-pattern alopecia prior to her presentation at our clinic.

Over the subsequent 4 years, her treatments in our clinic included topical corticosteroids, topical tacrolimus, minoxidil 5% foam, squaric acid dibutylester, crisaborole 2% ointment, topical calcipotriene, platelet-rich plasma injections, and compounded


table I. Percentage of scalp involvement and SALT-1 score

| Week | Frontal aspect | Parietal aspect | SALT-1 score |
|------|---------------|----------------|-------------|
| 0    | 95            | 80             | 50          |
| 2    | 70            | 70             | 65          |
| 4    | 50            | 70             | 55          |
| 8    | 10            | 70             | 8           |
| 10   | 9             | 60             | 5           |
| 12   | 5             | 55             | 2           |
| 14   | 0             | 35             | 1           |
| 18   | 0             | 15             | 0           |
| 20   | 0             | 5              | 0           |
| 24   | 0             | 0              | 0           |
| 48   | 5             | 0              | 0           |

SALT-1, Severity of Alopecia Tool.

Table II. Dosing schedule

| Week | Number of injections |
|------|----------------------|
| 0    | 2                    |
| 2    | 1                    |
| 4    | 1                    |
| 8    | 1                    |
| 10   | 1                    |
| 12   | 1                    |
| 16   | 1                    |
| 20   | 1                    |
| 24   | 1                    |

1 injection = 300 mg. No injection performed on week 6 due to COVID-19.
tofacitinib 2% cream. Systemic therapies, including oral prednisone tapers and intralesional steroid injections occasionally resulted in temporary focal hair growth, but none of these treatments resulted in any sustained improvement of her alopecia beyond 2 months. Given the safety profile of dupilumab and its reports of successful treatment of alopecia areata in patients with atopic dermatitis, we elected to use this medication.

The patient was started on dupilumab therapy with the intention of following the atopic dermatitis protocol (injections of 300 mg/2 mL every 2 weeks after an initial loading dose of 600 mg). She had been off all previous therapies for over a month prior to the start of dupilumab treatment. The patient was given the loading dose, and recovery of hair in the affected areas was noted by the 2-week follow-up visit.

During the first month of treatment, her Severity of Alopecia Tool (SALT-1) score decreased by 36% (Table 1). However, due to the onset of the COVID-19 pandemic, the patient was unable to return to the clinic for biweekly injections after week 4. The patient resumed the biweekly injections starting at

Fig 1. Progression of hair regrowth on the left frontal aspect of the scalp.
week 8, when she was able to return to the clinic. Despite a 4-week interruption in treatment, her hair continued to regrow in the bi temporoparietal areas of the scalp, but to a lesser degree on the occipital scalp. After week 12, she elected to switch to monthly injections to accommodate her work schedule. In total, she received 10 injections of dupilumab 300 mg over a 6-month period with significant regrowth of terminal hairs in almost all areas (Table II).

During this time, all nonophiasis lesions on her scalp resolved, and no new lesions of alopecia appeared (Figs 1-3). Concomitantly, her SALT-1 score decreased from 81.3 to 2.4. The patient elected to discontinue dupilumab after week 24, citing a good clinical response, and she had a personal desire to avoid long-term systemic therapy. Dupilumab therapy was stopped, and the patient did not experience any relapse of her alopecia until 6 months later. At week 48, new areas of alopecia were noted on the right frontal portion of the scalp and occipital scalp. Dupilumab therapy was reinitiated, and the patient is now being followed in our clinic.

DISCUSSION

Previous publications on the use of dupilumab for alopecia areata have reported mixed results. Some authors observed an improvement in alopecia, while exacerbations were noted by others. Although there is variation among responders, the recovery of hair in some cases is profound.2,3 Our patient experienced a rapid response to treatment with dupilumab, showing visible hair growth 2 weeks after initiating therapy. Her hair recovery was faster than in other case reports of responders despite not following a standardized injection schedule. The typical time-frame of hair recovery among responders reported...
thus far is 2 to 8 months.\textsuperscript{1} However, due to the limited number of reports with no standard protocol for measuring hair regrowth, it is unclear whether some of these cases began recovering hair earlier.

Our patient also recovered more hair in her temporoparietal scalp than on her occipital scalp as reflected in her SALT-1 scores. This pattern of response to treatment is consistent with other reports of ophiasis-pattern alopecia.\textsuperscript{4,5} Furthermore, our patient retained her recovered hair for 6 months following the cessation of therapy before experiencing a clinical relapse. The time to loss of response after withdrawal of dupilumab among responders has not previously been described in the literature. This information may be useful for medical decision-making and setting patient expectations.

Extrapolation of our findings is limited by the lack of a standardized dosing schedule for our patient. Furthermore, the successful use of dupilumab for alopecia areata has mostly been reported in patients with alopecia universalis or totalis. The validity of our experience in treating ophiasis-pattern alopecia areata and the applicability to other forms of extensive alopecia areata will require larger, controlled prospective investigations. Nonetheless, there is a clear medical need for effective treatments for chronic extensive alopecia areata that can be administered safely to both adults and children. Given its known safety profile, dupilumab could be well-suited to fulfill this need.

Conflicts of interest
None disclosed.

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