There are some limitations to our study, including the use of a small number of patients at a single institution. In addition, because this study was conducted in a specific population, it is necessary to consider genetic differences in the prevalence of AA and comorbidities according to ethnicity. Further studies to evaluate the association of poliosis with treatment or prognosis in other populations and with a larger sample size are needed.

Young Bin Lee, MD, Myungsoo Jun, MD, and Won-Soo Lee, PhD

From the Department of Dermatology and Institute of Hair and Cosmetic Medicine, Yonsei University Wonju College of Medicine, Wonju, Korea

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Correspondence to: Won-Soo Lee, PhD, Department of Dermatology, Yonsei University Wonju College of Medicine, 20 Ilsan-ro, Wonju, 26426, Korea

E-mail: leewonsoo@yonsei.ac.kr

REFERENCES

1. Harris ML, Fufa TD, Palmer JW, et al. A direct link between MITF, innate immunity, and hair graying. *PLoS Biol*. 2018;16(5):e2003648.
2. Kumano K1, Masuda S, Sata M, et al. Both notch1 and notch2 contribute to the regulation of melanocyte homeostasis. *Pigment Cell Melanoma Res*. 2008;21(1):70-78.
3. Yamada T, Hasegawa S, Inoue Y, et al. Wnt/β-catenin and kit signaling sequentially regulate melanocyte stem cell differentiation in UVB-induced epidermal pigmentation. *J Invest Dermatol*. 2013;133(12):2753-2762.
4. Pannella M, Caliceti C, Fortini F, et al. Serum from advanced heart failure patients promotes angiogenic sprouting and affects the notch pathway in human endothelial cells. *J Cell Physiol*. 2016;231(12):2700-2710.
5. Zhao Y, Wang C, Wang C, et al. An essential role for Wnt/β-catenin signaling in mediating hypertensive heart disease. *Sci Rep*. 2018;8(1):8996.

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Response to tofacitinib therapy of eyebrows and eyelashes in alopecia areata

To the Editor: Alopecia areata (AA) can affect any hair-bearing site. The eyebrows, eyelashes, or both are involved in 76% of patients with AA (L. Y. Liu, B. A. King, J. M. Ko, unpublished survey data, 2019). While Janus kinase (JAK) inhibitors have emerged as targeted treatment for AA, studies have focused on scalp hair growth.[1-3] In this study, we evaluated the response of eyebrows and eyelashes in patients with AA treated with the JAK inhibitor tofacitinib.

Table I. Patient demographic and clinical characteristics

Characteristic	Value, N = 119
Sex	
Male	65 (54.6)
Female	54 (45.4)
Age, y, mean ± SD	35.2 ± 15.3
Age <18 y	9 (7.6)
AA with subtotal scalp hair loss	21 (17.6)
AA with scalp, eyebrow involvement but no eyelash involvement	3 (2.5)
AA with scalp, eyelash involvement but no eyebrow involvement	3 (2.5)
AA with scalp, eyelash and eyebrow involvement	15 (12.6)
AA with total scalp hair loss	98 (82.4)
AA with scalp (total), eyebrow involvement but no eyelash involvement	11 (9.2)
AA with scalp (total), eyelash involvement but no eyebrow involvement	1 (0.8)
AA with scalp (total), eyelash and eyebrow involvement	86 (72.3)
Duration of current episode of AA with total scalp hair loss, y, mean ± SD	5.8 ± 6.6
Duration of tofacitinib treatment, mon, mean ± SD	20.8 ± 10.6

Values are n (%), unless otherwise indicated.
AA, Alopecia areata; *SD*, standard deviation.

Records of all patients treated with tofacitinib and evaluated by Dr King from January 2014-April 2018 were identified. The inclusion criteria for this study were AA diagnosis with scalp involvement and eyebrow or eyelash involvement and treatment with tofacitinib for ≥6 months. Treatment responses (absent, partial, or complete) were documented. Multivariate logistic regression models and Kruskal-Wallis rank sum tests were conducted in R statistical package software.

We identified 119 patients (Table I). Of 98 patients with total scalp hair loss, 86 had involvement of both eyebrows and eyelashes. Complete regrowth at all sites was achieved in 16% (19/119) of patients, and complete regrowth of eyebrows and eyelashes and partial growth of scalp hair was achieved in 16% (19/119) of patients (Table II). Complete regrowth of eyebrows was achieved in 34% (41/119) of patients. Out of 21 patients who received intralesional triamcinolone to the eyebrows, 14% (3/21) achieved complete regrowth. Complete regrowth of eyelashes was achieved in 39% (46/119) of patients. Eyelashes

Table II. Patterns of hair regrowth

Pattern of growth	Value, N = 119
Complete eyebrows growth	41 (34.5)
Partial eyebrows growth	50 (42.0)
Intralesional triamcinolone to eyebrows	21 (17.6)
Complete growth with triamcinolone	3 (2.5)
Partial growth with triamcinolone	11 (9.2)
Complete eyelash growth	46 (38.7)
Partial eyelash growth	36 (30.3)
Complete eyebrow and eyelash growth, no scalp growth	1 (0.8)
Complete eyebrow and eyelash growth, partial scalp growth	19 (16.0)
Complete eyebrow, eyelash, and scalp growth	19 (16.0)
Partial eyebrow, eyelash, and scalp growth	43 (36.1)
Time to documentation of scalp hair growth, months, mean ± SD	3.1 ± 3.1
Time to documentation of eyebrow growth, months, mean ± SD	4.3 ± 3.7
Time to documentation of eyelash growth, months, mean ± SD	5.5 ± 4.8

Values are n (%), unless otherwise indicated.
SD, Standard deviation.

required a longer mean time to documentation of first growth than eyebrows (5.5 months for eyelashes vs 4.3 months for eyebrows).

About 15% (18/119) of patients had >10 years duration of total scalp hair loss, which has been shown to be a negative predictor of scalp hair growth response to therapy.[1,3] Of these, 2 achieved complete regrowth of both eyelashes and eyebrows but only partial regrowth of scalp hair, 1 achieved complete regrowth of eyebrows and partial regrowth of eyelashes and scalp hair, and 1 achieved complete regrowth of eyelashes with partial regrowth of other sites. None achieved complete regrowth of scalp hair in this group.

The clinical course of severe AA is unpredictable, and there is little data to guide expectations of disease course, with or without treatment. The results of this study of tofacitinib treatment of AA suggest that severe scalp hair loss predicts involvement of eyebrows or eyelashes. When there is >1 hair-bearing site involved, all of the hair-bearing sites do not necessarily respond similarly to treatment, ie, scalp hair might grow without growth of eyebrows, eyelashes, or both, and vice versa. Although growth of scalp hair is uncommon in alopecia totalis and alopecia universalis of >10 years duration,[1,3] eyebrows and eyelashes in these patients might respond (completely) to treatment.

The era of JAK inhibitor treatment of AA not only holds promise of effective, targeted therapy but will also expand our knowledge of hair biology and function. Our results highlight differences in hair follicle biology across different hair-bearing sites. It is interesting that, unlike the duration of scalp hair loss, duration of eyebrow and eyelash loss was not a significant predictor of poor treatment response of these sites, suggesting that the hair follicles of eyebrows and eyelashes remain viable even after extended periods of nongrowth. These results should help to guide discussions with patients and manage expectations of therapy with oral JAK inhibitors.

Lucy Y. Liu, MD, and Brett A. King, MD, PhD

From the Department of Dermatology, Yale University School of Medicine, New Haven, Connecticut

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Reprint requests: Brett A. King, MD, PhD, Department of Dermatology, Yale University School of Medicine, PO Box 208059, New Haven, CT 06520

E-mail: brett.king@yale.edu

REFERENCES

1. Kennedy Crispin M, Ko JM, Craiglow BG, et al. Safety and efficacy of the JAK inhibitor tofacitinib citrate in patients with alopecia areata. *JCI Insight*. 2016;1:e89776.
2. Mackay-Wiggan J, Jabbari A, Nguyen N, et al. Oral ruxolitinib induces hair regrowth in patients with moderate-to-severe alopecia areata. *JCI Insight*. 2016;1:e89790.
3. Liu LY, Craiglow BG, Dai F, King BA. Tofacitinib for the treatment of severe alopecia areata and variants: a study of 90 patients. *J Am Acad Dermatol*. 2017;76:22-28.

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