Medical Center, 40 Duke Medicine Circle, Durham, NC 27710-4000

E-mail: meenal.kheterpal@duke.edu

REFERENCES

1. Maloney NJ, Zhao J, Tegtmeyer K, Lee EY, Cheng K. Off-label studies on apremilast in dermatology: a review. *J Dermatolog Treat*. 2020;31:131-140.
2. McClanahan DR, English JC. Therapeutics for adult nail psoriasis and nail lichen planus: a guide for clinicians. *Am J Clin Dermatol*. 2018;19:559-584.
3. Paul J, Foss CE, Hirano SA, Cunningham TD, Pariser DM. An open-label pilot study of apremilast for the treatment of moderate to severe lichen planus: a case series. *J Am Acad Dermatol*. 2013;68:255-261.
4. AbuHilal M, Walsh S, Shear N. Treatment of recalcitrant erosive oral lichen planus and desquamative gingivitis with oral apremilast. *J Dermatol Case Rep*. 2016;10:56-57.
5. Chen T, Levitt J, Geller L. Apremilast for treatment of recurrent erythema multiforme. *Dermatol Online J*. 2017;23(1):13030.

https://doi.org/10.1016/j.jaad.2020.05.112

Efficacy and safety of very-low-dose oral minoxidil 1.25 mg in male androgenetic alopecia

To the Editor: Oral minoxidil has been used with significant improvement in androgenetic alopecia in patients of either sex.[1-4] In men with androgenetic alopecia, oral minoxidil has been used alone and in combination with other therapies and in doses varying from 0.25 mg/day to 2.5 to 5 mg/day.[2,3] Some of the reported adverse effects of such lower doses of oral minoxidil include lower limb edema, generalized hypertrichosis, hair shedding, urticaria, and other allergic reactions.[1-4] In this case series, we share our experience of using oral minoxidil monotherapy at 1.25 mg/day in 32 patients with male androgenetic alopecia.

Thirty-two men (18-45 years; mean age 28.83 ± 7.12 years) with androgenetic alopecia (Hamilton-Norwood scale III-V) were treated with oral minoxidil monotherapy dosed at 1.25 mg/day for 24 weeks. Patients with severe hypertension, moderate hypertension on antihypertensive therapy, cardiovascular dysfunction, history of minoxidil hypersensitivity, or receiving treatment with any formulation of minoxidil, dihydroxytestosterone blockers, or other treatment(s) for androgenetic alopecia in the past 3 months were excluded. Of the included patients (n = 32), 18 (56.2%) were treatment naive, whereas 14 (43.8%) had failed previous monotherapy with either topical minoxidil 5% twice daily or oral finasteride received for at least 1.5 to 2 years. Efficacy outcome measures included global clinical photography and quantitative digital video trichoscopic assessment. Fig 1, *A*, schematically demonstrates the trichoscopy points that were evaluated (adopted from Leerunyakul and Suchonwanit[5]). Overall improvement was labeled "marked" if there was at least 1 grade improvement in the Hamilton-Norwood scale on global clinical photographic assessment; appreciable new hair growth not amounting to marked response was labeled as mild improvement. At each visit, patients

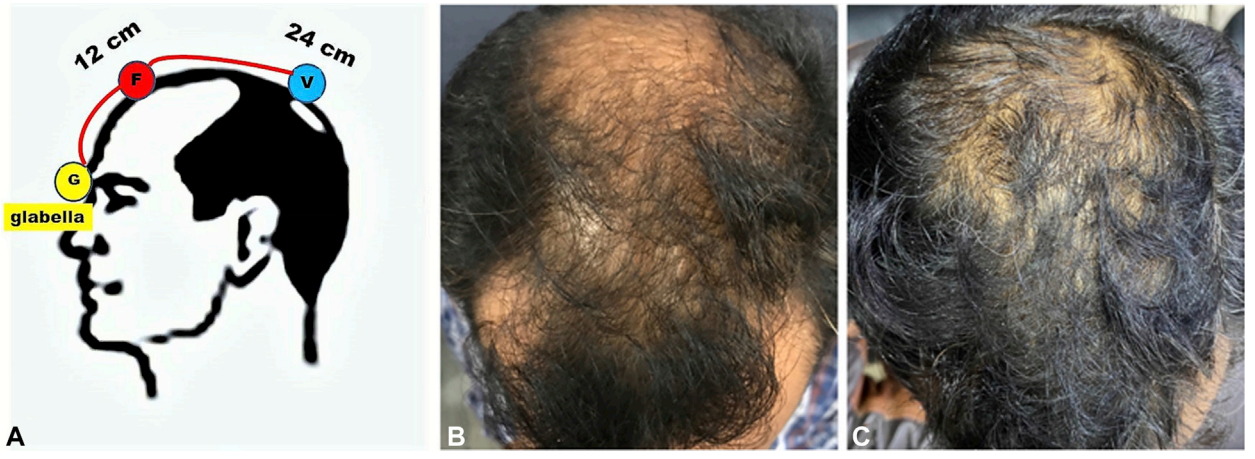

Fig 1. A, Schematic diagram of the human scalp (lateral view) demonstrating the points of trichoscopic analysis and their surface anatomy with respect to glabella (point G). Two sites on the scalp were measured at 12 and 24 cm from the glabella, identified as the frontal (point F) and vertex (point V) points, respectively. **B**, Baseline scalp clinical photograph of a patient with androgenetic alopecia Hamilton-Norwood scale V. **C**, Posttreatment clinical photograph showing significant improvement (Hamilton-Norwood scale III) after 6 months of oral minoxidil 1.25 mg/day.

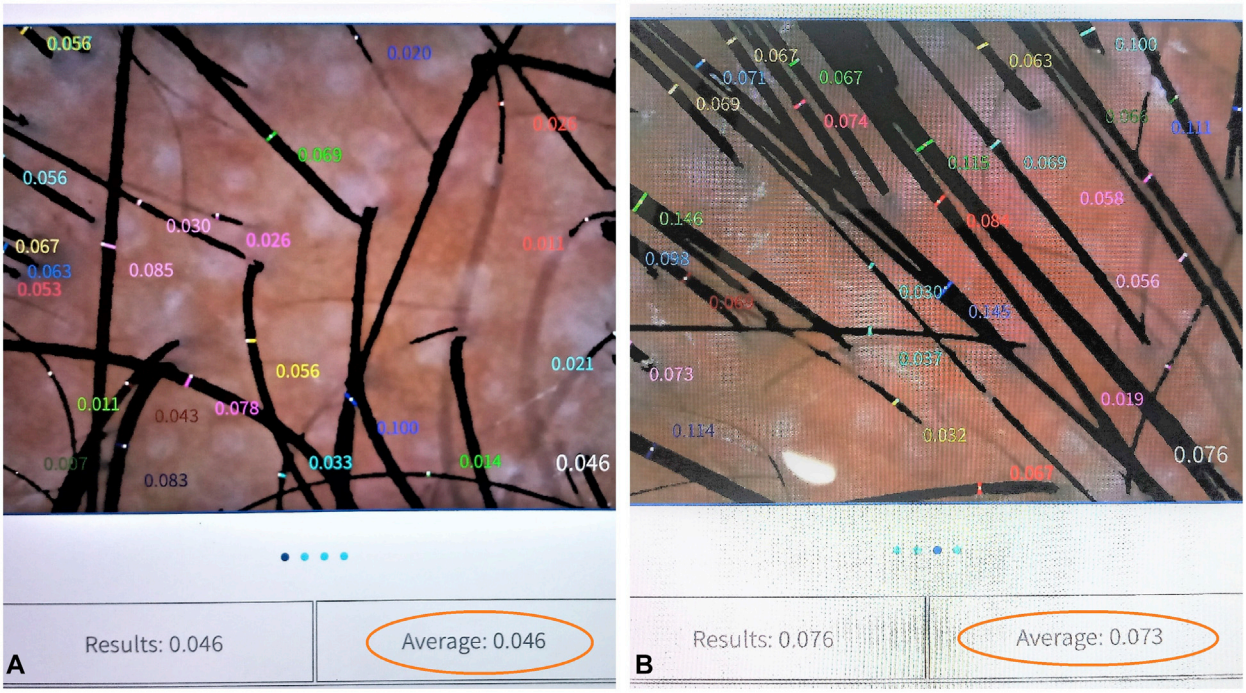

Fig 2. Quantitative digital video trichoscopic assessment of the patient (Fig 1, *B* and *C*). This image displays improvement in 1 of the 2 trichoscopic efficacy parameters (ie, average hair caliber per unit area recorded at the vertex point). The individual numbers scattered in the image fields refer to the diameter of individual hair shafts in a unit area, whereas the number mentioned in the lower right corner of each image (circled in red) refers to the average hair caliber per unit area for the entire trichoscopic field or area (all numbers in millimeter units, equivalent to ×1000 μm). **A**, Baseline image showing an average hair caliber per unit area of 0.046 mm (equivalent to 46 μm) at vertex point. **B**, Twenty-four weeks' posttreatment image showing an increase in average hair caliber per unit area to 0.073 mm (equivalent to 73 μm) at vertex point. (At 50× magnification, polarized light using 5-megapixel image sensor. Dermo Smart Harris advanced hair diagnostic system marketed by Aakaar Medical Technologies, Mumbai, India.)

were asked about possible adverse effects and their blood pressure was monitored.

At 24 weeks, in accordance with global clinical photographic assessment, marked and mild improvement was observed in 14 patients (14/32, 43.8%; albeit indicating overall efficacy <50%) and 13 patients (13/32, 40.6%), respectively (Fig 1, *B* and *C*). According to the Hamilton-Norwood scale, 3 of 8 patients (37.5%) of grade V, 6 of 12 patients (50%) of grade IV, and 5 of 12 patients (41.6%) of grade III showed marked improvement. On quantitative digital video trichoscopic assessment, improvement in average total hair density per unit area and hair shaft diameter (average hair caliber per unit area) (Fig 2) at 24 weeks revealed statistically significant improvement over the baseline for all points in 25 of 32 patients (78.1%), with maximum improvement at the vertex point for both parameters. An overall 48.4% improvement in hair density and increment of average hair caliber per unit area or average hair shaft diameter from 50 ± 11.7 μm to 68.1 ± 11.6 μm ($P < .01$) were noticed at the vertex.

Of the 14 of 32 patients with marked improvement, 10 belonged to the treatment-naive group (10/18), whereas only 4 patients were from the previous treatment failure group (4/14); improvement was overall less brisk in the latter group, who also had greater duration of hair loss at baseline. One patient left treatment because of peripheral edema and hypertrichosis of the lip and arms.

Conclusively, oral minoxidil at a dose of 1.25 mg/day can be used in male androgenetic alopecia, although a higher dose (2.5-5 mg/day) may be required if, despite 6 months of treatment, the response is suboptimal.

Abhijeet Kumar Jha, MD,[a] *Sidharth Sonthalia, MD, DNB, MNAMS,*[b] *MD Zeeshan, MD,*[a] *and Keshavamurthy Vinay, MD, DNB, MNAMS*[c]

From the Department of Skin and Venereal Diseases, Patna Medical College, Bihar, India[a]*; Department of Dermatology and Dermoscopy, Skinnocence: the Skin Clinic and Research Centre, Gurugram, India*[b]*; and Department of Dermatology, Venereology and Leprology, Postgraduate Institute of Medical Education and Research, Chandigarh, India.*[c]

Funding sources: None.

Conflicts of interest: None disclosed.

Reprints not available from the authors.

Correspondence to: Keshavamurthy Vinay, MD, DNB, MNAMS, Department of Dermatology, Venereology and Leprology, Postgraduate Institute of Medical Education and Research, Sector 12, Chandigarh 160012, India

E-mail: vinay.keshavmurthy@gmail.com

REFERENCES

1. Jimenez-Cauhe J, Saceda-Corralo D, Rodrigues-Barata R, et al. Effectiveness and safety of low-dose oral minoxidil in male androgenetic alopecia. *J Am Acad Dermatol*. 2019;81:648-649.
2. Pirmez R, Salas-Callo CI. Very-low-dose oral minoxidil in male androgenetic alopecia: a study with quantitative trichoscopic documentation. *J Am Acad Dermatol*. 2020;82:e21-e22.
3. Ramos PM, Sinclair RD, Kasprzak M, Miot HA. Minoxidil 1 mg oral versus minoxidil 5% topical solution for the treatment of female-pattern hair loss: a randomized clinical trial. *J Am Acad Dermatol*. 2020;82:252-253.
4. Beach RA. Case series of oral minoxidil for androgenetic and traction alopecia: tolerability and the five C's of oral therapy. *Dermatol Ther*. 2018;31:e12707.
5. Leerunyakul K, Suchonwanit P. Evaluation of hair density and hair diameter in the adult Thai population using quantitative trichoscopic analysis. *Biomed Res Int*. 2020;2020:2476890.

https://doi.org/10.1016/j.jaad.2020.05.129

Management of oral reactions from immune checkpoint inhibitor therapy: A systematic review

To the Editor: In previous reports characterizing dermatologic immunorelated adverse events from immune checkpoint inhibitors, oral reactions are not well described. A systematic review of the literature was conducted (search terms and outline in Supplemental Figs 1 and 2, available via Mendeley at https://doi.org/10.17632/c265tmrbhm.1) to detail oral reactions from immune checkpoint inhibitors and treatments used. Rashes with oral involvement were excluded because of potential for results nonspecific to the oral manifestation (eg, latency

Table I. Included studies detailing oral reactions from immune checkpoint inhibitor therapy in this analysis

Oral reaction	Study type	ICI used	Cases	Biopsy	Latency period,* weeks	Treatment used†	Treatment outcome
Oral mucositis/stomatitis							
Cao et al, *Dermatopathology (Basel)* 2017;4(1-4):13-17	CR	Niv	1	ND	12	Oral prednisone taper, oral oxycodone, oral dexamethasone (swish and spit), "magic mouthwash"	Complete resolution
Acero Brand et al, *J Immunother Cancer* 2018;6(1):22	CR	Pem	1	ND	42	IV methylprednisolone (2 mg/kg/d, 2 wk), oral prednisone (tapered, 5 mo)	Complete resolution
Lederhandler et al, *J Drugs Dermatol* 2018;17(7):807-809	CR	Pem	1	Yes (1 pt) DIF = neg Dx: ulcerative oral mucositis	52	Inpatient: Oral prednisone taper, dexamethasone (swish and spit), topical mupirocin mixed with triamcinolone 0.1% ointment	Complete resolution ICI held

Continued