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Dutasteride Mesotherapy for Androgenetic Alopecia: What do we know?

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Introduction

Androgenetic alopecia (AGA) is a common dermatologic condition that can cause a significant amount of distress for some patients.[1-3] Dihydrotestosterone (DHT), an endogenous hormone, plays a major role in this form of hair loss, causing scalp hairs to undergo miniaturization and reducing the amount of time they spend in the anagen growth phase.[4,5] Dutasteride is one of several treatment options for AGA. It works by inhibiting 5-α reductase (5-aR) types I and II, ultimately reducing the levels of DHT in the scalp.[2,4] This can be contrasted to another 5-aR inhibitor, finasteride, which only inhibits the 5-aR type II.[4] Although dutasteride is potentially more potent than finasteride, its longer half-life (~5 weeks), similar side effect profile, and lack of Health Canada approval for AGA make some prescribers more likely to choose finasteride over dutasteride.[2,4]

Mesotherapy involves injections of a substance, such as vitamins or a medication, into the skin at the correct layer to achieve a desired therapeutic effect while minimizing systemic absorption and adverse effects.[4,6] The use of dutasteride mesotherapy for AGA has been described somewhat recently; however, a large pool of data is not available to determine its appropriate place in the AGA treatment ladder. Despite this, an increasing number of publications are appearing over time regarding dutasteride mesotherapy. This paper will provide a concise review of potential dosing and injection techniques, adverse effects, and outcomes of dutasteride mesotherapy.

Dosing and Injection Technique

Publications have reported using concentrations ranging from 0.005–0.05% for dutasteride mesotherapy.[6-11] Combinations of 0.01% dutasteride and 2% minoxidil have also showed positive results in both men and women with AGA.[12]

Given dutasteride's long half-life, a treatment interval of every 3 months could be a convenient option for patients, yet shorter treatment intervals ranging from weekly to monthly have also been described.[6-8] Reports have indicated that some providers commence with weekly injections, then slowly decrease the frequency to every 2 weeks, and eventually transition to a monthly treatment interval.[6,8]

Administration techniques vary between injecting 0.01–0.1mL of the solution at each location, leaving approximately 1 cm between injections, and a depth of injection of ~4 mm using fine/higher gauge needles.[13,14] Although not thought of as being mesotherapy in the traditional sense, a more recent publication assessed

the use of 2.5 mm depth microneedling to introduce a 0.01% dutasteride solution into the scalp.[15] These authors used a monthly treatment interval.[15]

Adverse Effects

A small number of studies have highlighted the lack of systemic side effects with dutasteride mesotherapy, including no significant difference in serum hormone levels after treatment.[4,13]

A systematic review conducted by Herz-Ruelas and colleagues was not able to identify any studies noting changes in libido, erectile dysfunction, or ejaculatory dysfunction associated with dutasteride mesotherapy.[4] The injection frequencies included in the review were as often as weekly, and there was no evidence of sexual side effects associated with dutasteride mesotherapy. In contrast, their review did highlight a decrease in libido, erectile dysfunction, and ejaculatory dysfunction with the use of oral dutasteride, although this increase was nonsignificant when compared to placebo.[4]

A report has described 2 cases of paradoxical nonscarring alopecia after dutasteride mesotherapy. The report noted that both patients who experienced this adverse effect had received a dutasteride solution using ethanol as the solvent.[11]

The first patient underwent one session of dutasteride mesotherapy with a 0.025% dutasteride solution and developed small patches of non-scarring alopecia 1 month later. She was lost to follow up to assess the progression or resolution of this adverse effect. The second case was a male who underwent treatment with dutasteride mesotherapy at the same injection concentration (0.025%) and technique of administration who later developed similar small patches of hair loss at the injection sites after 2 sessions. At the 3-month follow-up, no improvement was observed.[11]

The authors suggest that using ethanol as the solvent could have induced hair follicle toxicity and cell death leading to the secondary hair loss. Instead, they propose using dimethyl sulfoxide (DMSO) as the solvent for dutasteride mesotherapy over ethanol.[11] In Canada, it is crucial to be aware that there is no pre-formulated sterile dutasteride solution with a drug identification number available in pharmacies. Practitioners should therefore work with their compounding pharmacy colleagues to obtain a sterile dutasteride solution at the desired strength and in the most appropriate solvent.

Angioedema-like contact dermatitis secondary to dutasteride mesotherapy was reported in a woman who developed facial swelling and skin redness a day after her first mesotherapy session.[16] The swelling was quite extensive in the periorbital area despite the injections being administered locally on the scalp. Subsequent patch testing confirmed a strongly positive reaction to varying concentrations of dutasteride (0.001%, 0.01%, and 0.05%), as well as to 20% propylene glycol given that this was another ingredient in the dutasteride solution.[16]

Melo and colleagues described 10 patients who experienced frontal edema after mesotherapy with dutasteride; however, their solution was diluted with lidocaine.[17] Additionally, some, but not all, of the patients received platelet rich plasma injections in the same session. Treatments were spaced apart every 3 months. The edema lasted for approximately 1–4 days, improving with a cold compress and some improvements were noted with oral corticosteroids. The edema was most commonly seen after 2 sessions. It was unclear to the authors whether the adverse reaction was attributable to the dutasteride, or if it was secondary to the lidocaine, or the total volume injected in 1 session.[17]

Aside from localized pain, bleeding, and bruising from the injection itself, other side effects such as scarring alopecia, scalp abscesses, and fat necrosis have been mentioned infrequently in case reports with mesotherapy in general, but not specifically with dutasteride mesotherapy.[9,18,19] A retrospective study that included 541 patients who underwent dutasteride mesotherapy noted pain as the most frequently reported adverse effect in 45.5% of patients with no serious or sexual side effects observed.[9]

Potential side effects that have been discussed are outlined in **Table 1**.

Reported Adverse Effects of Dutasteride Mesotherapy
Pain
Bleeding
Bruising
Frontal Edema
Angioedema-like Contact Dermatitis
Nonscarring Alopecia at Injection Sites
** No current reports have indicated changes in serum hormone levels, changes in libido, erectile dysfunction, or ejaculatory dysfunction

Table 1. Reported Adverse Effects of Dutasteride Mesotherapy; *courtesy of Matt Sandre, MD, FRCPC.*

Outcomes

Available reports have shown favourable outcomes with dutasteride mesotherapy, yet, it appears to be less effective compared to oral dutasteride therapy.[4] For example, a study's pooled analysis has revealed a mean change in hair growth of 15.92 hairs per cm^2 with oral dutasteride, and 7.9 hairs per cm^2 with intralesional therapy.[4] The same analysis indicated that self-assessed improvement and treatment satisfaction with dutasteride mesotherapy had ranged from 7.1% to 92.9%, and 40% to 90%, respectively.[4]

The aforementioned multi-centre retrospective study of 541 patients utilized 0.01% dutasteride mesotherapy injections in men and women administered every 3 months.[9] Of note, 86 of those patients received dutasteride mesotherapy as monotherapy. Over 80% of the patients demonstrated a clinical improvement, and 33 of 86 patients (38.4%) who received dutasteride mesotherapy as monotherapy achieved a marked improvement.[9]

The authors conducted a 20-week randomized, double-blind, placebo-controlled study using 2.5 mm microneedling with 0.01% dutasteride. Participants received 3 monthly treatments with either microneedling with a dutasteride solution or microneedling with a saline solution.[15] Three dermatologists compared photographs taken at baseline to week 16. The dermatologists reported that 52.9% of the men in the microneedling-with-dutasteride-solution group had a statistically significant marked improvement in hair density compared to the microneedling-with-saline-solution group.[15]

My Approach

The area is cleaned with chlorohexidine or hypochlorous acid. A sterile solution of 0.05% dutasteride preserved with benzoyl alcohol is drawn up into BD 1mL syringes with Luer-Lok Tip using a 18G blunt-tipped needle. For injection, TSK STERiJECT Hypodermic 33G x 4mm needles are used. Given the use of 4mm needles, the desired depth is easily achieved by inserting the needle all the way to the hilt. Subsequently, 0.05mL per cm^2 of the desired treatment area is injected and treatments are repeated every 3 months. A minimum of 3 sessions are recommended to assess response and then, once desired response is achieved, a maintenance regimen of treatment every 6 months is recommended.

Combination treatment is always recommended with topical therapy such as 5% minoxidil, and consideration may be given to the addition of oral off-label minoxidil and/or finasteride in discussion with the patient. Based on personal preference, the author does not recommend oral dutasteride in those proceeding with dutasteride mesotherapy.

Patient selection may follow platelet-rich plasma injections; those with early changes of AGA would be more ideal candidates for trialing dutasteride mesotherapy than those with late-stage changes.

Conclusion

Given how common AGA is in our patient population, it is important for practitioners treating this condition to stay informed about recently described therapies or innovative approaches to using established therapies. Although oral approved and off-label options are available, the potential for, and in some cases, unpredictable nature of systemic side effects may cause both patients and practitioners to feel uneasy about their use. Considering the currently available publications, dutasteride mesotherapy appears to show promise in providing benefit for patients with AGA. Importantly, its use with mesotherapy may avoid systemic side effects typically associated with oral administration of this drug. Given that dutasteride mesotherapy is not approved for AGA, practitioners should be aware of the potential side effects. This awareness can enable practitioners to engage in a candid discussion with patients before considering this relatively new treatment option.

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Financial Disclosures

None declared.

References

1. Blume-Peytavi U, Blumeyer A, Tosti A, Finner A, Marmol V, Trajatelli M, et al. S1 guideline for diagnostic evaluation in androgenetic alopecia in men, women and adolescents. Br J Dermatol. 2011;164(1):5-15. doi: 10.1111/j.1365-2133.2010.10011.x
2. `Busanello EB, Turcatel E. Androgenetic alopecia and dutasteride in hair mesotherapy: a short review. Our Dermatol Online. 2017;9(1):75-79.
3. Zhongbao Z, Shiqiang S, Zhenli G, Jitao W, Jiajia M, Yuanshan C. The efficacy and safety of dutasteride compared with finasteride in treating men with androgenetic alopecia: a systematic review and meta-analysis. Clin Interv Aging. 2019;14:399-406. doi: 10.2147/CIA.S192435
4. Herz-Ruelas M, Alvarez-Villalobos NA, Millan-Alanis JM, Leon-Gutierrez H, Ocampo-Garza SS, Gomez-Flores M, et al. Efficacy of intralesional and oral dutasteride in the treatment of androgenetic alopecia: a systematic review. Skin Appendage Disord. 2020;6(6):338-345. doi: 10.1159/000510697
5. Chen W, Zouboulis C, Organos CE. The 5-alpha-reductase system and its inhibitors. Recent development and its perspective in treating androgen-dependent skin disorders. Dermatology. 1995;193(3):177-184. doi: 10.1159/000246242
6. Abdallah M. Mesotherapy using dutasteride-containing solution in male pattern hair loss: a controlled pilot study. J Pan-Arab League Dermatol. 2009;20(1):137-145.
7. Moftah N, Moftah N, Ahmed N, Hamed Y, Ghannam B, Ibrahim M. Mesotherapy using dutasteride-containing preparation in treatment of female pattern hair loss: photographic, morphometric and ultrastructural evaluation. J Eur Acad Dermatol Venereol. 2013;27(6):686-693. doi: 10.1111/j.1468-3083.2012.04535.x
8. Sobhy N, Aly H, El Shafee A, El Deeb M. Evaluation of the effect of injection of dutasteride as mesotherapeutic tool in treatment of androgenetic alopecia in males. Our Dermatol Online: 2013;4(1):40-45.
9. Saceda-Corralo D, Moustafa F, Moreno-Arrones O, Jaen-Olasolo P, Vano-Galvan S, Camacho F. Mesotherapy with dutasteride for androgenetic alopecia: A retrospective study in real clinical practice. J Drugs Dermatol. 2022;21(7):742-747.
10. Saceda-Corralo D, Rodriques-Barata AR, Vano-Galvan S, Jaen-Olasolo P. Mesotherapy with dutasteride in the treatment of androgenetic alopecia. Int J Trichology. 2017;9(3):143-145. doi: 10.4103/ijt.ijt_73_16
11. Del Cura LR, Sancho AD, Lombrana MR, Sundh AE, Lopez MA. Two cases of paradoxical nonscarring alopecia after mesotherapy with dutasteride. Skin Appendage Disord. 2022;8:46-48. doi: 10.1159/000518043
12. Merino-de-Paz N, Vazquez-Rodriguez C ,Ramirez-Fernandez G, Garcia-Peris E, Arteaga-Henriquez, Lukoviek V, et al. Mesotherapy with dutasteride and minoxidil in treatment of androgenetic alopecia. J Am Acad Dermatol. 2018;79(3) Supplement 1,AB190. doi: 10.1016/j.jaad.2018.05.770
13. Rodriguez-Cuadrado FJ, Pinto-Pulido EL, Fernandez-Parrado M. Mesotherapy with dutasteride for androgenetic alopecia: a concise review of the literature. Eur K Dermatol. 2023;33(1):72. doi: 10.1684/ejd.2023.4443
14. Dominguez-Santas M, Diaz-Guimaraens B, Saceda-Corralo D, Hermosa-Gelbard A, Arrones OM, Pindado-Ortega C, et al. The state-of-the-art in the management of androgenetic alopecia: a review of new therapies and treatment algorithms. JEADV Clin Pract. 2022;1:176-185. doi: 10.1002/jvc2.53
15. Sanchez-Meza E, Ocampo-Candiani J, Gomez-Flores M, Herz-Ruelas ME, Ocampo-Garza J, Orizaga-Y-Quiroga TL, et al. Microneedling plus topical dutasteride solution for androgenetic alopecia: a randomized placebo-controlled study. J Eur Acad Dermatol Venereol. 2022;36(10):e806-e808. doi: 10.1111/jdv.18285
16. Magdaleno-Tapial J, Valenzuela-Onate C, Garcia-Legaz-Martinez M, Martinez-Domenech A, Alonso-Carpio M, Talamantes CS, et al. Angioedema-like contact dermatitis caused by mesotherapy with dutasteride. Contact Dermatitis. 2020;83(3):246-247. doi: 10.1111/cod.13585
17. Melo DF, Saceda-Corralo D, Tosti A, Weffort F, Jorge MC, de Barros CC, et al. Frontal edema due to mesotherapy for androgenetic alopecia: a case series. Dermatol Ther. 2022;35(2):e15247. doi: 10.1111/dth.15247
18. Duque-Estrada B, Vincenzi C, Misciali C, Tosti A. Alopecia secondary to mesotherapy. J Am Acad Dermatol. 2009;61(4):707-709. doi: 10.1016/j.jaad.2008.11.896
19. Kadry R, Hamadah I, Al-Issa A, Field L, Alrabiah F. Multifocal scalp abscess with subcutaneous fat necrosis and scarring alopecia as a complication of scalp mesotherapy. J Drugs Dermatol. 2008;7(1):72-73.