Notes from the Editor Emeritus

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Medical therapy for hair loss: what we know and what we need to find out

I would like to review the status of current knowledge regarding what therapeutic options are available for treating hair loss patients with medical therapy. This topic is of importance to not only our physician readers who choose to treat some of their patients strictly with non-surgical modalities but also to all hair restoration surgeons as the ever present limiting factor for our procedures is the donor supply. This makes medical therapy a necessary adjunct to the overall treatment plan.

Current Knowledge

We know that minoxidil acts through the mechanism of opening potassium channels to increase the size of hair follicles as well as the percentage of anagen follicles.[1] The 5% concentration is superior to the 2% in treating male pattern hair loss (MPHL)[2] and although the package labeling states that it is indicated for treating the vertex, we have seen positive results in the top scalp and frontal areas. Topical minoxidil is extremely safe, as evidenced by its over-the-counter status in the United States, and side effects are predominantly allergic or irritant contact dermatitis, the latter being less frequent with the foam vehicle, which does not contain propylene glycol. In treating female pattern hair loss (FPHL), the 2% solution, which is marketed for women, is equally effective when used BID as compared to a single daily application of the 5% foam.[3] 5% minoxidil, however, is associated with a higher incidence of facial hypertrichosis in women than the 2%, but this side effect is reversible within 1-3 months after treatment is discontinued.

We have long observed that, in histologic sections, FPHL exhibits a greater degree of inflammatory infiltration than its male counterpart, and, additionally, recent studies have shown the presence of immunoglobulin deposition in FPHL using immunofluorescent staining.[4] My treatment results for women have improved since I routinely started to add a topical steroid to minoxidil in solution for enhanced efficacy in FPHL.

5-alpha reductase inhibitors, without question, are the most efficacious treatment for MPHL currently available. By inhibiting type II 5-alpha reductase, finasteride decreases both serum and scalp levels of DHT and increases hair diameter, growth rate, and, to a lesser degree, hair counts.[5] In large clinical trials of patients with MPHL, the most common side effects were decreased libido (1.9%), erectile dysfunction (1.4%), and decreased ejaculate volume (1.0%).[6]

In these large studies, as well as in many of our practices, we have observed that discontinuing the drug or lowering the frequency of administration results in resolution of the side effects. The rationale for lower or less frequent dosing stems from the fact that a 0.2mg daily dose (which represents 20% of the 1mg dose recommended daily) has shown 70-90% of the therapeutic effect seen with 1mg.[7] While I will not go into all of the reported post-marketing side effects, it is important to note that a small number of men claim that they have suffered permanent sexual dysfunction despite stopping the drug, and, in a small subset of men, prolonged sexual side effects lasting weeks to months have been reported.[8]

Questions Begging for Answers

While finasteride at a 1mg daily dose was shown to be ineffective in post-menopausal women,[9] several case reports have demonstrated efficacy in FPHL using 2.5-5.0mg daily.[10,11] While, theoretically, the slight increase in testosterone that results from the administration of the drug and its subsequent conversion via aromatase to estrogen should have no adverse effect, we currently have no large-scale studies evaluating safety data regarding the administration of finasteride to women. It is important to note, of course, that the drug is teratogenic and should not be administered to any woman who is planning to become pregnant. My concern, however, stems from the remarkably high incidence of breast cancer in the general female population and the possible legal risk that the appearance of a breast tumor in a woman taking finasteride poses. Certainly, it might be wise to at the very least take a family history regarding breast, ovarian, or uterine cancer to rule out potential high-risk patients.

With regards to low level laser/light therapy (LLLT), the ranks of the "believers" has been growing steadily. Unfortunately, we have only one study published in the literature where the use of a handheld device showed a statistically significant increase in hair counts.[12] While some of us have anecdotally observed the results obtained from the more recently developed helmet/hat devices, well-controlled clinical studies are needed to determine the relative efficacy of the these two forms of laser devices (handheld vs. hat). In addition, what can we tell patients who are already on minoxidil, finasteride, or both with regards to adding laser therapy to their regimen? How much further improvement can they expect? Considering that the increase in hair counts observed with LLLT is in the 15-20% range,[12] which is what is seen with minoxidil therapy, it is possible, yet still undetermined, whether these two modalities act via the same target so that an additive or synergistic effect would not be expected. Finally, what is the optimal frequency, power, and duration of treatment for LLLT in men and in women? Should MPHL be treated differently than FPHL?

Mesotherapy, consisting of scalp injections of pharmaceuticals and vitamins, has been presented at our meetings, and Rinaldi's study of 126 patients with FPHL injected with dutasteride, biotin, pyridoxine, and d-panthenol shows photographic improvement in 63% of patients as compared to 17.5% on saline placebo.[13] The concept of mesotherapy seems attractive as presumably delivering small amounts of active compounds directly into the follicle might avoid systemic side effects. In addition, the intermittent treatment schedule offers the prospect of improved compliance as compared to daily, messy topical applications, especially in women. Until

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we determine which compounds are truly active and at what concentrations their efficacy is optimal via this route, we must remain cautious regarding safety and efficacy of this treatment.

Finally, my patience is growing thin with patients asking me about clinics that offer "stem cell" therapy, when in fact, it is platelet rich plasma (PRP) that is being used. While the use of PRP for hair loss stems from reports of enhanced growth of transplanted follicular units,[14-16] there appears to be a rationale for using this treatment in hair loss patients as the multiple growth factors released upon platelet activation presumably have the potential to"turn on" hair follicle growth. While small studies do show accelerated wound healing in hair transplant surgery and one form of PRP is FDA approved for wound healing applications, the clinical data to support a direct effect on hair growth is limited. A recent study, which was marred by lack of tattooing to mark target sites, showed increased hair counts and hair shaft diameter with the use of PRP alone, and PRP with a controlled release carrier.[17] Given the numerous PRP preparations currently available, all differing in platelet concentration and mode of activation, further studies are needed to determine whether significant efficacy for hair loss can be achieved and what the optimum preparations and treatment frequencies are for this specific application.

While our limited armamentarium for the medical treatment of hair loss appears to be growing (we anxiously await the results of the bimatoprost study for scalp hair loss), there seems to be a lack of incentive for those who are marketing some of these new products to conduct large, well-controlled clinical trials. Ultimately, we as physicians are to blame as, due to competition and hype, we are quick to purchase and offer our patients the "latest and greatest" without demanding more rigorous evidence.

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