

## Notes from the Editor Emeritus

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Female hair loss diagnosis is a time-consuming yet extremely rewarding endeavor for the physician. It encompasses the detective skills of taking an inquisitive, detailed medical history and requires an in-depth scalp examination looking for clues to derive at a diagnosis. I would like to make note of some of the current trends relevant to this field and hope not much overlap occurs with Dr. Roger's lead article.

Scalp dermoscopy has emerged as an invaluable tool in recognizing features of various alopecias not appreciable with the naked eye. Dermoscopy is particularly helpful in differentiating non-scarring alopecias, such as chronic telogen effluvium, in which abnormal miniaturization is absent, contrasted to female pattern hair loss (FPHL) where the ratio of terminal to vellus hairs is decreased and miniaturization results in hair diameter diversity. Alopecia areata, meanwhile, shows yellow brown dots at the follicular orifice (also seen in some cases of FPHL), but it also shows black dots and dystrophic hairs with a monomorphic population of miniaturized hairs rather than the variation in diameter seen with FPHL.

With regards to therapeutic assessment, I prefer coupling global photography with hair bundle cross-section measurements using the HairCheck® device to follow a patient's response. As I presented in San Francisco, these two modalities show a high degree of correlation, and combining them enhances a physician's ability to determine the patient's progress. Cross-section hair bundle measurements compensate for the many limitations of photography, such as changes in hair length, color, or hair-style at different visits. Patients like the HairCheck and are very receptive to having a numerical value assigned to their hair, to be compared on subsequent visits.

An important finding that, in my opinion, has helped us design more effective therapies for FPHL is the recognition of an indolent inflammation, which is a pathologic feature of this condition.<sup>1</sup> There is empiric evidence that therapy targeted to attenuate this inflammatory component results in enhanced efficacy.<sup>2</sup> For example, I have found that compounding topical corticosteroids along with minoxidil improves our results in FPHL as compared to minoxidil alone. In the hope of achieving even better results, we add low level laser therapy (LLLT) to this topical regimen and my impression is that results are further enhanced with the combination. This "shotgun" type of approach does not allow us to evaluate the contribution of each treatment component, yet patients don't seem to care about that, and generally only concern themselves with achieving improvement.

Although evidence-based data has been limited demonstrating the efficacy of LLLT, a recent multicenter, randomized, double-blind study compared the laser comb to a sham device in 128 men and 141 women for 26 weeks of treatment. The laser comb was shown to achieve a statistically significant increase in mean terminal hair as compared to the sham device, and no adverse effects were reported.<sup>3</sup> Certainly, we need additional studies to see if the benefits of LLLT can be maintained over the long term and to determine if, in fact, the effects are additive or synergistic with minoxidil or other topical treatments. We also have not yet defined the preferred wavelength, power, treatment frequency, or duration to achieve optimal results with this modality.

Evaluating female hair loss patients generally encompasses doing some laboratory blood work and, in the past couple of years, I have added a vitamin D level to this panel. Vitamin D deficiency is increasingly common in the general population and I have seen patients in whom vitamin D deficiency was probably related to telogen effluvium that resolved with adequate replacement. The vitamin D receptor is intimately involved with

activating hair growth and mice genetically deficient in a vitamin D receptor antagonist generate more hair than controls. Moreover, molecules that activate the vitamin D receptor promote differentiation of skin cells into hair follicle cells. Vitamin D toxicity can result in systemic adverse effects, so the hope is to develop topical agents that selectively manipulate the vitamin D receptor in the scalp and hair follicles. It should be noted that while our focus is generally to look for dietary or other deficiencies as contributory to female hair loss (such as zinc, vitamin B12, and folate), we need to remember that toxicity due to environmental agents such as copper, arsenic, cadmium, or mercury can also be associated with hair loss.<sup>4</sup> The recent popularity of eating sushi in the United States has prompted me to question patients about excessive dietary intake of fish containing high mercury levels (such as tuna, swordfish, or Chilean sea bass), and I have found abnormally high blood levels of mercury in some patients presenting with telogen effluvium. Obviously, it is impossible to determine if mercury was in fact the causative agent.

Lastly, knowledge of hair cosmetics is extremely helpful when treating female hair patients and, in the past couple of years, I have seen several women who presented with acute onset of hair loss following Brazilian keratin hair-straightening treatments. The hair loss appears to be secondary to both hair breakage and a form of effluvium with the most likely culprit being the formaldehyde in these products. Interestingly, a recent study measured the formaldehyde concentration in seven Brazilian keratin products and found that six had formaldehyde levels approximately 5 times higher than the level recommended by the United States Cosmetic Ingredient Review Panel. Some of these brands were, in fact, labeled as being "formaldehyde free."<sup>5</sup>

I have tried to touch upon a few of the topics that I feel are of current interest, but I wish to stress that empathy and bedside manner are extremely important for physicians to embrace when treating these patients, as female hair loss has been demonstrated to impact quality of life (QOL). An improvement of QOL was achieved in those individuals with successful hair treatment outcomes.<sup>6</sup>

### References

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