Hair Loss in Women

Elise A. Olsen, MD, FAAD, interviewed by Mona Sadeghpour, MD, FAAD

MONA SADEGHPOUR, MD, FAAD: Welcome back to another episode of *Dialogues in Dermatology*. I'm Dr. Mona Sadeghpour and today I have the privilege of speaking to Dr. Elise Olsen, who is a Professor of Dermatology at Duke School of Medicine and the founder and director of the Duke Hair Disorders Research and Treatment Center. During her career, she has been a member of numerous national and international consensus groups, where she has helped to develop guidelines, scales, and treatment algorithms for a variety of hair disorders. Welcome, Dr. Olsen.

ELISE A. OLSEN, MD, FAAD: Thank you.

MONA SADEGHPOUR, MD, FAAD: I wanted to start by getting a little bit of insight about what sparked your interest and focus in hair loss.

ELISE A. OLSEN, MD, FAAD: At the time that I was a resident, I became interested in hair loss because of topical minoxidil being an agent that was going to be studied in clinical trials. My first project at Duke was to take on the topical minoxidil trial for men. I realized there were no other treatments available, there was little knowledge about hair loss conditions, things weren't separated out at that time, and so it was a gap in terms of dermatology and I just became very interested in that.

MONA SADEGHPOUR, MD, FAAD: I think today, you would probably agree that we still have a lot of way to go as far as treatments goes. So thanks for all the work that you do for us. Speaking of treatments for hair loss, obviously as dermatologists, telogen effluvium is one of the most common hair losses that we see in our practice. I think most dermatologists have different practices, as far as what they do with regards to ordering labs. Some people order none, some

people order a lot, and I wanted to get your insight about how you approach that in your particular hair loss patients.

ELISE A. OLSEN, MD, FAAD: I think for telogen effluvium, probably I'm going to back up a little bit, I think the most important thing is to make sure that you have the diagnosis correct. Sometimes this can be an early female pattern hair loss, with just minimal type of shedding, you have patients complaining of shedding. And then there is the patient that comes in with voluminous shedding, little bags of hair, etc. So first determining if it's an overlap condition or if it's a single problem. Before I start thinking about labs, I think about the history and going over first if there's been any changes in their medications, any hormonal changes, any particular stressful events that might have triggered it.—

--And then the timeframe of that, how long has it been going on, are any of these things related to the onset and the continuation of it. I think it's very important to look at common things, particularly in premenopausal women, which is iron deficiency. I always do a ferritin as well as an iron and a total iron binding capacity, I think that they show different things. The question is, of course, with the iron deficiency is whether it's actually a cause of the problem, because there has been no good studies comparing what happens if you actually treat it with the association with hair regrowth or correction of the shedding.—

--So I'll look at this and as something that could, anemia with it and the iron deficiency could precipitate the shedding. I make sure that it's corrected or being corrected while we're addressing treatments for the specific hair loss. I would also check vitamin D. Again, the question of direct relatedness to the onset of the shedding is unclear, but trying to correct that as well. I think it's more clear for thyroid, if there's a thyroid disorder and the association of hair loss. So we check a TSH and a T4 for those patients.—

--I know you could go down the list and you could do zinc, as well, and that's reasonable. There is hair loss associated with zinc deficiency but it's very rare, I don't usually do that. You could look at biotin, some people do that as well, or a biotinidase deficiency. These are all things that remotely can cause hair loss. I think that is uncommon, that's a path to go down later if you have nothing else that you can do to help the patient. But going back to the female pattern hair loss, I would usually like to think about looking at androgens, if there's any suggestion on the physical exam of the scalp that this might be an overlap kind of process, where they're having increased shedding but they also have decreased density.—

--It's not just density all over, it's density primarily in the central scalp and maybe with accentuation toward the frontal margin, which would be a clue that the patient has two things going on. So in that case, I would check testosterone, total and free. If that was abnormal, then I would go down further to look at things like DHEA or androstenedione or sex hormone binding globulin. I think those are later. I use the testosterone as sort of the first test, to see if further things are needed.

MONA SADEGHPOUR, MD, FAAD: In my practice, I do the same thing. I do TSH, zinc, vitamin D, and I do the zinc but I do a ferritin. So I have two follow up questions for you on that. Do you have a ferritin goal for patients or what is your view on that?

ELISE A. OLSEN, MD, FAAD: There are studies looking at ferritin and female pattern hair loss that a goal would be 40. I think that's probably reasonable. I also am looking at that percent saturation though and trying to move that up, as well. Because you can have a falsely elevated ferritin obviously, if there's something else going on because it's an acute phase reactant. So I think actually for me, the percent saturation is the more important measure of how or if someone is iron deficiency.

MONA SADEGHPOUR, MD, FAAD: Going back to your laboratory workup for the hormonal workup, do you approach that the same way, based on the age group of your patients? For example, if someone is perimenopausal or postmenopausal, where in states where you would expect potentially female pattern to be a little bit more common, do you still check labs or do you do them more in your younger patients, where that would be less expected?

ELISE A. OLSEN, MD, FAAD: I think that one of the things that we probably overlook for evaluating women who have what I would call a phenotype of female pattern hair loss, where it's decreased density, primarily on the central scalp, again with predominantly a focus in the frontal part of the scalp, that there's an early onset and a late onset, which you're alluding to. So the patient who has early onset, postpuberty, early 20s for example, they are much more likely to have elevated androgens or other androgen-related processes, like hirsutism or eventually infertility.—

--In the postmenopausal or perimenopausal woman, less likely to have those problems. But if I am thinking about using antiandrogens or using a 5-alpha reductase inhibitor in those women, realizing that both of those can cause an increase in testosterone, and in the presence of a normal aromatase, that these women can have elevation of estrogens with this. I always want to check the androgens in those women for a different purpose.—

--I'm not looking for a PCOS kind of picture but I'm looking to see if that could be a problem when I'm giving them these medications. Or whether it could be a problem because, as a postmenopausal woman, they would have an increase in estradiol levels as a result of this and therefore that's a problem for postmenopausal women to have unopposed estrogen as a risk factor for breast cancer or for uterine cancer. So these hormones have different implications I think in these two age groups.

MONA SADEGHPOUR, MD, FAAD: That's an excellent point and obviously, you're an expert so once you get the results back, do you manage these hormonal regulations or irregulations yourself? Or do you have them referred?

ELISE A. OLSEN, MD, FAAD: If it's just mildly elevated testosterone, for example, and I know that the treatment that they're going to be using is going to do a good job on treating that, if they have a mildly elevated testosterone, then I think the treatment that I'm going to offer, such as spironolactone, might take care of this problem. If it gets into where it's a higher level, they may need to be on an oral contraceptive medication, maybe you want them on an oral contraceptive agent anyway because they're on an agent that's going to decrease androgens and might be a problem if they got pregnant.—

--But some of them are going to need to be on an oral contraceptive agent to control the elevation of the androgens. Or if I'm going to go down the line of looking for an elevation treatment or further evaluation of DHEA, that requires an endocrinologist to be involved. So not all cases do I work with an endocrinologist, but in cases where it's very obvious that it's very elevated or I need their help in terms of evaluating whether it's an adrenal hyperplasia, definitely.

MONA SADEGHPOUR, MD, FAAD: Kind of shifting gears a little bit, and I agree with you that the most important step in hair loss assessment and treatment is establishing the correct diagnosis. I'm sure most of us as dermatologists see cases all the time where people come in, have been diagnosed erroneously and been using treatments that are clearly not making a difference, and it's because they're treating the wrong disease, so thank you for emphasizing that. Now, once you establish a correct diagnosis, obviously we want to select the best treatment. Recently, there's been so much attention and excitement about low dose oral minoxidil, including a *New York Times* article that brought a lot of patients to our offices. Can

you walk us through when and how you discuss and select oral minoxidil as a therapeutic tool for your patients? And do you worry about side effects?

ELISE A. OLSEN, MD, FAAD: We are so lucky to have oral minoxidil. It's an amazing medication. It now gives the dermatologist a treatment for so many different types of hair loss. We know how it affects male and female pattern hair loss from the use of the topical minoxidil. But now we can use it for a global process, like telogen effluvium, where topical minoxidil just doesn't make sense to try to put that all over the scalp. We can use it in women who have estrogen receptor-positive breast cancer who have now female pattern hair loss related to their aromatase inhibitors.—

--They can use this now as a treatment. In both of these, telogen effluvium and the female pattern hair loss that develops in breast cancer patients, it's all about a miniaturization of the hairs and an increase in the percentage of telogen hairs. Both of those things are reversed by the use of minoxidil. We also have been seeing some success in cicatricial alopecia, because not all the hairs are destroyed in that condition. Many of them are damaged, still viable, and it gives the opportunity to help those hairs grow, as well.

MONA SADEGHPOUR, MD, FAAD: That's excellent, which actually answers my next question which is, does oral minoxidil have a role in scarring alopecias, which you've answered. So are there other scarring alopecias in which you've been successful with oral minoxidil?

ELISE A. OLSEN, MD, FAAD: Number one, it does work very well in CCCA. I have my own questions about CCCA and some kind of inflammatory counterpart to female pattern hair loss in some patients. I think that we have to think about etiology for CCCA hormonally, as well as environmental and genetic, so keep that in mind. I didn't mention this, but it's excellent for traction alopecia, especially what I call marginal traction alopecia, because traction alopecia can be all over the scalp, doesn't have to be just in that marginal relationship.—

--As far as FFA, yes, because I think in FFA there is a significant overlap of female pattern hair loss in many of those patients. So whether you're treating the cicatricial component, or a concomitant process, or just the hairs that are damaged but not destroyed, I think it is useful in cicatricial alopecia.

MONA SADEGHPOUR, MD, FAAD: Talk to us now from a practical standpoint. So there's a patient in your office you believe could benefit from oral minoxidil. Is this a first line armamentarium tool for you now? And when you start talking about it, how do you approach dosing, side effects, speaking to patients?

ELISE A. OLSEN, MD, FAAD: The first thing I think that is necessary when discussing minoxidil at all is to get a good history on these patients. Whether they have any significant cardiovascular problems. Have they had congestive failure? What kind of medications they're on, you can kind of tell from that. Any procedures they've had previously. Do they have current angina? Is there risk there? I might not have that conversation about oral minoxidil in that person. In terms of suggestions for that patient, it might be a discussion about topical minoxidil.—

--And I've had patients be wary about topical minoxidil causing issues. But the absorption is so much less with the topical minoxidil than oral that I think that you don't have to worry about cardiovascular issues with that. The other thing that I think is important is to talk about the hair growth that they might currently have on their face, such as if they have hirsutism or they're concerned about having hair growth on their face. Because once they start the oral minoxidil, they're almost certainly going to have some hair growth on the face. Just like with topical minoxidil, it usually starts on the sides of the face but women can have it more excessive than they might be willing to tolerate with the oral minoxidil.—

--So there might be a discussion of how can you manage that. But the history goes first. The history is whether I think that they are a candidate for oral minoxidil before deciding whether to even include it. But usually we'll have a discussion if it's female pattern hair loss about the treatments that I think are reasonable, it's going to be oral and topical minoxidil, spironolactone, and a 5-alpha reductase inhibitor. Those are kind of the starting medical parts. We don't talk about PRP, we don't talk about low level laser at that point, or microneedling.—

--I try to focus on the standard medical treatments first and review those, because those are going to be the background medications that I think those patients are going to need to be on, regardless of what kind of procedural thing that they use. We have good data for topical minoxidil and we have reasonable case series data on most of the other treatments at this point.

MONA SADEGHPOUR, MD, FAAD: I'm going to hone in on oral minoxidil a little bit more, just perhaps for selfish reasons but also because I know a lot of us use it in practice or want to use it in practice. You talked about spironolactone, you talked about the oral minoxidil. How do you combine these? Do you start with spiro? Do you start with minoxidil? Do you have concerns about dropping blood pressure if you're combining them? How do you approach that algorithm in a stepwise fashion?

ELISE A. OLSEN, MD, FAAD: I'm not sure that every patient needs to be on both initially. I would not start them at the same time because I don't think then you're going to be able to separate out the side effects, just like you were alluding to. For me, the big thing is to get past the initial period of probably the first four months that they are on oral minoxidil, to determine all the potential side effects that you might be able to see. One of the things that I am seeing in the patients that are referred to me for hair disorders is that sometimes the dermatologist that first sees them and thinks about oral minoxidil, it's a great treatment, great first treatment, is I think they start too high.—

--Some of the patients have stopped it and have come in and said, “Oh, no, I can’t use that,” and that’s because they were started on 5 mg. I think with the oral minoxidil, it’s very important to think about starting low and escalating up. We don’t have target doses yet. We think we have target doses, currently I think a target dose for women would be 2.5 mg a day and men might be 5 mg a day, but we don’t know that. We don’t have any knowledge of a dose response study that would tell us what we should be starting with, whether we should stay with a low dose, or what we should escalate to.—

--I normally start with about either a quarter of a pill or a compounded 0.5 mg. I make sure that they check their blood pressure, pulse, and if you were in my office I would say check the blood pressure and pulse and weight, because if they have edema that’s going to show up in their weight, too. I have them take that blood pressure and pulse beforehand. Check it afterwards. Knowing the pharmacology of oral minoxidil is important because it has a maximum blood level at about an hour, so it’s very fast.—

--The blood pressure is going to drop its greatest at about two hours. So if you know that and you tell the patient that, if they’re going to check their blood pressure and pulse afterwards, that’s the time to do it, just to see if there is any kind of problem, with palpitations, feeling dizzy, or whatever. And then it drops very fast so at the end of 24 hours, it’s almost back to like what a topical dose would give you. So checking that out and then making sure that over that first month, so I do it, but there is no issues with dizziness, they feel good on it, they’re not having a series of palpitations, then I would escalate them off of these.—

--The undesirable dosing regimen, who wants to take a compounded and have to pay for it, or split a pill into four quarters? So then we’d move them to likely 1.5 mg or 1.25, half of a 2.5 pill, and see how they do over the next period of time. With the assessment, probably the next assessment the physician would want to do could be either at that three month visit or six

months. Because at the three month visit is when you're going to start seeing any changes with the hair growth on the face and you're going to start seeing any kind of edema at that point.—

--So you can assess whether you need to adjust the dose, whether you can go up further, whether you need to hold at that point. And your question about the spironolactone, it obviously will treat the edema, which is not just ankle edema, tightness of the rings on the hand or edema of the face, oftentimes they'll get swelling under their eyes. So all these things are dose-related, they're 100 percent dose related. So if you can hold them at a given dose, or you can go back to the dose before that, or for the edema you could start them at that point on spironolactone.—

--We think of spironolactone as 100 mg a day for female pattern hair loss. But in this case, you could be treating any of these conditions, so you don't need 100 mg. You could use 25 mg. And in a man, you wouldn't use spironolactone as a diuretic. So hydrochlorothiazide would be what your choice would be instead. I think for the hair growth on the face, that might be the time to consider how to manage that, whether they're accepting of it, or whether they need to get some help in terms of how to remove it, whether it's laser hair removal, or depilatories, or shaving.—

--I haven't done a study on this, but I was thinking about eflornithine, Vaniqa could also be used because it's not specifically hormonal. That was a drug that was approved for unwanted facial hair and this would fit, it's unwanted.

MONA SADEGHPOUR, MD, FAAD: One of the things I was thinking about is spironolactone as a therapeutic modality, if you do have to bring it in, has that potential benefit of combatting the hirsutism. So I wonder if you see that in practice, does that help offset that side effect?

ELISE A. OLSEN, MD, FAAD: Yes, it does so many other things. It's helping the edema, it's helping the hirsutism if that's a problem, it won't help the hypertrichosis but it will help the

hirsutism. So yeah, that would be important. That's a good one to add, not the finasteride as the antiandrogen there. The spironolactone has much more value.

MONA SADEGHPOUR, MD, FAAD: So start slow and increase your titration up. After three months, evaluate, check for side effects, look for edema. And it sounds like what you were saying is 2.5 mg dosing for women is sort of where you keep it and then potentially up to 5 mg for men?

ELISE A. OLSEN, MD, FAAD: I'm going to modify it a little bit. That's a safe thing to do for everybody. But many of my colleagues would start with half of a pill, because this is a normal weight woman, has no history of cardiovascular, nothing. They would go right to the half a pill and I think that's okay.

MONA SADEGHPOUR, MD, FAAD: I actually do that.

ELISE A. OLSEN, MD, FAAD: I think that's okay. But if you have someone who is low body weight or any of these other issues, then for sure I would have a lower starting dose. Many would say with the men, you start at a 2.5 or maybe you even go to the 5, in a young man who doesn't have all these other issues. A lot of it has to do with the history. We didn't mention about labs to do for these patients but this is cleared by the liver. It's metabolized by the liver and it's excreted by the kidneys.—

--So what do you do if you have a patient who has liver disease or who has chronic kidney problems? Should you be doing labs? I do, then I add, and unfortunately I forgot to mention this earlier, I think a CBC is good to do always with those screening labs that I mentioned, the iron, so I do a CBC. But I would do a CBC and I would do a CMP, because I'm thinking about I'm going to look at liver, I'm going to look at their creatinine, and if I'm thinking about

spironolactone I want that potassium, so I get it all in those initial tests and then I can have that for follow up. It will give me a better idea of that patient.

MONA SADEGHPOUR, MD, FAAD: How often do you recheck potassium for spironolactone once you have patients started on it?

ELISE A. OLSEN, MD, FAAD: I have had patients who have been on spironolactone and within a very short period of time have developed elevation of their potassium. One of them ended up with EKG problems in the ER. Number one with spironolactone, while we're working with the minoxidil we can't forget that spironolactone, you need to tell them about their diet. Make sure that they are not eating too many foods that are high in potassium or using salt substitute, which has a lot of potassium. And also I think I would do the first check within the first month.—

--And then if that's fine, then I think probably six months, twelve months after that. But the initial one should be close in, so you can see whether their dietary habits, plus the dose of spironolactone, are having any effect. And then of course if you change the dose, you probably need to check this again.

MONA SADEGHPOUR, MD, FAAD: I think you and I can talk about hair all day but I think our time is nearing the end today. But I certainly hope we have a chance to continue talking in the future. I really appreciate all that you've shared with us. I hope as a result of this conversation, all the listeners, including myself, I know I do feel more comfortable with managing oral minoxidil and thinking about some of the side effects that you mentioned. Thank you so much for your time today.

ELISE A. OLSEN, MD, FAAD: Thank you.

Commentary

Jenna Koblinski, MD with Benjamin Stoff, MD, FAAD (ed.)

Hair loss is a common concern for women. There are a number of etiologies including, androgenetic alopecia (female pattern hair loss) and telogen effluvium, as well as cicatricial alopecias like central centrifugal cicatricial alopecia (CCCA), and frontal fibrosing alopecia. In this episode of Dialogues in Dermatology, Dr. Mona Sadeghpour interviews Dr. Elise Olsen, hair expert at Duke University, on the topic of hair loss in women.

5 Key Takeaways from Today's Episode include:

1. **Diagnosis is key** for appropriate treatment, and it is important to consider overlap of multiple conditions in each patient.
2. Laboratory work-up can be beneficial to evaluate for drivers of hair loss, especially telogen effluvium. Baseline lab recommendations can vary, but usually include a **CBC (for hemoglobin), iron panel (including ferritin, total iron binding capacity, and iron level), TSH (with T4), and vitamin D**. **Zinc or biotin levels** can also be considered as well. Depending on patient age, comorbidities, and treatment plan, a **CMP** may also be useful. A hormonal work-up can be indicated in certain scenarios such as female pattern hair loss.
3. Female pattern hair loss can be seen in pre-menopausal, peri-menopausal, and post-menopausal women. For pre-menopausal women, it is important to evaluate for a hormonal abnormality. **Testosterone (total and free)** is a good first test, with **DHEA, androstenedione, and sex hormone binding globulin** obtained later depending on the clinical context and lab results. However, it still may be beneficial to screen peri- and post-menopausal women for androgen excess if treatment with 5-alpha-reductase inhibitors is considered. If hormonal imbalances are found, then referral to an **endocrinologist** is recommended.
4. Both **topical and oral minoxidil** can be helpful treatments not only for female pattern hair loss, but also for scarring alopecias. Oral minoxidil (off-label) is generally well tolerated, but risks of the medication include : **Edema, weight gain (due to fluid retention), hypertrichosis, orthostatic hypotension, pericarditis, pericardial effusion/cardiac tamponade, and angina pectoris exacerbation** (the latter three which are fortunately rare but are listed as a US boxed warning). Expert recommendation for target dose is 2.5 mg a day for women and 5 mg a day for men. However, **titrating up** to that dose gradually and monitoring for adverse effects are needed.
5. **Spironolactone** (off-label) is an effective systemic medication for women with female pattern hair loss. Further, when used in combination with oral minoxidil, **spironolactone can help the unwanted side effects** of hirsutism and edema from the oral minoxidil. Adverse effects from spironolactone include: **Hyperkalemia, gynecomastia, teratogenicity, menstrual irregularities, urinary frequency, and hypovolemia.**

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