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Female Pattern Hair Loss

Female pattern hair loss (also called androgenetic alopecia) is a common type of hereditary hair thinning. Although hair may become quite thin, women do not become bald as in men. Hair thinning starts as early as the teenage years, but usually in the twenties and thirties and is usually fully expressed by the age of 40.

How can one recognize female pattern hair loss?

- Typically, a female in her teens, twenties or thirties gradually becomes aware that she has less hair on the top of her head than previously.
- She may notice that her scalp has become slightly visible now and it takes more effort to style the hair to hide the thinning.
- The size of the ponytail becomes smaller in diameter.
- While all this is happening, she may also notice that her hair becomes greasy and stringy more quickly and she shampoos more often to keep the hair looking fuller volume.

- One of the earliest signs of androgenetic alopecia is widening of the 'central part' (down the middle of the scalp). The spacing between hairs gradually increases. The thinning gradually becomes diffuse and may be present all over the scalp but is usually most pronounced over the top and sides of the head.

- There is much variation in the diameter and length of hairs – some are thick and long while others are fine and short. This variation in size represents the gradual miniaturization of hair follicles- they become smaller and smaller.

What causes female pattern hair loss?

- This form of hair thinning is a normal hereditary trait that is influenced by two factors – the normal male hormone called testosterone and heredity.
- The influence of the normal male hormone on hair follicles that are programmed to genetically get thinner causes their miniaturization over time.
- Smaller follicles produce hair that is finer and shorter.
- The miniaturized hairs are still present and the possibility still exists to reverse this process and re-enlarge the hair follicles. This is what treatments like Minoxidil help to do.

Does female pattern hair loss come from mother's side or father's side of the family?

- Contrary to popular belief, the genetic trait can be inherited from both sides of the family – mother or father (or both sides).
- Affected members in the family may have varying degrees of thinning.

How common is this condition?

- Female pattern hair loss is common.
- At least 50 % of women will be affected by this type of thinning.
- We are less aware of it in women because it tends to be milder than in men. Furthermore, women tend to be more self-conscious and embarrassed by this trait and do not talk about it freely.
- For all these reasons, there is much less public awareness about hereditary thinning in women.

Do women with female pattern hair loss have too much male hormone?

- No – normal levels of the male hormone are present in most cases (85% or more).
- The difference is that the hair follicles are MUCH MORE SENSITIVE to the normal male hormone.

Do I need any hormone tests as part of my blood work?

- In most cases, the answer is 'no'.
- However, if there are certain findings on your history or hair examination your doctor may order these tests. This includes, irregular periods, infertility, excess facial hair severe acne and milky breast discharge.

What treatments are available?

Although there is no cure, there are several treatment options available to women with hair loss. Feel free to discuss any of these treatments with your Dr. Donovan.

1. **Minoxidil (Rogaine and others).** This is the first approved treatment for promoting hair growth. Although the effect is not very strong, if applied properly, the effect is real. Many studies have shown that it produces a substantial increase in partially thicker and longer hairs and women whose scalps are visible will usually enjoy improved coverage of the scalp. Topical minoxidil does not completely reverse the thinning process. It must be applied twice daily for one year before judging its efficacy. Treatment must be continued.
2. **Hormonal blocking treatments** – (Spironolactone, oral contraceptives and others). In certain cases, these may be helpful. These treatments are not effective for all women with hair loss, and your doctor can advise if these may be helpful for you.
3. **Hair Transplantation.** Many women with female pattern hair loss can greatly improve the density of hair on top of the scalp with hair transplantation. This is an out-patient day long surgical procedure whereby hairs are removed from the back of the scalp and individually placed into the front and top of the scalp where there is thinning. The new hairs grow out over the next 6-12 months.
4. **Laser hair treatment** – Some laser devices have shown evidence of being helpful in women.
5. **Platelet rich plasma therapy** – A newer treatment, PRP has shown benefit in many women.
6. **Wigs and camouflage.** Women the substantial thinning may use small hair pieces or full wigs. There is a large selection and these are safe. Contrary to popular belief, wigs do not harm the hair in any way and do not accelerate the thinning process. Camouflaging agents are over the counter products (hair fibers, sprays) that cover areas of thinning.

Dr. Donovan – Articles on Female Pattern Hair Loss

ARTICLE 1: ANDROGENETIC ALOPECIA IN WOMEN: CAN I STILL HAVE IT IF MY HORMONES ARE LOW?

AGA in Women with Low Androgens

I'm often asked on various blogs and posts how it's possible to have androgenetic alopecia if a woman's androgen levels are normal or low. Many individuals have received a diagnosis of androgenetic alopecia and once their blood tests return normal, then have questions:

Is the diagnosis wrong?

How could I possibly have AGA if my androgens (testosterone, DHEAS, etc) is normal?

AGA in Women is best called FPHL

One must always keep in mind that androgenetic hair loss in women has much less to do with male hormones than it does in men. MOST women with AGA have normal hormone levels. In fact, about 90 % have normal hormone (androgen) levels. Treatments for AGA in women can still be helpful in many despite normal or low - normal levels. For this reason, many dermatologists choose to call female androgenetic alopecia "*female pattern hair loss (FPHL)*" rather than ANDROgenetic alopecia to de-emphasize the role of androgens.

Summary

There are many complex mechanisms that lead to the development of AGA in women. For many women, androgenetic alopecia has little to do with androgens. For some it has a lot to do with androgens and for some it probably has nothing to do with androgens

ARTICLE 2: ELEVATED TESTOSTERONE LEVELS IN WOMEN WITH HAIR LOSS

There are many causes of elevated testosterone levels in women. Slightly elevated levels can sometimes be considered 'normal' with no underlying issues to be concerned about. Many patients with increased androgen levels have polycystic ovarian syndrome or underlying endocrine issues such as Cushing syndrome. However, elevated but can sometimes be associated with serious underlying conditions, including cancer. Patients with rapid onset of symptoms and signs along with hormone levels that are well above normal need rapid medical attention for proper diagnosis.

What is the 'cut off' for normal?

There are no hard and fast rules when it comes to cut off numbers. A full story is needed from the patient including how fast the symptoms appeared and how many symptoms are present. Is it hair loss? Is acne present? How about increased hair growth on the face (i.e. hirsutism)? Is the patient menopausal or post menopausal? Are menstrual cycles regular? Has there been weight loss or gain? Does the patient have increasing pain anywhere ? How about fatigue levels?

Cancers of the adrenal gland and ovaries

Cancers of the adrenal gland are rare and about 2 new cases are diagnosed every year per 1 million people. Cancers of the ovary are more common and currently ovarian cancer is the sixth most common cancer in women. Less than 1 % of patients presenting with hirsutism and other signs of hyperandrogenism have an ovarian or adrenal tumor - but it is important to diagnose early.

Generally speaking a plasma testosterone concentration three times above the normal level (i.e. above 8.7 nmol/L or 200 ng/dL) with a normal DHEAS level raises the suspicion that the patient could have an underlying benign or malignant ovarian cause of their symptoms. Furthermore, a plasma testosterone

concentration three times above the normal level (i.e. above 8.7 nmol/L or 200 ng/dL) with an elevated DHEAS level (above 16.3 umol/L or 600 ug/dL) raises the suspicion that the patient could have an underlying benign or malignant adrenal cause of their symptoms. It could of course be normal, but when levels are in this range - a full work up is mandatory.

Further testing with elevated androgens

Further testing may be advised depending on the degree of hormone elevation and associated signs and symptoms. Generally a full hormonal panel with free and total testosterone, DHEAS, LH, FSH, estradiol, SHBG, prolactin, 17 hydroxyprogesterone and TSH are ordered. Other tests include AFP (alpha fetoprotein) and B-hCG may be ordered. A pelvic ultrasound or CT scan may be ordered for women with markedly elevated levels. Further stimulation and suppression testing (i.e a dexamethasone suppression test for a potential androgen secreting adrenal tumor) may be ordered upon referral to an endocrinologist.

Conclusion

There are many causes of increased androgens in women. When associated with increased hair growth on the face, irregular periods, acne or hair loss, androgen hormone levels are frequently elevated. Conditions such as polycystic ovarian syndrome (PCOS) or ovarian hyperthecosis are common and frequently responsible. However, women with markedly elevated androgen levels (especially three times above normal) require a full work up including referral to endocrinology, radiology and gynaecology specialists

Reference

Pugeat M et al. Androgen secreting adrenal and ovarian neoplasms. Contemporary Endocrinology: Androgen Excess Disorders of Women: Polycystic Ovarian syndrome and other disorders. Second Edition. Humana Press.

ARTICLE 3: CAN FINASTERIDE (PROPECIA) BE USED IN WOMEN?

Finasteride is not FDA approved for women. That does not mean we never use finasteride in women - in fact, I sometimes do prescribe this medication. The fact that it is not FDA approved just alerts us that there are important reasons to consider as to why it is not approved.

Does FDA approval matter?

FDA approval does matter. It directs us to consider that considerable review has been done to evaluate that safety of a given medication. However, readers must keep in mind that 99 % of the medications that a hair loss doctor uses are not FDA approved!! When a medication that is not FDA approved is used, we say that this is a so called 'off label' use.

When I use minoxidil for alopecia areata, I'm using the medication in an 'off label' manner. Minoxidil is not FDA approved for alopecia but but sure can help many patients. In fact - there is not a single medication on the planet that is FDA approved for alopecia areata.

When I use Plaquenil for lichen planopilaris, I'm using the medication in an 'off label' manner. Plaquenil is not FDA approved for lichen planopilaris but but sure can help many patients. In fact - there is not a single medication on the planet that is FDA approved for lichen planopilaris.

When I use clindamycin for folliculitis decalvans, I'm using the medication in an 'off label' manner. Clindamycin is not FDA approved for folliculitis decalvans but but sure can help many patients. In fact - there is not a single medication on the planet that is FDA approved for folliculitis decalvans.

When I use minoxidil and steroid injections for traction alopecia, I'm using these medications in an 'off label' manner. Minoxidil and steroid injections are not FDA approved for traction alopecia but but sure can help many patients. In fact - there is not a single medication on the planet that is FDA approved for traction alopecia.

ARTICLE 4: FINASTERIDE FOR WOMEN – IT’S OFF LABEL

When I use finasteride for androgenetic alopecia in women, I'm using these medications in an 'off label' manner. Finasteride is not FDA approved for androgenetic alopecia but sure can help many patients.

Some medications are appropriate for a given patient others are not. One really needs to sit down with a physician and discuss. Even Rogaine is not advised for some women (heart conditions, heart rhythm problems, pregnancy, other hormone abnormalities such as pheochromocytoma).

Some physicians never prescribe finasteride to women regardless of age. Some physicians only prescribe to post menopausal women. Some physicians will prescribe to premenopausal with appropriate counseling on the risks during pregnancy and prescription of appropriate birth control.

Finasteride must never be used by women who may become pregnant. Women with strong histories of estrogen dependent cancers (breast, ovarian, gynaecological cancers) should also review use with their doctors. This includes breast, ovarian and other gynecological cancers. Women with depression should also have a thorough discussion as to whether this drug is appropriate for them or not.

ARTICLE 5: ARE HAIR TRANSPLANTS A GOOD OPTION FOR WOMEN?

Hair transplantation in women

Hair transplants can sometimes be a good option for women with androgenetic alopecia, but much less commonly than for men. I don't think this is well understood, even among the medical community. Here are the top 3 reasons why women are far less likely to be deemed good hair transplant candidates.

1. The patient has diffuse thinning making the donor area weak.

Many women have a pattern of hair loss whereby hair loss and thinning occurs at the top, sides and back. In other words, the hair thinning is affecting everywhere. We call this diffuse hair loss. Diffuse hair loss affects a large proportion of women with androgenetic alopecia. In contrast, men rarely have a diffuse pattern of hair loss.

The reason the diffuse pattern is important to identify is that hairs taken from a thinning area from the back of the scalp and transplanted into the front will thin out over time, making the hair transplant unsuccessful.

If the female patient does not have thinning in the back of the scalp and the physician predicts she will never have thinning in the back of the scalp... then the patient may be a good candidate for hair restoration (provided point 2 and point 3 below are met).

2. The patient has more than one reason for their hair loss.

Hair loss in women is far more complex than for men and many women have two (and even three) reasons for their hair loss. Women with only one reason for the hair loss do better with hair restoration procedures. If there is a component of telogen effluvium or cicatricial alopecia, these individuals usually do not have good results with hair transplant procedures.

3. The recipient area is not thin enough making it possible for a hair transplant to cause hair damage and worsening of hair loss.

The recipient area (are to be transplanted) needs to be of a certain density to effectively accommodate new grafts. In the early stages of thinning, the patient appreciates their is a reduction in density in the area, but has not experienced sufficient hair loss to make a hair transplant a good option. In many of these cases, attempts to do a hair transplant can sometimes lead to worsening of hair loss, or no change in density. Of course, the transplant can also be a success sometimes - but decisions to proceed with surgery come with a risk.

Conclusion

Approximately 30,000 women undergo hair transplants every year in the world. Many have success but many do not. Overall, it is important to understand that not all women are good candidates for surgery. An experienced hair physician can help a patient understand her chances of getting an improvement with surgery before undergoing the procedure. If the patient has diffuse thinning, multiple types of hair loss and the hair loss is in too early of a stage ... one may not achieve expected results.

ARTICLE 6: FEMALE ANDROGENETIC ALOPECIA: WHAT ARE THE FEATURES?

Female genetic hair loss is a common cause of hair loss in women. 40% of women by age 60 will have this condition.

Female genetic hair loss has many names, including "female pattern hair loss", "female androgenetic alopecia", "female balding", "female thinning", and the "female equivalent of male balding". The preferred term is female pattern hair loss or "FPHL". Women with FPHL develop hair loss in the centre of the scalp. Usually the front of the scalp is not affected. Hair thinning can also occur at the sides and the back of the scalp. This type of thinning is referred to as diffuse loss.

This type of hair loss is easily confused with other types of hair loss. Women with FPHL initially develop increased hair shedding. A common misdiagnosis at this stage is 'telogen effluvium' - causing extensive work up for things such as low iron or thyroid problems. FPHL causes shedding in the early stages.

Up close exams help confirm the diagnosis. Hair follicle miniaturization (see arrow) is an important feature - hairs that were once 70 micrometers in diameter thin to well under 40 micrometers. The abundant normal groupings of 2 and 3 hairs coming out of a single pore are no longer present - most hair follicle pores contain just 1 or 2 hair bundles.

Biopsies are not typically required for a diagnosis but rather a careful up close examination, review of the full history and review of blood tests results. Most women with FPHL have normal blood test results. Only 10-15 % have elevated androgens.

Treatments include minoxidil, hormone blocking medications, low level laser, platelet rich plasma and hair transplantation.

Article 7: FEMALE "ANDROGENETIC" ALOPECIA: DO ALL WOMEN HAVE A FAMILY HISTORY ?



Female androgenetic alopecia also known as female pattern hair loss. Some people refer to it as the female equivalent of male balding.

Androgen hormones and genetics have a very clear role in men. For women, it is not as clear. Not all women improve their female pattern hair loss with antiandrogen medications - and not all have a clear genetics.

Between 15 to 30 % of women with female pattern hair loss do not have a strong family history of balding.

We still have a ways to go in understanding the role of hormones and genetics in female hair thinning.

Reference

Siah et al. Int J Trichology. 2016 Apr-Jun;8(2):57-61.

ARTICLE 8: HORMONE LEVELS AND USE OF SPIRONOLACTONE FOR TREATING FEMALE PATTERN HAIR LOSS:

Do my hormone levels have to be high in order for me to benefit from spironolactone?

Spironolactone is a hormone blocking pill using to treat genetic hair loss in women (also called female pattern hair loss or "FPHL". Spironolactone can reduce the levels and androgens by the adrenals and ovaries. Studies dating back to 2005 showed the spironolactone can stop hair loss in about 40 % of women and increase hair density in 40 % of women.

The importance of these early findings was the observation that hormone levels at initiation of therapy did not matter. Women with higher hormone levels (ie higher DHEAS and higher total testosterone) were just as likely to benefit as women with lower or normal levels of these hormones.

Overall, this study was very important as it suggested that hormone levels in female patients do not necessary sway the decision as to whether to use spironolactone or not.

REFERENCE

Treatment of female pattern hair loss with oral anti androgens. Sinclair R, et al. Br J Dermatol. 2005.

ARTICLE 9: CHOICE OF ORAL CONTRACEPTIVES IS IMPORTANT FOR WOMEN WITH ANDROGENETIC HAIR LOSS

Androgenicity of 'combined' birth control pills

First approved in 1960, there are now many different brands of oral contraceptives on the market. One common class of oral contraceptive pills are those which contain an estrogen component and a progestin component. These so called "combined OCPs" are the most popular of the birth control pills. Today, I'd like to highlight an important topic: the "androgenicity" of oral contraceptive pills or "OCPs."

The Estrogen Component.

Significant attention has been given in recent years to making oral contraceptives safer by reducing the estrogen dose. Many modern OCPs contain 20-35 micrograms of estrogen (ethinyl estradiol) compared to 50 micrograms or higher in years past.

The Progestin Component.

What is sometimes forgotten in the discussion of OCPs is that the progestin component is important to consider as well, especially for women with androgenetic alopecia. Some progestins are significantly more 'androgenic' than others.

In general, all oral contraceptives are "anti-androgenic" to some degree as they function by reducing the production of androgens by the ovaries. But because the progestin that makes up the OCP differs, this translates into a scale of

'androgenicity' for oral contraceptives with some being less androgenic than others.

The least 'androgenic' progestins often added to OCPs include norethindrone, norethindrone acetate, desogestrel, norgestimate and drospirenone. The most 'androgenic' progestins in OCPs have names like levonorgestrel and norgestrel. However, it's not so simple as to say that the androgenic progestins are bad and the least androgenic are better: the combination of an estrogen with the progestin to make up the combined OCP alters the pill's overall androgenic potential. For example, even the levonorgestrel is an androgenic progestin, it has such a low amount of progestin in many OCPs, that the OCP might actually itself have a low androgenicity rating.

My preferences for starting an OCP

Overall, one should always speak to their physician before starting or changing a birth control. My preference for women with androgenetic alopecia who decide to start a birth control pill is to choose one with 1) low androgenic activity overall and 2) a progestin with low androgenic activity. My advice may be slightly different if someone is already on a certain type OCP. The importance of the 'androgenicity' of the OCP does not carry the same relevance if the woman does not have androgenetic alopecia.

Low androgenicity OCPs include : ortho tri-cyclen (contains norgestimate), ortho-cept or desogen (contains desogestrel), modicon (has norethindrone), ortho cyclen has (norgestimate), demulen (has ethynodiol diacetate), and ortho 777 (has norethindrone).

Other OCPs may also have low androgenicity and all women should speak to their physicians before starting or changing any oral contraceptive. Oral contraceptive use may not be appropriate for everyone.

ARTICLE 10: PCOS RELATED HAIR LOSS - MORE THAN ONE TREATMENT NEEDED

Multimodal treatments are usually necessary for PCOS. The ideal is usually a combination of minoxidil, oral contraceptives, spironolactone and low level laser. I always advise that patients see their dermatologist or endocrinologist for advice. Certainly, these treatments aren't appropriate for everyone. inoxidil helps 30 % of women with genetic hair loss, but not everyone. It helps halt loss and may improve hair density a bit. It can thicken hair a little bit and promote growth of dormant hair. As many are aware, shedding is common in months 1 and 2.

PCOS related thinning usually requires more than 1 treatment for most effective results. I like to add zinc (periodically) and selenium to my general recommendations as well.

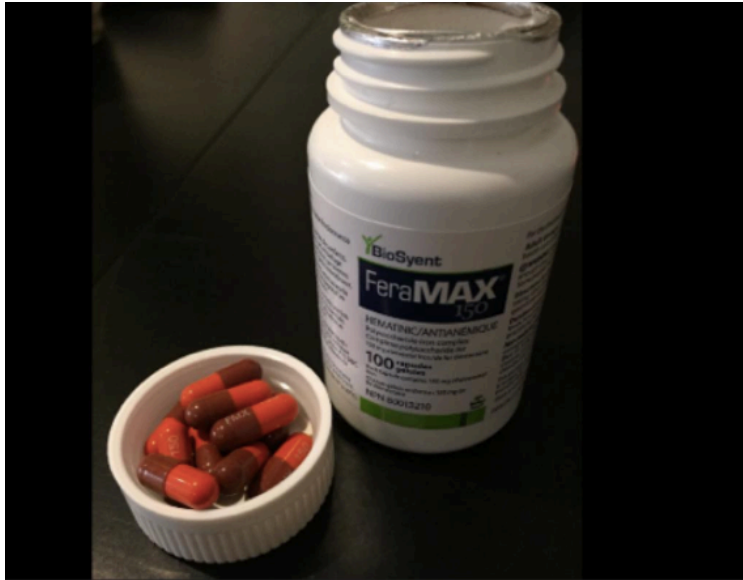
Razavi et al studied the effect of receiving either 200 µg selenium daily (n=32) or placebo (n=32) for 8 weeks. Jamilian et al studied the effect of 220 mg zinc sulfate (containing 50 mg zinc) (n = 24) or placebo (n = 24) for 8 weeks. Although the short in duration, both studies showed an improvement in various clinical parameters and improved hair growth.

REFERENCES

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Jamilian M, Foroozanfard F, Bahmani F et al. Effects of zinc sypplementation on endocrine outcomes in women with polcystic ovarian syndrome: a randomized, double-blind placebo controlled trial. *Biol Trace Elem Res.* 2015 Aug 28.

ARTICLE 11: THE IMPORTANCE OF CHECKING IRON



The discussion of iron and hair growth is controversial. Some studies have shown no clear cut relationship ... and yet others have! Our cut off in the clinic for what is considered a normal ferritin level is 40 micrograms/L. Very rarely, I aim for 70.

In 1992, Drs Rushton and Ramsay conducted a study looking at women with genetic hair loss who were being treated with an antiandrogen medication (called cyproterone acetate). The researchers showed that women with iron levels above 40 had much better results with the antiandrogen pill than women who had iron levels below 40.

Conclusion:

It's clear that treating hair loss requires careful attention to many parameters, including the patient's iron status.

Reference

Rushton DH, et al. The importance of adequate serum ferritin levels during oral cyproterone acetate and ethinyl oestradiol treatment of diffuse androgen-dependent alopecia in women. *Clinical Trial. Clin Endocrinol (Oxf)*. 1992.

