

## A Note on Causes of Pattern Hair Loss

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### DESCRIPTION

The top and front of the scalp are most commonly affected by the hair loss syndrome known as pattern hair loss. Male-pattern hair loss commonly manifests as either a receding front hairline, loss of hair on the scalp's vertex, or a mix of the two. Female-pattern hair loss frequently manifests as an all-over diffuse thinning of the hair. A combination of oxidative stress, the scalp's microbiome, genetics, and circulating androgens, particularly dihydrotestosterone, appear to be responsible for male pattern hair loss. It has been determined that men with early-onset androgenic alopecia (before the age of 35) are the male phenotypic counterparts of polycystic ovary syndrome. AGA is linked to an increased risk of cardiovascular illnesses, glucose metabolism disorders, type 2 diabetes, and prostate enlargement as an early clinical presentation of insulin resistance and metabolic syndrome. Although the underlying reason of female pattern hair loss is still unknown, androgenetic alopecia is linked to a higher risk of polycystic ovarian syndrome in women. Accepting the condition outright or shaving one's head to make the condition more aesthetically pleasing are both possible forms of management. Otherwise, frequent medical procedures include hair transplant surgery, minoxidil, finasteride, and dutasteride. Finasteride and dutasteride use in women is not thoroughly studied and, if taken while expecting, could lead to birth abnormalities. By the age of 50, roughly half of men and a quarter of women experience pattern hair loss.

It is by far the most typical reason for hair loss. Male patients with early-onset AGA (before the age of 35) and younger male patients both showed greater rates of metabolic syndrome and insulin resistance. Studies have shown that the prevalence of metabolic syndrome is almost 4 times higher in younger guys, which

which is clinically important. For younger groups, the prevalence of abdominal obesity, hypertension, and low HDL was also significantly higher.

### Causes

**Hormones and genes:** The pilosebaceous units of hair follicles are initially programmed in utero. When compared to individuals without pattern hair loss, men with premature androgenic alopecia typically have lower than normal levels of sex hormone-binding globulin, follicle stimulating hormone, testosterone, and epitestosterone. Although it was often believed that hair follicles in areas of full hair loss were permanently lost, more recent investigations have revealed that these cells are really dormant on the scalp, where the follicles' original stem cells and progenitor cells originated. The activity of the insulin-like growth factor at the dermal papillae, which is impacted by DHT, has been linked to the growth and dormancy of hair follicles, according to transgenic research. Around birth and during puberty, androgens are crucial for the development of male sexuality. They control libido, apocrine hair development, and sebaceous glands. The "androgen paradox" is the phenomenon where, as people age, androgens promote facial hair development while suppressing it at the scalp vertex and temples. The levels of DHT and free androgens, as well as total and unbound/free testosterone, are frequently higher in men with androgenic alopecia. The largest concentrations of 5-alpha-reductase, which turns free testosterone into DHT, are found in the prostate and scalp. The process of testosterone's 5-reduction produces DHT most frequently at the tissue level. It has been identified which genetic sequence codes for this enzyme. Additionally, it has been proposed that prolactin differs according to gender in how it affects the hair follicle.

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