Female Pattern Hair Loss – Hormone Treatment Solutions

As many as 21 million women will experience hair loss at some point in their lives[1]. While hair loss is linked to genetic factors, so far, no GWAS have identified clear genetic mutations which contribute to hair loss [2]. Although scalp hair is not biologically essential, the impacts of hair loss on how women feel about themselves is profound. A 2002 study[3] found that 55% of affected women displayed symptoms of depression. However, the effects of alopecia reach far beyond symptoms of depression and include anxiety, obsessions, dissatisfaction with one's appearance, and low self-esteem[4,5]. There can be significant disturbance in a patient's social life because they may change their hair style, clothing, or avoid social meetings. One study reported that 40% of surveyed women described marital problems and 63% had career-related issues that they ascribed to their hair loss[6].

There are a range of conditions and situations that contribute to Female Pattern Hair Loss (FPHL) including telogen effluvium, nutrition deficiencies, poor quality nutritional supplements, endocrine imbalances, drugs, infection, disease, and malignancy.[7] Looking particularly at endocrine changes, an excellent article Hormonal Effects on Hair Follicles[8] published this year is well worth a read. The article includes a comprehensive summary of hair growth phases, a review of androgenic, sex hormone, and stress hormone impacts on hair growth and resilience, and then looks at the hormonal effects on hair at different stages of a woman's life.

A common thread of discussion of female pattern hair loss is the correlation of metabolic syndrome, with or without PCOS. When there are insufficient levels of estrogen and/or progesterone, as commonly occurs with PCOS, the hypothalamus will be triggered via negative feedback to produce Gonadotropin Releasing Hormone and stimulate the anterior pituitary to produce Follicle Stimulating Hormone which then triggers Luteinizing Hormone (LH) production. LH will, in turn, stimulate production of androgens. Androgens exert an inhibitory effect on the hair follicles in the region of the scalp[9], in particular, through miniaturization of the hair follicle[10]. When saliva testing has established elevated testosterone levels in PCOS patients, maintaining adequate levels of progesterone goes a long way to ensuring that testosterone levels remain within range.

The role of estrogen and progesterone in the treatment of hair loss and growth is still evolving. Estrogen is made when androstenedione or testosterone are modified by the enzyme aromatase. It is synthesized in the ovary and other peripheral tissues and then travels to its receptors, some of which are located in scalp hair follicles[11]. At the scalp follicle, estradiol has been reported to induce aromatase activity[12]. Estrogen has been hypothesized to have a protective role against hair loss on the basis of the observation that patients with lower estrogen levels during menopause, postpartum, or treatment with aromatase inhibitors or selective estrogen receptor modulators are more likely to develop FPHL[13,14]. Another supporting observation is that in the frontal hairline of women, which tends to be spared with FPHL, there is a higher level of aromatase enzyme when compared with the rest of the scalp[15]. This variation in hair loss could be

the result of locally increased levels of estradiol or decreased levels of testosterone and DHT that is secondary to greater amounts of conversion.

In post-menopausal women when both progesterone and estrogen levels are significantly lower, there is the potential for imbalance between androgens and progesterone and estradiol. While maintaining adequate testosterone and DHEA levels is vital for a range of functions, ensuring that androgens are balanced with adequate estrogen and progesterone is a treatment consideration for a range of symptoms, including FPHL.

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