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Review Article

A cross-specialty expert opinion on the management of hair loss in gynaecological and endocrinological disorders in Indian patients

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ABSTRACT

Hair loss, aggravated by modern social demands and work–life pressures, significantly impacts psychosocial well-being. Disorders affecting both the endocrine and gynaecological systems can induce diverse modifications in the intrinsic mechanisms governing hair growth and its cyclic pattern, resulting in hair loss. Nutritional deficiencies can affect both hair structure and growth in conditions such as telogen effluvium, androgenetic alopecia, female pattern hair loss and alopecia areata. Studies indicate that hormonal imbalances and disruptions in the hair growth cycle may benefit from proper nutritional support. Therefore, the key management strategies include lifestyle modifications, nutritional support and medical interventions such as hormone replacement therapy and topical treatments. Addressing underlying endocrine and nutritional deficiencies is crucial. This consensus provides a comprehensive overview of hair loss disorders associated with endocrine and gynaecological conditions, including hypothyroidism, hyperthyroidism, polycystic ovary syndrome and hair loss occurring during postmenopausal and postpartum periods. It emphasises the importance of a multidisciplinary approach for effective management, involving collaboration between dermatologists, nutritionists, endocrinologists and gynaecologists. This collaborative approach ensures a holistic and effective treatment plan for patients experiencing hair loss, offering a well-rounded perspective on improving patient outcomes.

Keywords: Hair loss, Hormones, Endocrine disorders, Gynaecological, Nutrition, Topical treatment

INTRODUCTION

With the rapid upsurge in social demands and work–life pressure, hair loss has become a common issue that causes substantial mental and psychological burdens on individuals. Various factors—including trauma, mental stress, genetics, endocrine imbalances, physical stress and chemical exposure—can lead to significant hair loss, impacting both appearance and mental health.[1]

Androgenetic alopecia, commonly known as male or female pattern baldness, represents the most prevalent form of hair loss, afflicting a minimum of 80% of men and approximately 50% of women by the age of 70 years, with the incidence increasing with age.[2] Research has indicated that hair loss can lead to a range of psychological challenges, including anxiety, depression and trauma, ultimately exacerbating the decline in quality of life (QoL).[3]

Hair growth, cycling and density are primarily influenced by endogenous factors, particularly circulating hormones. Consequently, disorders of the endocrine system can lead to significant alterations in normal hair growth and cycling.[4] Research highlighted a notable prevalence of micronutrient deficiencies among healthy individuals

experiencing hair loss, regardless of the alopecia type.[5] Additionally, nutritional support has been shown to help restore hormonal balance and regulate hair growth cycles.[6]

Therefore, collaboration across medical disciplines is indispensable in navigating the intricate landscape of hair loss management.[4] An interdisciplinary approach involving dermatologists, endocrinologists, gynaecologists and nutritionists allows for a more nuanced understanding of individual cases and the development of tailored treatment strategies that encompass both medical interventions and nutritional and lifestyle modifications.

The present consensus endeavours to offer an extensive overview of different hair loss disorders linked with common endocrine and gynaecological conditions, including hypothyroidism, hyperthyroidism, polycystic ovary syndrome (PCOS) and obesity, among others. This highlights the critical role of interdisciplinary collaboration in efficiently addressing and managing these conditions for the successful management of hair loss.

METHODS

A panel of 34 experts in dermatology, endocrinology and gynaecology from across India participated in three focused group meetings. Each meeting was facilitated by a chairperson who guided discussions on various hair disorders associated with hyperthyroidism, hypothyroidism, diabetes, and obesity, and their management. Following these discussions, expert opinions were recorded. The discussions gathered from all the meetings were compiled to finalise the expert opinions, which were unanimously endorsed by all participating experts.

ROLE OF HORMONES IN HAIR LOSS

Androgens influence hair follicle cells through intracellular androgen receptors (ARs) located in the dermal papilla cells of human hair follicles.[7] In male pattern hair loss (MPHL), extensive studies have shown increased AR expression and increased dihydrotestosterone (DHT) formation in the scalp, highlighting the significant impact of androgens on altering *Wnt* expression. However, data regarding female pattern hair loss (FPHL) are less conclusive. Many women with FPHL exhibit normal androgen levels, and FPHL can also occur in individuals without ARs. Furthermore, AR content in the scalp is generally higher in the frontal region than in the occipital region for both men and women, higher in men than in women and more pronounced in balding areas than in non-balding areas.[8] Zinc deficiency has been found to impair the activity of angiotensin-converting enzyme, which plays a role in the synthesis of adrenal androgens. Since the DNA-binding domain of the AR is a zinc finger protein, zinc levels can influence androgen function, with deficiency shown to reduce the receptor's activity.[9]

Oestradiol is vital in regulating hair follicle growth and the hair cycle by binding to high-affinity oestrogen receptors. It also impacts androgen metabolism, such as inhibiting aromatase activity, which is responsible for converting androgens into oestrogen.[7] Progesterone affects hair follicle growth both centrally and locally. Centrally, it inhibits luteinising hormone (LH) secretion, leading to reduced stimulation of ovarian theca cells and decreased androgen synthesis. Locally, it reduces the conversion of testosterone to DHT by inhibiting the activity of 5-alpha reductase.[7]

The human skin, including hair follicles, is significantly affected by the hypothalamic-pituitary-thyroid (HPT) axis, which regulates numerous metabolic functions.[7] Clinically, individuals with thyroid disorders often exhibit noticeable hair abnormalities. Hypothyroidism can manifest as telogen effluvium (TE), characterised by dry, brittle, dry and dull hair shafts. Conversely, hyperthyroidism may also result in TE, accompanied by thinning hair shafts and brittle, greasy hair, despite an apparent increase in hair matrix proliferation. Additionally, hair shafts in individuals with hyperthyroidism demonstrate markedly reduced tensile strength.[10]

Research indicates a reciprocal relationship between serum thyroid-stimulating hormone (TSH) and vitamin D levels in individuals with hypothyroidism. It was observed that administering 50,000 IU of vitamin D in patients with hypothyroidism reduced TSH and parathormone levels, although it had no significant impact on serum thyroxine (T3 and T4) levels.[11]

Prolactin (PRL) is acknowledged for its involvement not only in lactation but also in hair growth. Its role in directly regulating hair growth is associated with inhibiting hair shaft elongation and prematurely inducing the catagen phase. PRL seems to elevate free testosterone and dehydroepiandrosterone sulphate levels while reducing serum testosterone-oestradiol-binding globulin levels. Additionally, PRL appears to hinder the activity of 5-alpha reductase, a key factor influencing the manifestation of androgenicity.[7,12]

The findings of the recent study by Jassum et al align with the notion that decreased serum PRL and vitamin D levels contribute to the reduced hair density in patients with FPHL. Compared to controls, the mean vitamin D levels were significantly lower ($p<0.001$), whereas serum PRL levels were notably higher ($p<0.05$).[13]

Melatonin plays a role in regulating hair growth both directly and indirectly. Its direct influence involves modulating serum PRL levels. Melatonin also affects hair follicle response to oestrogens, reducing the expression of oestrogen receptors within the follicle.[7]

Cortisol, a steroid hormone produced by the adrenal glands, impacts hair growth as well. High cortisol levels

are associated with decreased synthesis and premature degradation of hyaluronans and proteoglycans, essential for hair follicle function. Conversely, low cortisol levels can have a positive effect on hair growth by slowing down the degradation of these skin components.[7] Thyrotropin-releasing hormone (TRH) originates in the hypothalamus and primarily regulates the release of TSH and PRL. Its gene expression extends to various organs, including the hair follicle, where it promotes hair shaft elongation as well as extends the growth phase of the hair cycle.[7]

Galanin, another neurotransmitter, is produced by and acts on the human hair follicle. It functions as an inhibitor of hair growth by diminishing the proliferation of matrix keratinocytes, shortening the anagen phase and reducing hair shaft elongation.[7]

EXPERT CONSENSUS STATEMENT

The expert panel suggests paying attention to hair loss complaints in patients with diverse endocrinological and gynaecological conditions, including hypothyroidism, hyperthyroidism, PCOS, adrenal gland disorders, postpartum periods, menopause, insulin resistance, vitamin deficiencies, anaemia, obesity (especially post-weight loss) and during post-COVID recovery.

Discussion among the panel experts highlighted that around 20–30% of patients presenting with endocrinological or gynaecological issues visit the clinic due to concerns about hair loss, with approximately 60% of these cases being females and 40% being males.

ENDOCRINE DISORDERS ASSOCIATED WITH HAIR LOSS

Hair loss associated with hypothyroidism

Hypothyroidism is caused by thyroid gland malfunctions (primary hypothyroidism) or pituitary or hypothalamic issues (secondary and tertiary hypothyroidism). Numerous studies have highlighted the array of changes in skin, hair and nails associated with thyroid hormone imbalances, occurring in both hyperthyroid and hypothyroid conditions.[14] Worldwide, in approximately 33% of individuals associated with hypothyroidism, hair loss is observed.[15] Hypothyroidism is associated with slow-growing, coarse, dry, thin and brittle hair. Notably, patients may exhibit loss of the outer third of the eyebrow and/or diffuse hair loss. Additionally, patients with hypothyroidism may experience alopecia, together with prolonged shedding (TE), accompanied by brittle, dry and lacklustre hair[15]

Pathophysiology

Hypothyroidism can disrupt the normal division of skin cells and hair follicles, potentially leading to a delay in hair follicle cycling and the transition between growth phases, which may contribute to hair loss or thinning observed in individuals with this condition.[15] In conditions like Hashimoto's thyroiditis **(**HT), autoimmune thyroid disorder is the most prevalent and is characterised by chronic inflammation of the thyroid tissue. It results in hypothyroidism in approximately 20%–30% of patients.[16] Subclinical hypothyroidism associated with HT affects around 5% of patients with alopecia areata (AA).[15] Nutrient deficiency also has a role in hair loss associated with hypothyroidism. Zinc along with other trace elements such as copper and selenium are vital for synthesising thyroid hormones. Deficiency in these nutrients can lead to hypothyroidism, potentially resulting in severe alopecia.[17]

Management

Certain medications used in the management of thyroid disorders can occasionally lead to hair thinning. Differentiating whether the thinning is attributable to the medication or the underlying thyroid condition poses a challenge due to the extended life cycle of hair.[15,18] Addressing hair loss linked to hypothyroidism includes lifestyle adjustments such as stress reduction and consistent physical activity. Dietary interventions may focus on ensuring a balanced diet rich in micronutrients such as iodine, zinc, selenium and iron as well as vitamins A and D.[19]

Expert consensus statement

It is recommended to recognise that hypothyroidism, which affects 15–20% of individuals, frequently results in non-scarring hair loss. This hair loss can often be reversed with thyroid hormone replacement therapy, although substantial improvements in hair density and texture may take several months to become noticeable.

Hair loss associated with hypothyroidism is influenced by various factors, including hormonal imbalances, metabolic changes, nutritional deficiencies, autoimmune factors, stress, medication side effects and genetic predisposition.

Nutritional deficiencies commonly linked with hypothyroidism encompass iron deficiency anaemia as well as deficiencies in vitamin B12, selenium and vitamin D.

Medications such as thyroxine (levothyroxine) used for the treatment of thyroid disorders and radioactive iodine therapy can occasionally induce hair loss as a side effect.

A comprehensive approach for the management of hair loss associated with hypothyroidism involves optimal underlying hypothyroid management, addressing nutritional deficiencies, reducing stress and considering treatments such as topical minoxidil.

Medications (Carbimazole and Propylthiouracil) prescribed for the management of thyroid disorders may occasionally cause hair thinning as a side effect.

Hair loss associated with hyperthyroidism

Hyperthyroidism is also linked with extensive hair shedding.[15] In this condition, there is a rise in hair bulb cell proliferation, consequently increasing the rate of hair fall.[20] In approximately 50% of individuals with hyperthyroidism, hair loss is observed.[15] It can lead to hair shedding, accompanied by a reduction in the tensile strength of hair shafts.[15]

Pathophysiology

Hyperthyroidism stimulates the production of reactive oxygen species (ROS) in untreated individuals, leading to oxidative damage, peroxidation of biomembrane lipids and augmented free radical generation in mitochondria. However, the precise mechanisms through which hyperthyroidism triggers hair loss remain to be elucidated.[15] Graves' disease (GD) is a prevalent autoimmune condition primarily affecting the thyroid, often leading to hyperthyroidism.[21] It is the most common autoimmune disease in patients with AA.[22]

Management

Treatment primarily involves antithyroid drugs, thyroid surgery or radioactive iodine treatment, with an emphasis on tailoring treatment decisions to each patient's specific needs and preferences.[23] Nutrient management plays a crucial role, with iodine-rich foods such as kelp, iodised salt and seafood potentially exacerbating or triggering hyperthyroidism. Therefore, avoidance of these foods is advisable.[24]

Expert consensus statement

Although hyperthyroidism is less common than hypothyroidism, it often presents with more noticeable symptoms, including hair loss.

It is advisable to recognise that in hyperthyroidism, hair loss typically presents as patchy areas of thinning or loss, accompanied by increased shedding. This condition is often linked with GD, an autoimmune disorder affecting the skin and hair, which exacerbates hair loss.

Rapid weight loss may be associated with hyperthyroidism and can lead to nutrient deficiencies, exacerbating hair loss. It is recommended to address various factors contributing to hair loss in hyperthyroidism, such as calcium, vitamin D and selenium deficiencies. Optimal management of the underlying hyperthyroidism, along with stress reduction and the use of topical treatments such as minoxidil, is crucial for effectively managing hair loss in these cases.

Hair loss associated with PCOS

PCOS is a common hormonal and endocrine disorder affecting women after puberty.[25] It affects 5–18% of females globally, with 20–30% of patients with PCOS experiencing FPHL or female pattern alopecia—a typical form of AGA in females, characterised by directed diffuse hair loss on the scalp.[25] PCOS generally results in vertex thinning while preserving the frontal hairline, though central scalp hair loss similar to AGA can occur in rare instances.[25]

Pathophysiology

An increase in circulating ovarian androgens is a hallmark of PCOS, occurring in both ovulatory and anovulatory women.[26] This hyperandrogenism leads to increased levels of 5-alpha reductase and ARs, along with decreased cytochrome P450 enzyme levels. Consequently, these changes result in a shortened anagen phase, miniaturisation of terminal hairs and eventual transformation into vellus hair.[25] Moreover, the enzyme 5-alpha reductase converts testosterone to DHT.[27] In women with FPHL, enhanced DHT formation locally or increased androgen binding to the AR may result from alterations in 5α-reductase, leading to enhanced androgen action in the scalp.[8]

Management

The primary focus of treatment is to alleviate symptoms associated with hyperandrogenism, regulate menstrual cycles and facilitate conception. When addressing infertility linked to PCOS, Letrozole, an aromatase inhibitor, demonstrates superior efficacy compared to Clomiphene citrate (CC). CC is the preferred medication for inducing ovulation in adolescents with PCOS.[28] Dyslipidaemia, marked by elevated low-density lipoprotein cholesterol and triglycerides alongside reduced high-density lipoprotein cholesterol levels in women with PCOS, is a significant predictor of cardiovascular risk. Consequently, enhancing the lipid profile to lower the risk of cardiovascular disease represents an effective therapy for PCOS. Statins have demonstrated efficacy in managing PCOS by aiding in the treatment of dyslipidaemia.[28] Management strategies for PCOS also include supplementation with specific vitamins (B-12, inositols, folate and vitamins D, E and K), vitamin-like nutrients (bioflavonoids and α-lipoic acid), minerals (calcium, zinc, selenium and chromium picolinate) and other compounds (melatonin, ω-3 fatty acids, probiotics and cinnamon). Complementary approaches such as acupuncture and yoga can also be beneficial.[29] Lifestyle modification along with medical treatment is usually recommended.[30] Women with PCOS often exhibit deficiencies in vitamin D, particularly those with higher body weight.[31] Moreover, B-group vitamins (particularly, vitamin B-12) are often deficient in these women.[29]

Expert consensus statement

PCOS is common in women of reproductive age and can cause various symptoms due to hormonal imbalances, including hair loss or thinning hair (androgenic alopecia).

Factors contributing to hair loss in PCOS include hyperandrogenism, insulin resistance, increased sensitivity of hair follicles to androgens, genetic predisposition, nutritional deficiencies (such as iron, zinc, vitamin D and omega-3 fatty acids) and chronic stress.

PCOS-associated hair loss includes irregular menstrual cycles, acne, excessive hair growth, weight gain, migraine and elevated 17-hydroxyprogesterone levels.

Proactive treatment in PCOS focuses on rectifying hormonal imbalances and halting additional hair loss. Treatment modalities encompass combined oral contraceptives (COCs), anti-androgenic medications such as Spironolactone and hormonal therapies such as combined oral contraceptives combined with anti-androgen medications.

Lifestyle modifications, including a healthy diet, regular exercise, stress management and adequate sleep and scalp care, are also essential.

Hair loss associated with type 2 diabetes mellitus

Hair can serve as a universal indicator of hyperglycaemia, reflecting the state of diabetes management. It may also reveal previously undiagnosed diabetes, allowing clinicians to initiate early treatment.[32] Type 2 diabetes mellitus (T2DM) is linked to an increased risk of significant central-scalp hair loss, particularly in women who have had diabetes for at least 10 years and those whose hair loss started before the age of 50 years.[33] Clinically, a high rate of hair loss can indicate poor glycaemic control, with patients with T2DM often experiencing diffuse hair loss.[32]

Pathophysiology

A potential explanation for diffuse and acute hair shedding in patients with diabetes is that damaged blood vessels impair the supply of oxygen and nutrients to hair follicles. This disruption shortens the anagen phase and prolongs the telogen phase in the normal hair growth cycle, leading to alopecia.[34]

Management

Management of T2DM requires more than just pharmacological treatment for long-term success; significant lifestyle changes are crucial. These include increased physical activity, dietary adjustments, stress management and improved sleep patterns, alongside pharmacological interventions to effectively manage the disease.[35] Timely commencement of insulin in patients with T2DM and alopecia restores normal hair growth.[34] Magnesium deficiency is linked to a heightened risk of T2DM, with intracellular free Mg^{2+} levels being lower in individuals with T2DM than in those without diabetes.[36] Additionally, deficiencies in vitamins A and D are also associated with T2DM.[37,38]

Expert consensus statement

Contributing factors for hair loss include hyperinsulinaemia, metabolic abnormalities, high testosterone and hyperandrogenism, which can lead to hair loss in both male and female patients; protein deficiency is also a common cause in males.

In diabetes, microangiopathy, poor peripheral circulation and chronic stress further exacerbate hair loss by reducing blood flow to hair follicles.

Metformin may contribute to hair loss by inducing vitamin B12 deficiency.

The inflammatory response associated with diabetes can indirectly lead to hair loss.

Hair loss associated with type 1 diabetes mellitus

Type 1 diabetes mellitus (T1DM) is a chronic autoimmune condition, characterised by an absolute deficiency in pancreatic insulin production.[39] Clinically, T1DM is associated with focal hair loss, presenting as patches of hair loss on the scalp.[40]

Management

The American Diabetes Association (ADA) recommends that adults with T1DM should participate in 150 minutes of moderate-to-vigorous physical activity each week, ensuring no more than 2 consecutive days without exercise. Prolonged periods of sitting should be interrupted every 30 minutes with light activity. Nutritional therapy should be tailored to individual needs.[41] Regular assessment of vitamin D levels in patients with diabetes is essential to ensure appropriate healthcare delivery.[42] Studies have identified that vitamin D deficiency is strongly associated with T1DM.[42]

Expert consensus statement

Patients with T1DM may experience TE or hypothyroidism, often associated with autoimmune polyglandular syndrome as well as subclinical hypo- and hyperthyroidism. Nutritional deficiencies, potentially compounded by conditions such as anaemia and coeliac disease, along with subtle hepatic disorders and hypoproteinaemia, can contribute to hair loss in T1DM. Therefore, assessing and addressing these factors is crucial in managing hair loss in T1DM.

In diabetes, hyperinsulinaemia associated with conditions such as PCOS can lead to hair loss, acne and hirsutism, highlighting the broader metabolic impacts on hair health.

Hair loss associated with obesity

Obesity has emerged as a global public health concern, with its incidence rising significantly over the past

decade.[43] Obesity can adversely affect hair health. It can result in hair thinning.[44]

Pathophysiology

Obesity can hasten hair thinning by affecting the stem cells in hair follicles. According to a study, patients with AGA exhibit a higher prevalence of metabolic syndrome (MetS) compared to controls.[44] Despite high caloric intake, poor nutritional habits in individuals with obesity lead to deficiencies in essential vitamins, minerals and trace elements necessary for metabolism and normal physiological processes. Moreover, current bariatric surgical procedures can cause or worsen deficiencies in nutrients such as iron, selenium and vitamin B12.[43]

Management

Lifestyle modification is fundamental for weight management, starting with changes in eating habits. Progressive calorie restriction and diet type influence weight regulation, appetite signals and food preferences. Regular physical activity is crucial for maintaining weight loss.[45] Five drugs—Orlistat, Lorcaserin, Liraglutide, Phentermine/Topiramate and Naltrexone/Bupropion—are available for long-term weight management.[46] Additionally, bariatric surgery has recently become a prominent option for managing obesity.[43]

Expert consensus statement

Patients with obesity, particularly after experiencing weight loss, often report concerns about hair loss.

Severity and progression of postmenopausal hair loss can be influenced by obesity.

Effective weight loss and management strategies are advised for individuals with obesity or weight-related issues as they can potentially address and mitigate hair loss problems alongside promoting overall health.

OVERVIEW OF HAIR LOSS IN GYNAECOLOGICAL CONDITIONS

Hair loss in postpartum females

Postpartum hair loss is a significant concern for women, influenced by factors such as the newborn's weight, anaemia, gestational diabetes, stress, history of hypothyroidism and previous experiences of hair loss before, during and after pregnancy.[7] Although precise statistics are challenging to obtain, certain large multicentre studies and organisations such as the American Pregnancy Association suggest that around 40–50% of new mothers may encounter hair loss following childbirth.[47] Postpartum hair loss, a form of diffuse alopecia, typically emerges around 2–4 months after childbirth and persists for approximately 6 months to a year. While the severity varies among individuals, some women experience extensive hair loss across the entire scalp and for prolonged durations.[48] Although diffuse, hair loss is accentuated along the anterior hairline.[49]

Pathophysiology

Endocrine dysfunction and hormonal alterations during pregnancy and after childbirth, iron deficiency resulting from blood loss during delivery, the extension of the anagen (growth) phase during pregnancy and the subsequent increase in the telogen (resting) phase after delivery are associated with postpartum hair loss. This type of alopecia is typically referred to TE.[50] Iron deficiency resulting from blood loss during labour is one of the important factors contributing to postpartum hair loss.[50]

Management

Implementing gentle hair care practices such as using a soft brush, minimising heat styling and avoiding tight hairstyles can help prevent hair breakage and excessive loss. Including iron-rich foods, vitamin C, vitamin D, omega-3 fatty acids, magnesium and beta-carotene in the diet may enhance hair health. Topical Minoxidil is a commonly prescribed medication for addressing hair loss.[38]

Expert consensus statement

Postpartum hair loss, also known as postpartum TE, is a common condition experienced by many women after childbirth.

Typically begins around 3–6 months postpartum and last for 6–8 months depending on the individual's medical condition.

Factors contributing to postpartum hair loss include nutritional deficiencies (such as deficiencies in iron, zinc, biotin and vitamin D), hormonal changes and genetic predispositions.

Breastfeeding can also influence the duration and severity of hair loss.

Adequate postpartum nutrition is vital for minimising excessive hair shedding, emphasising the importance of a diet rich in protein, iron, omega-3 fatty acids and essential vitamins and minerals.

Treatments may involve oral supplements such as multivitamins, biotin and omega-3 fatty acids, as well as topical applications such as Minoxidil and corticosteroid creams.

Prophylactic strategies include nutritional support, stress management and the use of topical treatments to promote hair health.

Hair loss in postmenopausal females

Hair loss is a multifaceted issue with various contributing factors that can have a significant psychological impact on women, especially those going through the hormonal changes of menopause.[51] FPHL, or AGA, is the most frequently diagnosed type of alopecia, particularly prevalent among women over the age of 60 years, with an estimated incidence of around 40%.[51] Hair loss during menopause may present as either diffuse thinning or widening of the parting. However, it is essential to recognise that not all women undergo substantial hair loss during this period, and the extent of the loss can differ from individual to individual.[52]

Pathophysiology

During menopause, hormonal shifts involve a sharp decrease in ovarian oestrogens and a relative rise in androgens. These hormonal changes are linked to reduced growth rate, a decrease in the percentage of hairs in the growth phase (anagen), diminished time spent in anagen, a reduction in hair diameter, alterations in diameter distribution and increased miniaturisation of hair follicles.[51] Postmenopausal women frequently exhibit inadequate levels of vitamin D.[53]

Management

Regarding management, nutritional supplements have shown promising outcomes in enhancing overall scalp coverage by decreasing the telogen percentage and perceived hair loss, thus augmenting hair density. Supplementation with omega-3 and omega-6 fatty acids along with antioxidants has demonstrated efficacy in combating hair loss by improving hair density, reducing the telogen percentage and decreasing the proportion of miniaturised anagen hair.[54]

Expert consensus statement

Post-menopausal hair loss, influenced by factors such as hormonal changes, genetic predisposition, ageing, thyroid disorders, nutritional deficiencies, stress and medical conditions, presents a complex challenge.

Post-menopausal hair loss is often chronic and progressive, varies in severity and duration among individuals, with factors such as diabetes, obesity and nutritional status playing significant roles.

Nutritional deficiencies including iron, vitamin D, vitamin B12, protein and omega-3 fatty acids are crucial contributors, affecting hair strength and health.

The influence of genetic factors in FPHL, often characterised by a familial predisposition has been noticed.

Treatment options include oral supplements (biotin, iron, vitamin D, vitamin B12, calcium and omega-3 fatty acids) and topical applications (Minoxidil, corticosteroids and Spironolactone).

Prophylactic therapy emphasises nutritional support, stress management, topical treatments such as minoxidil, hormone replacement therapy (HRT) for hormonal imbalances and peptides.

Understanding and addressing these multifaceted factors are essential for managing and preventing post-menopausal hair loss.

MULTIDISCIPLINARY APPROACH TO HAIR LOSS MANAGEMENT

Hair loss is frequently encountered in clinical practice and can lead to considerable psychosocial distress due to varying social and ethnic standards. Hair growth, its cycles and density are primarily influenced by endogenous factors, particularly circulating hormones. Consequently, endocrine system disorders can result in diverse changes in normal hair growth and cycling. Effective diagnosis and treatment of these conditions necessitate a collaborative approach, involving dermatologists, gynaecologists and endocrinologists. A multidisciplinary approach involving offers numerous benefits in improving the patient's journey. These include thorough assessment, holistic treatment strategies, timely detection and intervention, identification and management of challenges faced during the treatment, patient education and assistance, streamlined referral processes and ongoing supervision and follow-up. This multidisciplinary team is essential to comprehensively address and manage hair disorders.[4]

FUTURE DIRECTIONS

The future outlook for understanding and addressing hair loss linked to endocrine and gynaecological conditions is promising, with advancements poised to transform diagnosis and treatment. Emerging technologies, such as precision medicine approaches and advanced diagnostic tools, offer the potential for personalised interventions tailored to individual hormonal profiles. Targeted therapies focusing on modulating hormonal pathways associated with hair growth hold promise for more effective treatments with fewer side effects. Additionally, exploring the interplay between lifestyle factors and hormonal imbalance associated with endocrine and gynaecological conditions could reveal holistic strategies for managing hair loss.

CONCLUSION

The current consensus has amalgamated expert opinions to address the multifaceted impacts of hormonal imbalances and nutrition deficiencies on hair growth, briefly highlighting how these conditions can lead to hair loss. Various hormones play a significant role in shaping the hair cycle and follicle structure, and their deficiency has a role in hair growth patterns and related hair loss.

Moreover, nutritional deficiencies impact both hair structure and hair growth. Thus, this consensus is crucial for embracing a comprehensive approach to diagnosing and treating various hair disorders. Additionally, the role of nutritional supplementation in optimising hair health, especially in individuals with deficiencies, is also emphasised. Although this article has outlined several mechanisms influencing hair development, further extensive research is necessary to fully comprehend complete hormonal effects and the role of nutrients on the hair cycle.

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