



A SYSTEMATIC OVERVIEW OF HAIR LOSS: DIAGNOSIS AND MANAGEMENT

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ABSTRACT

Hair loss (Alopecia) is one of the most common complaints among men and women of all ages and often significantly affects social and psychological wellbeing. Hair loss is usually associated with severe psychological disturbances, distress and symptoms of depression are commonly related to it and some other factors like Nutrition, infection, environment, auto-immune and congenital factors are all seen as possible triggers. Alopecia is usually treatable and self-limited, but it may be permanent in some cases. Hair loss may last over both short and long time span. A great number of examinations have to be done in order to confirm the Hair loss. The Diagnosis of hair loss is based on detailed clinical history, physical examination, clinical diagnostic tests, and laboratory testing and scalp biopsy. Careful diagnosis of the type of hair loss will aid in selecting effective treatment. The treatment of hair loss diseases is sometimes difficult because of insufficient efficacy and limited options. However, recent advances in understanding the pathophysiology and development of new remedies have improved the treatment of refractory hair loss conditions. Reassurance is an important component of any treatment regimen. Currently, treatment options for the hair loss disorder are extremely limited. The development of effective therapies for this form of intractable alopecia represents an important issue to be resolved. This article presents an overview of the most common clinical causes of hair loss and provides updated information on the current available therapeutic options of the disorders.

KEYWORDS: Alopecia, androgenetic Alopecia (AGA), dihydrotestosterone (DHT).

INTRODUCTION

Hair loss is one of the most common complaints among all patients is usually associated with severe psychological disturbances, distress and symptoms of depression are commonly related to it.^[1-3] Hair loss may last over both short and long time span. A great number of examinations have to be done in order to confirm the diagnosis of hair loss which includes laboratory testing, clinical tests, scalp biopsy and physical examination. Nutrition, infection, environments, auto-immune and congenital factors are all seen as possible triggers.^[4] Alopecia is usually treatable and self-limited, but it may be permanent. An adequate evaluation and management is essential for appropriate patient care and successful treatment.^[3] This article presents an overview of the most common clinical causes of hair loss in patients and provides up-dated information on the current available therapeutic options for these disorders.

NORMAL HAIR GROWTH

Each day the scalp hair grows approximately 0.35 mm (6 inches per year), while the scalp sheds approximately 100 hairs per day, and more with shampooing.^[5] Because each follicle passes independently through the three stages of growth, the normal process of hair loss usually is unnoticeable. At any one time, approximately 85 to 90 percent of scalp follicles are in the anagen phase of hair growth. Follicles remain in this phase for an average of three years (range, two to six years).^[5] The transitional, or catagen, phase of follicular regression follows, usually affecting 2 to 3 percent of hair follicles. Finally, the telogen phase occurs, during which 10 to 15 percent of hair follicles undergo a rest period for about three months. At the conclusion of this phase, the inactive or dead hair is ejected from the skin, leaving a solid, hard, white nodule at its proximal shaft.^[6] the cycle is then repeated. In this article, we give a brief overview of the primary care management of the various types of hair loss.

HAIR CYCLE PHASES

Anagen	The follicles produce the hair shaft. Duration ranges from two to seven years. Up to 85% of the hair is in this phase at one time.
Catagen	Transitional phase that lasts two to three weeks which precedes the resting telogen phase
Telogen	Hair production is absent. Up to 15% of hair is in this phase at one time and it can last 3 months.

TYPES OF HAIR LOSS

Most hair loss can be categorized into three types:

1. Non-cicatricial (potentially reversible)
2. Cicatricial
3. Due to hair shaft abnormalities.

NON-CICATRICAL ALOPECIA

Noncicatricial alopecia, in turn, has several subtypes

Telogen effluvium (shedding)

Androgenic alopecia (common baldness)

Alopecia areata (isolated or recurrent patchy hair loss)

Traction alopecia (caused by pulling hair)

Trichotillomania (compulsive hair-plucking).

Telogen effluvium

Telogen effluvium or shedding is the most common type of hair loss condition. It is a disorder caused by the perturbation of hair cycle which leads to an increased loss of normal club hairs. It was Klingman who described it first in 1961. His hypothesis argued that no matter what caused the hair loss, follicle behave in the same way and causes premature disappearance of anagen. Many are subclinical cases so it makes it hard to determine the true occurrence of this disorder. The drugs, stress and iron deficiency are considered to be common causes of TE.^[7] The primary sign reported by patients is an increase in the number of hairs they are shedding, seen on the shower drain, clothes, or pillow. Normally, people shed up to about 100 hairs on days they do not shampoo, people with telogen effluvium usually lose 150 to 400 hairs per day. Some patients notice a decrease in hair volume only when hair density is reduced as much as 30% to 50%.^[8]

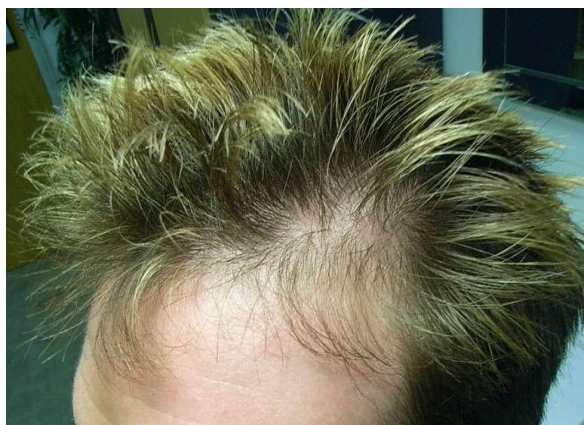


Figure 1: Telogen effluvium in men.

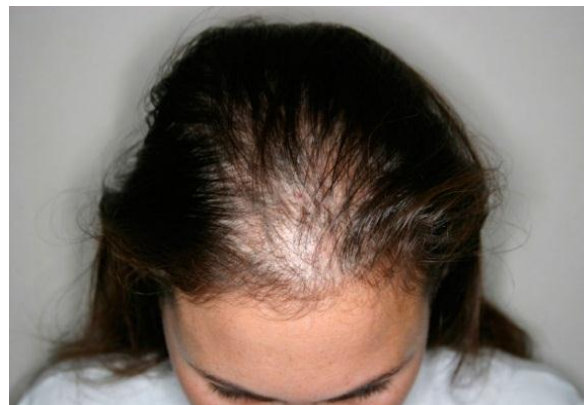


Figure 2: Telogen effluvium in women.

CAUSES

Often, an event triggers the process 3 to 6 months before the shedding begins. Acute shedding was initially described after febrile diseases, childbirth, chronic systemic diseases, use of heparin, and emotional distress.^[9] The factors identified as both acute and chronic causes of telogen effluvium included drugs, numerous, endocrine disorders, severely restrictive diets, surgical procedures, and anaesthesia.^[10-12] Recently, it was proposed that telogen effluvium can herald androgenetic alopecia in either sex.^[13]

DIAGNOSIS

The key is to find the trigger, with a careful clinical history. In addition, the clinician should evaluate thyroid function and exclude anaemia. Hormonal screening can help detect perimenopausal changes and androgen excess. The history and physical examination should exclude infectious diseases (eg: syphilis) and nutritional deficiencies (protein, vitamins, and minerals) that are often associated with shedding.^[23]

ANDROGENETIC ALOPECIA

Androgenetic alopecia may affect genetically predisposed men and women at any time from puberty to senescence. Thinning of the hair usually begins between the ages of 12 and 40 years, and approximately half of the population expresses this trait to some degree before age 50.^[14] This is caused by the miniaturization of hair follicle in the follicular units. AGA is usually activated by the androgens that are present in persons genetically susceptible. The increased activity of 5 α -reductase and dihydrotestosterone (DHT) levels are present in hair follicles of AGA patients.^[15]

In these follicles that are genetically susceptible, DHT links to androgen receptor and hormone-receptor complex causing the alteration of normal follicles into

the miniaturized ones. When amount of the terminal fibers pre follicular unit decrease it will spread out alopecia. Androgenetic alopecia mostly has a psychological impact. The hair loss in men is mostly assumed to be age –related, while in women it is always unexpected. Association with thyroid disorders is suggested by some authors, but alopecia is unaffected by thyroid sub- situation.^[16]

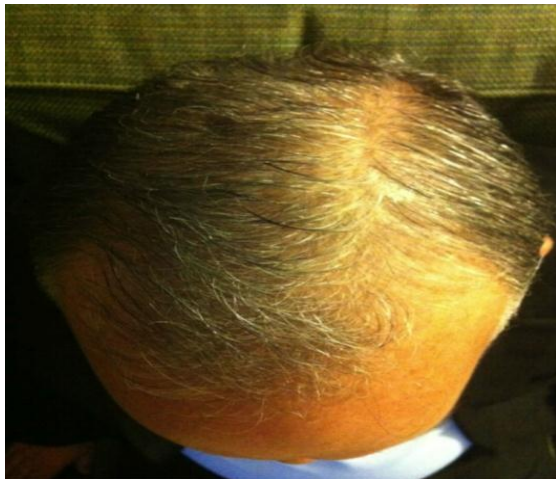


Figure 1: Old male presenting androgenetic alopecia. Figure 2: old female presenting androgenetic alopecia.

CAUSES

Androgens such as dehydrotestosterone and dehydroepiandrosteronesulfate influence hair loss. Dehydrotestosterone, the most potent androgen, reduces the amount of scalp hair and increases the amount of body and genital hair. Whether androgenetic alopecia is inherited is controversial; it is either polygenic or autosomal dominant with variable penetrance. Androgenetic alopecia affects equal numbers of men and women. One-third of people with a strong family history can expect to be affected, irrespective of sex.^[18]

Alopecia areata

This is a hair loss condition where both scalp and body can be affected. It is an inflammatory and autoimmune disorder which strikes 2% population. The main

characteristic of AA is hair loss in patches. When the whole scalp is affected it is called alopecia totalis, while losing hair from all body is called alopecia universalis. Pathology reveals an increase in number of telogen and catagen follicles including presence of the inflammatory lymphatic infiltrate and the peribulbar area. Clarifying of the pathogenesis takes into account many factors. The reactions of organ-specific autoimmune, non-specific immune and genetic constitutions are considered to be possible reasons. The idea that is discussed the most is that some individuals are genetically predisposed to an autoimmune reaction against hair follicles. Certain triggering factors like stress and viral infection may start this process. Thyroid diseases, another autoimmune disorder, can also be one of the causes.^[19]



Figure 1: Alopecia Areata condition in men.



Figure 2: Alopecia Areata condition in women.

Causes

In alopecia areata, a deep inflammatory process around the follicle accelerates the shedding phase.^[20] The affected hair sheds, and no replacement is seen while the inflammation is present. The exact cause of alopecia areata has not been identified. However, growing evidence suggests that it is an autoimmune disease mediated by T lymphocytes. As an autoimmune disease, alopecia areata can be associated with other diseases of known or suspected autoimmune origin, such as thyroid disease, vitiligo, and atopy.^[21] Other autoimmune disorders such as lupus erythematosus, diabetes, and pernicious anemia are common in the family

history. Genetic factors have an important role in alopecia areata, and a family history is found in 10% to 42% of cases.^[22]

Traction alopecia

Traction can physically damage the hair shaft and also alter the hair growth cycle. If traction is repetitive and chronic, cicatricial alopecia may result. Traction alopecia causes the hair to be sparse and break in the frontal area. This condition is quite common in women with curly hair.^[23]



Figure: Traction alopecia in women.

CAUSES

Tight braids, ponytails, elastic hair bands, rollers, or other devices that place extreme and repetitive stress on the scalp hair are responsible for most cases.^[23]

Trichotillomania

Trichotillomania is the compulsive pulling out of one's own hair in a bizarre pattern. Trichotillomania, also known as hair pulling disorder, is an impulse-control disorder that affects at least 3.7 million people in the United States and results in marked functional impairment.^[24,25] This disease is characterized by an irresistible desire to manipulate and pull out the hair.^[26] Trichotillomania clinically presents as areas of incomplete hair loss and short hair, most commonly on the scalp. Eyelashes, eyebrows, and other hairy areas can also be affected. The condition is frequently seen in children, in whom pulling is often due to insecurity and is not a sign of psychiatric illness.^[27] In both younger and older women, the condition can be associated with depression or anxiety.^[28] The disorder typically onsets in childhood either in preschool or in the preadolescent years and is up to seven times more commonly found in the paediatric population than in adults.^[29]

CAUSES

The cause may not be obvious; it can range from an underlying emotional problem to a definite mental disorder.^[23]

CICATRICALALOPECIA

Cicatricial alopecia is irreversible hair loss associated with destruction of the stem cell reservoir located in the middle of the follicle.

CAUSES

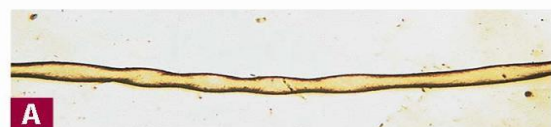
Cicatricial alopecia is caused by a diverse group of cutaneous disorders with a variety of presentations. Common causes are fungal or bacterial folliculitis, discoid lupus erythematosus, and lichen planopilaris. Others include trauma, scarring bullous disorders (epidermolysisbullosa, bullous pemphigoid, porphyria cutanea) and neoplastic disease (skin tumours and cutaneous metastasis).^[23]

DIAGNOSIS

The evaluation of cicatricial alopecia of unknown origin starts with cultures for bacterial and fungal infection. The diagnosis is based on scalp biopsy; 4-mm punch biopsy is suggested.^[23]

3. HAIR SHAFT ABNORMALITIES

Hair shaft abnormalities produce fragile and brittle hair. Patients may present with diffuse or patchy areas of short hair and a history of hair that will not grow beyond a certain length.



Hair Shaft Abnormalities.

CAUSES

Repeated trauma to the hair shaft from traction, bleaching, perming, or blow-drying is most often the cause of the hair shaft abnormality in adults. In addition, inherited disorders (genodermatoses) and external hair

shaft damage can change the hair shaft structure. A variety of hair shaft shapes may develop. The most common hair shaft abnormality is trichorrhexis nodosa, a nodal area where the hair splits into strands. Trichorrhexis nodosa is more commonly acquired as a result of external damage, but it may be associated with genetic and metabolic disorders that alter hair keratinization.

Patients with these latter conditions should be referred to a dermatologist with a special interest in hair diseases.

Medical Treatments to Prevent and Cure Hair Loss Telogen Effluvium

To treat telogen effluvium, the cause or causes must be isolated and treated.^[23]

(a) The Iron Supplementation

Talogen hair losses in female patients who have neither underlying disorders nor systemic inflammation are in correlation with the levels of serum ferritin equal to the 30 mg/mL or below. Iron sulphate must be taken until serum ferritin reaches 70 mg/mL.^[4]

(b) The Biotin Supplementation

The hair syndrome which cannot be combed can be treated with coenzyme R or vitamin H also known as biotin. Biotin can increase the hair root strength, make scaling disappear and accelerate regrowth. % mg daily of biotin is recommended.^[4]

(c) The Cysteine Supplementation

This is not proven that cysteine supplements can increase or decrease quality of the hair and growth cycle. The recommended dose is 500 mg a day.^[4]

2. The Androgenetic Alopecia

(a) The Topical Minoxidil

AGA is now widely treated with topical minoxidil—2 % and 5 % solutions are available. FDA approved 2% solutions for female patients. This stops the hair loss in patients with AGA and stimulates new hair growth. A temporary shedding in first four months and the contact dermatitis are common side effects.^[4]

5(b) Finasteride

Fenasteride is the synthetic kind-2 5 α reductase inhibitor. Several authors have been examining it as the treatment for the female hair loss. Although the solid evidence of its efficacy is very limited, fenasteride can be considered as the treatment in patients who do not react to topical minoxidil. It is proven to be well tolerated. The better results are shown with dosage of the 2.5 mg/daily in comparison to the 1.0 mg daily. Due to its teratogenicity this is contraindicated at the time of pregnancy. While receiving it, premenopausal patients have to stick to reliable contraception. Usual dosage for men is having 1 mg daily.^[3]

3. The Anti-hormonal Therapy

This is suggested to help in treating the female alopecia in women having normal hormone level. Spironolactone behaves as potassium sparing diuretic as it is like aldosterone antagonist. It decreases the production of adrenal androgen and blocks androgen receptors in the target tissues. Female patients have been using this medication off-label so that they can stop hair loss. Pregnant women shouldn't be using it because of teratogenic effects. Cyproterone acetate medicament blocks androgen receptors and expresses weak glucose action and activity of strong progestational. This medication doesn't activate hair regrowth, but it does reduce hair shedding. Premenopausal women should take 100 mg a day for ten days of every menstrual cycle, while with postmenopausal women the dosage should be 50 mg a day constantly. In order to assess the efficiency of oral anti-androgen therapy, Sinclair and colleagues carried out a research on 80 women with the FPHL. Half of them were given 200 mg of spironolactone daily, while other half was taking cyproterone acetate (premenopausal women received 100 mg daily over the course of 10 days every month, and postmenstrual patients received 50 mg daily).^[30] No serious differences in the outcome between spironolactone and cyproterone were found. Thirty-five women (44%) had regrowth of hair, thirty-five (44%) experienced no difference in the hair density after and before the treatment, and only 10 women (12%) continued to lose hair after the treatment.^[4]

(a) The Alopecia Areata

Having in mind that alopecia areata is not considered to be serious condition, the treatment is optional. If it is treated, certain medications can be helpful.^[4] Some therapeutic agents can be effective. This list includes systemic, intralesional and topical steroids under occlusion and topical immunotherapy with squaric acid dibutylester or diphenylprone.^[31-33]

(b) Chemotherapy Induced Alopecia

Scalp cooling is as a method of preventing hair loss during chemotherapy and it has been discussed by several authors as an effective option.^[34,35] The baldness period after chemotherapy can be shortened by taking topical 2% minodoxil as the therapy for hair regrowth. Important elements in any treatment are education, psychological support and the self-care.^[4]

4. Traction Alopecia

Traction can physically damage the hair shaft and also alter the hair growth cycle. Treatment of traction alopecia involves urging the patient to change her hairstyle and explaining that the hair loss may be permanent if the traction is not stopped.^[23]

5. The Trichotillomania

The hair pulling disorder is easily treated with pharmacotherapy and behaviour therapy. Those treatments have shown excellent results in adults.

Medications mostly used are the inhibitors of selective serotonin at a high dosage and the domipraminethere are also other drugs such as the opioid blockers, glutamate modulators and atypical neuroleptics that are still to be proved as a treatment for the trichotillomania.^[36]

CICATRICALALOPECIA

Cicatricial alopecia is irreversible hair loss associated with destruction of the stem cell reservoir located in the middle of the follicle. Even though the hair loss is irreversible, treatment is always recommended to prevent the process from spreading to unaffected areas. These patients should be referred to a dermatologist who has a special interest in hair loss.^[23]

HAIR SHAFT ABNORMALITIES

Treatment is based on removing the cause, if the problem is traumatically induced. Leave-on conditioners that coat the hair fibers may increase hair strength and prevent breakage.^[23]

Clinical Treatments to Reduce Hair Loss

In cases of severe hair loss, clinical treatment may be the solution. After all, the use of medication will only work for as long as the treatment is active. The moment a person stops the medication, hair loss will usually come back. You will get to know the most common type of surgery to minimize hair loss, along with one laser surgery that will help prevent hair loss and promote the growth of new hair.

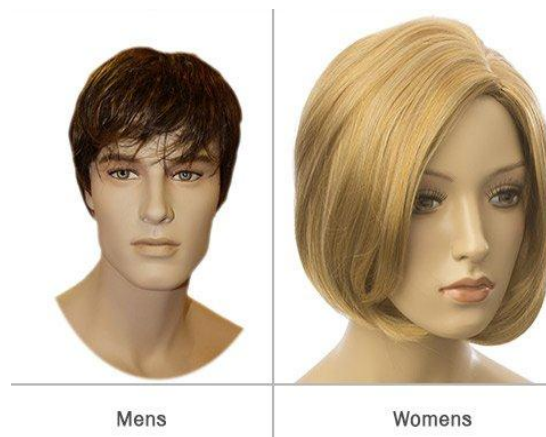
Hair Transplant Surgery

Hair transplants have been the solution to severe hair loss for over 50 years now. In the latest type of hair transplant surgical procedures, the surgeon starts by injecting anaesthetic in areas of the scalp. After that, he will remove small parts of the scalp which contain the muscles, blood vessels, and the nerves. He will then prepare a graft with 8 to 12 hairs and implant them to the areas that have had severe hair loss. This will be a long process, as a typical hair transplant surgery would require anywhere between 50 to 800 grafts. After he has transplanted all of the grafts, the openings are stitched closed.

Hair wig

If you don't have enough money to buy expensive medications and have transplants, well, this can be a much cheaper solution for you. Hair weaves; hairpieces or wig may disguise hair loss. Also, this is the safest approach to hair loss.

You should choose the right hairpiece or wig and this should not be sutured to the scalp for it may cause allergy, scar and infection.



To Control Hair loss, Hair fall With Natural & Herbal Remedies

1. Some asanas of Yoga is quite beneficial in prevention of Hair loss and Hair fall. Yoga augment blood circulation into the head and scalp region thereby strengthen hair root internally. Asanas like Shirsasana and Sarvangasana enhances blood circulation to the head and scalp region thereby facilitate hair growth.
2. Massage your head region with coconut oil or Vitamin E oil prevent hair loss.
3. Massage your scalp with Camphor + Coconut oil strengthen the root hair and prevent hair loss.
4. Massage with the mix of honey and egg yolk is quite beneficial in the management of hair loss
5. Slow massage of the scalp portion stimulates blood circulation and helps in re-grow of hair.
6. If you want shining hair, use the mix of Amla, Shikaki powder and curd. This mixture helps to clean the pores of the scalp and stimulate hair growth.
7. Everybody has lemon in their home, rinse your hair with lemon juice to prevent baldness.
8. Baldness can be cured if you apply the mix of curd, lemon and mustard oil on your head portion. Leave it for 30 minutes and wash it after then.
9. For shining and glow hair, one should eat more and more protein enriched foods such as fish, yeast, soybean, eggs and beans.
10. Activities like Hair dyes, hairdryer, curling, coloring, braids, buns, ponytails, etc. should be avoided. Shampoo, Conditioners, Alcohol and Beverages should be discouraged. "For incurable hair loss, there are now medical professionals dedicated to provide medical help, or you can try using human hair extensions to temporarily hide hair loss."

CONCLUSION

Thank you for downloading this article! I hope this article was able to help you understand the causes behind your hair loss and help you find the right solution to preventing and treating it. Do not hesitate to consult a hair loss specialist if you have exhausted all of the remedies which you can do at home. You deserve all the help you can get.

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