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Review on Observation and Treatment of Alopecia



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ABSTRACT

Alopecia areata (AA) is an autoimmune disease. Etiology and pathogenesis are unknown. The most affected area is the scalp, where a lot of hair loss occurs. Histopathology is characterized by an increase in the number of telogen follicles and infiltration of inflammatory lymphocytes in the peribulbar area. Corticosteroids are the drugs most commonly used to treat this condition.



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INTRODUCTION

Alopecia, also known as alopecia or baldness, is hair loss on the head or part of the body. Usually at least it is kept up. Alopecia areata (AA) is a hair loss disorder that can be patchy, mixed, or widespread. It can affect hair loss in some or all areas of the body, usually the scalp. In 2% of patients, the disease spreads to the entire scalp (alopecia totalis) or the entire epidermis (alopecia universalis).

Hair is considered an important part of the whole personality, especially for women where hair often represents femininity and attractiveness. Men often associate thick hair with youth.

People with thinning hair often find their appearance inconsistent with their self-image and are often worried about looking older than their age or not being attractive to others. Psychological problems (if any) caused by baldness are often worse when symptoms appear.

Alopecia areata is autoimmune and telogen effluvium is usually caused by physical or mental stress.

Telogen effluvium occurs after pregnancy.



Process of hair loss

The growth of hair follicles is cyclical. Each cycle has a long growth phase (anagen), a short period (catagen), and a short resting period (telogen).

At the end of the resting period, the hair is shed (exogenous), new hair begins to grow in the follicle, and the cycle begins again.

There are many variations in the length of the three phases, and the duration of the anagen phase determines the type of hair produced, and in particular its length.

Usually, about 100 hairs a day reach the end of the telogen phase and are shed from nonmarking hair (such as alopecia areata), which is the main part of the hair follicle cycle.

Etiopathogenesis

Hair growth and maintenance depends on the three phases of the hair cycle: anagen (growth phase),

catagen (catagen phase) and telogen (resting phase). The type and length of hair depends on the anagen phase. In healthy individuals, hair falls out after the exogenous telogen period. In alopecia, hair loss occurs even before anagen begins to drain the hair follicles (anagen). Therefore, AA is usually a hair loss and is considered a kenogenous state.

In AA diseases, stress, hormones, diet, antibiotics, vaccines, etc., as well as genetics. Many factors also play a role. Stress is thought to be one of the causes, but controlled studies have not confirmed his mental illness from a family death or accident has been reported to be a cause of the person's symptoms, but there are no controls to prove it. Iron deficiency is seen in 71% of women with AA. The association of other autoimmune diseases such as thyroid disease, anemia, diabetes, vitiligo and psoriasis may give reason to believe that AA is an autoimmune disease.

Hair-specific substances, especially keratin 16 and trichomes, are elevated in the peripheral blood of AA patients.

Diagnosis

Before diagnosis, your doctor may perform a physical exam and ask questions about your diet, hair care, medical and family history.

You may also need the following tests:

- **Blood tests** – this will help find the treatment that could be causing the hair loss.
- **Pull test**

The doctor gently pulls a large amount of hair to see how many have fallen out. This will help determine the stage of the shedding process.

- **Scalp biopsy**

The doctor takes a sample of the skin or a few strands of hair from the scalp and examines the roots under a microscope.

This can help determine if a disease is causing hair loss.

• **Light Microscope** –

The doctor uses a special instrument to examine the cut hair from the root.

Medication

There are effective treatments for certain hair types. You can reverse or at least slow down hair loss. In some cases, such as irregular hair loss (alopecia areata), hair may grow back within a year without treatment. Hair loss treatment includes medication and surgery.

Patients with more than 50% hair loss:

1. Antibiotics with Diphencyprone.
2. Minoxidil 5% drug and super potent topical corticosteroid
3. Minoxidil 5% liquid and anthralin combination.
4. PUVA
5. Corticosteroid therapy (nadir)

Minoxidil (Rogaine).



Over-the-counter (nonprescription) minoxidil comes in liquid form and shampoo forms. To be most effective, apply the product to the scalp skin once daily for women and twice daily for men.



If your hair loss is caused by an underlying disease, treatment for that disease will be necessary. If a certain medication is causing the hair loss, your doctor may advise you to stop using it for a few months.

Products with minoxidil help many people regrow their hair or slow the rate of hair loss or both. It'll take at least six months of treatment to prevent further hair loss and to start hair regrowth. It may take a few more months to tell whether the treatment is working for you. If it is helping, you'll need to continue using the medicine indefinitely to retain the benefits.

Possible side effects include scalp irritation and unwanted hair growth on the adjacent skin of the face and hands.

Anthralin:

Anthralin is an irritant, and its mechanism of action in AA is unknown. It is effective because of its immunosuppressive and anti-inflammatory properties by generating free radicals. It is used as 0.5-1% cream with short contact therapy. It is applied daily for 20-30 minutes, for 2-3 weeks, gradually increasing contact time daily by 5 minutes up to 1 hour or

till erythema and/or pruritus develops and maintained the same time of contact for 3-6 months.

Finasteride (Propecia):

This is a prescription drug for men. You take it daily as a pill. Many men taking finasteride experience a slowing of hair loss, and some may show new hair growth.

Steroids:

These help calm down the immune response and inflammation. For children older than 10 years of age, treatment options are based on the amount of hair loss.

Corticosteroids:

Corticosteroids, because of their anti-inflammatory activity, have been the mainstay of therapy for AA. They have been used topically, orally, and parenterally. Different forms of topical steroids are used with variable efficacy. Fluocinolone acetonide 0.2% cream, 0.1% beta methasone valerate foam, 0.05% beta methasone dipropionate lotion, 0.1% halcinonide, 0.05% clobetasol.

Topical Immunotherapy

Antibiotics work by applying a strong contact allergen to the skin, inducing allergic contact dermatitis. These antiinflammatory drugs seem to act by immunomodulation of the skin and a dnexa. Dinitrochlorobenzene (DNCB) was the first sensitizer used to treat AA. It has been shown to be mutagenic and is therefore not preferred. However, studies have shown that DNCB is not carcinogenic when administered to mice, rats, guinea pigs and humans.

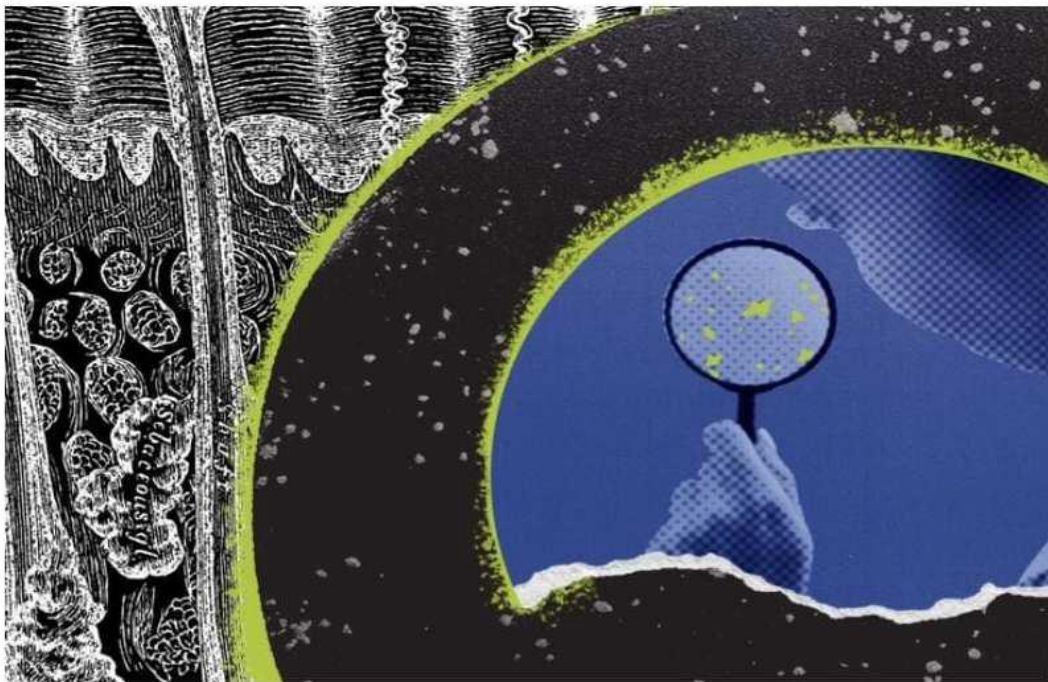
Diphenylcyclopropenone (DPCP) and square acid dibutyl ester (SADBE) are other reagents used in AA. The efficiency of both reagents is almost the same, both in the range of 50-60% and 987%. DPCP is preferred over SADBE because it is less expensive and stable in acetone, which is a good UV absorber. DPCP is light and heat sensitive and should be stored in an amber bottle. Dissolve 20mg in 1ml of acetone to make a 2% solution, use a pipette to draw acetone to dilute the 2% solution according to the concentration and dilute it further.

First sensitize the patient to a 4 cm² area of the scalp with 2% DPCP. Leave it on the scalp

for 12 days and wash it off. The scalp should be protected from the sun for two days. After two weeks, apply 0.0001% DPCP to the ipsilateral scalp and gradually increase the concentration each week until a minor rash or itching occurs.

In case of allergic reaction, continue to use the same concentration every week for 48 hours without exposure to sunlight. The treatment should continue on the same half of the scalp until the hair regrows before going to the other half of the scalp. When the hair regrowth process is completed and continued for more than 3 months, the treatment can be closed and stopped within 9 months.

Phototherapy



Recent Cochrane review revealed that there were not many randomized controlled studies about phototherapy in AA. There are conflicting reports about efficacy of PUVA in AA. PUVA has been found to be effective in AA by decreasing the perifollicular inflammatory infiltrate. It has reported good or excellent response in 85% of their AA patients. Turban PUVA and turban PUVASOL also have been found effective.

PUVA in combination with oral steroids have been found effective in recalcitrant AT and AU. Mild erythema, burning and increased risk for melanoma are some of the side effects observed with PUVA. NBUVB phototherapy has been found in effective in AA. from

Turkey reported in a recent study that only 20% showed excellent response in severe AA, most of whom received intramuscular triamcinolone acetonide injections also and concluded that NBUVB is not an effective treatment in AA. 308-excimer laser has shown hair regrowth in 41.5% patches of AA, but poor results were observed in AT/AU. Infrared therapy as monotherapy and in combination with other modalities has shown variable success. Photodynamic therapy was not effective.

Prostaglandin Analogues

Latanoprost and bimatoprost are prostaglandin analogues, which are used in open angle glaucoma caused hypertrichosis of eyelashes and hair on the malar area as an adverse effect. Because of this effect, these were tried in eyelash AA and found ineffective. Though the earlier studies failed to induce hair growth, a recent trial showed a cosmetically acceptable hair growth in 45% of the latanoprost-treated group. Bimatoprost has also been beneficial, and showed cosmetically acceptable eyelash growth in 43.2% of AU patients. Transient mild eye irritation or hyperemia may occur.

Topical Calcineurin Inhibitors

Topical calcineurin inhibitors, tacrolimus, and pimecrolimus inhibit transcription following T-cell activation of several cytokines. They were tried in AA and were found to be ineffective.

Sulfasalazine

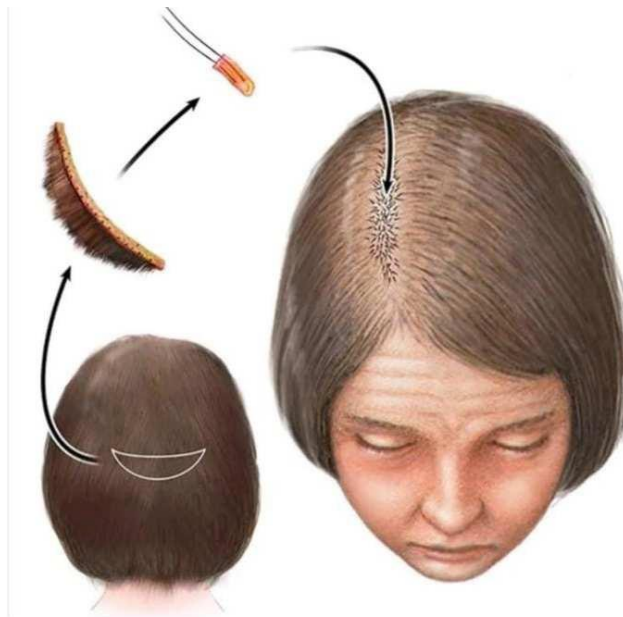
Sulfasalazine works as immunomodulator and immunosuppressant. It inhibits inflammatory cell chemotaxis and cytokine and antibody production. Sulfasalazine can be given 0.5 g twice-daily for 1 month, followed by 1g twice-daily for 1 month and 1.5g twice-daily for least 3 months. It may cause gastrointestinal distress, headache, fever, rash, hematological abnormalities, and hepatotoxicity.

Cyclosporine:

An immune suppressive drug, in combination with a steroid called methyl prednisolone.

Camouflage

At times, the treatments may not regrow the hair in AA/AT/AU in an attractive manner. Camouflage techniques like hairpieces and hair additions may be a better option. Hairpieces could be in the form of wigs, demiwigs, toupees, cascades, and wiglets. Human hair wigs are most expensive, needs regular shampooing every 2-3 weeks and lasts only 2-3 years. Synthetic hair fibers may be a better option as they are less expensive, needs less maintenance, and lasts for 3-5 years.



Hair transplant surgery:

In the most common type of permanent hair loss, only the top of the head is affected. Hair transplant, or restoration surgery, can make the most of the hair you have left.

Hair transplant procedure, a dermatologist or cosmetic surgeon removes hair from a part of the head that has hair and transplants it to a bald spot. Each patch of hair has one to several hairs (micrografts and minigrafts).

Sometimes a larger strip of skin containing multiple hair groupings is taken. Possible risks include bleeding, bruising, swelling and infection.

You may need more than one surgery to get the effect you want. Hereditary hair loss will eventually progress despite surgery. Surgical procedures to treat baldness are not usually covered by insurance.

Laser therapy:-

Does laser treatment for hair loss work?

It's widely accepted that the procedure is safe, tolerable, and less invasive than hair transplant surgery.

The theory of laser treatment for hair loss is that the low-dose laser treatments invigorate circulation and stimulation that encourages hair follicles to grow hair.

What are the positives of laser treatment for hair loss?

It's noninvasive, it's painless, there are no side effects, it increases hair strength.

What are the negatives of laser treatment for hairloss?

There are a number of reasons that some people are not as positive about the procedure, such as: It's time consuming. To see results, treatment often requires several sessions a week for a number of months. Although the number of sessions might taper off, most providers suggest that you continue treatments for the rest of your life.

It may not be effective. The procedure appears to be less effective for people in the advanced stages of hair loss as opposed to those in the early stages.

It can interact with certain medications. Laser therapy should not be performed on people taking medications that are photosensitizing. Photosensitizing is a chemical alteration to the skin that increases someone's sensitivity to light.

PRP therapy-

PRP (platelet-rich plasma) therapy for hair loss is a three-step medical treatment in which a person's blood is drawn, processed, and then injected into the scalp.

Some in the medical community think that PRP injections trigger natural hair growth and maintain it by increasing blood supply to the hair follicle and increasing the thickness of the hair shaft. Sometimes this approach is combined with other hair loss procedures or medications.

There hasn't been enough research to prove if PRP is an effective hair loss treatment.

PRP therapy process-

PRP therapy is a three-step process. Most PRP therapy requires three treatments 4–6 weeks apart. Maintenance treatments are required every 4–6 months.

Step 1

Your blood is drawn—typically from your arm—and put into a centrifuge (a machine that spins rapidly to separate fluids of different densities).

Step 2

After about 10 minutes in the centrifuge, your blood will have separated into three layers: platelet-poor plasma, platelet-rich plasma, and red blood cells.

Step 3

The platelet-rich plasma is drawn up into a syringe and then injected into areas of the scalp that need increased hair growth. There hasn't been enough research to prove whether PRP is effective. It's also unclear for whom and under what circumstances it's most effective.

According to a recent study Trusted Source, “Although PRP has sufficient theoretical scientific basis to support its use in hair restoration, hair restoration using PRP is still at its infancy. Clinical evidence is still weak.”

Causes:

It occurs when white blood cells attack the cells in the hair follicle, causing the follicle to shrink and slow hair loss. It is not clear what causes the immune system to attack hair follicles in this way.

Although scientists are not sure why these changes occur, they appear to be genetic, as people with close family members who have the disorder are more likely to develop alopecia areata. One in five people with this condition have a family history of alopecia areata.

Other research has shown that many people with a family history of alopecia areata have a personal or family history of other autoimmune diseases such as atopy (a condition that is positive), thyroiditis, and vitiligo.

Every day, most people lose about 100 hairs from their scalp. While most people grow this hair, some do not because of:

Age heredity hormonal changes medical conditions, such as lupus and diabetes poor nutrition.

Home remedies:

With few treatments for hair loss, there is less research to support natural hair loss treatments. Some people recommend applying onion or garlic juice, green tea, almond oil, rosemary oil, honey or coconut milk to the scalp. Although these do not appear to be harmful, their benefits are not yet supported by research. Some people turn to alternative treatments such as acupuncture and aromatherapy, although there is little evidence to support these treatments.



Symptoms

The most common symptom of alopecia areata is patchy hair loss. A small amount of hair begins to all out, mostly on the scalp. But any place where hair can be affected, including the beard and eyebrows.

Hair loss can be sudden and last for days or weeks. Before hair loss, there may be itching or burning in the area.

Hair follicles are not destroyed, so if the inflammation of the roots decreases, the hair can grow

w back. People with only a few patches of hair loss usually get better on their own without treatment.

About 30% of people with alopecia areata find their condition worsens or causes an irregular cycle of hair loss and regrowth.

About half of people with alopecia areata recover within a year, but there are many manifestations of multiple attacks. About 10% of people develop alopecia totalis or alopecia universalis.

Alopecia areata can also affect the nails and toes, and sometimes these changes are the first signs that the condition is progressing. Some minor changes occur in the nails:

White spots and lines appear nails become rough nails become thin and split.

Additional clinical signs include: nails lose their shine

Exclamation mark hairs: This occurs when few short hairs that get narrower at their bottom and grow in or around the edges of bald spots.

Cadaver hairs: This is where hairs break before reaching the skin surface.

White hair: This may grow increases affected by hair loss.





Diet

Essential Vitamins for Alopecia diet

Hair is one such body part where the nutrition reaches the last. Therefore, it is important to ensure that your diet consists of all the essential nutrients needed by the hair. The most vital nutrients and vitamins required to prevent Alopecia Areata are:

Biotin

Biotin is responsible for hair growth and increasing the volume of hair.

Zinc

Zinc plays an important role in hair tissue growth and repair. It also helps keep the oil glands around the follicles working properly.

Thiamine

Thiamine prevents nerve damage, so the hair follicles can grow without a hurdle.

Vitamin C

Vitamin C strength the capillaries that supply blood to the hair shaft.

Healthy Fats

Healthy fats less the inflammatory reaction in the body. So, it is advisable to use can olive oil for cooking purposes. In addition, increase your intake of omega-3 unsaturated fats found in greasy fish. Such as salmon, trout, fish, mackerel, sardines and herring. Some vegetarian options to incorporate in your autoimmune hair loss diet are walnuts, flax seeds and hemp seeds. However, all nuts and seeds contain helpful fats.

Antioxidants

Antioxidants help to improve the hair growth in alopecia. It boosts the blood circulation and nutrient supply to the scalp cells which encourages the hair growth. These supplements come in numerous types including vitamins, minerals and bioflavonoids.

Best Foods for Alopecia Areata

Some medical experts contradict the fact that diet can help in case of Alopecia but in most of the cases, people with good diet and healthy lifestyle have seen significant results in hair regrowth. Some of the best foods to include in Androgenic Alopecia diet are –

Fruits and Vegetables

Include more bright-coloured fruits and vegetables in your diet. Apples, Strawberries, Broccoli, Cauliflower, Spinach, Pineapple, Green Cabbage, Apricot among others contain antioxidants. These fruits and veggies contain antioxidants that can help reduce inflammation.

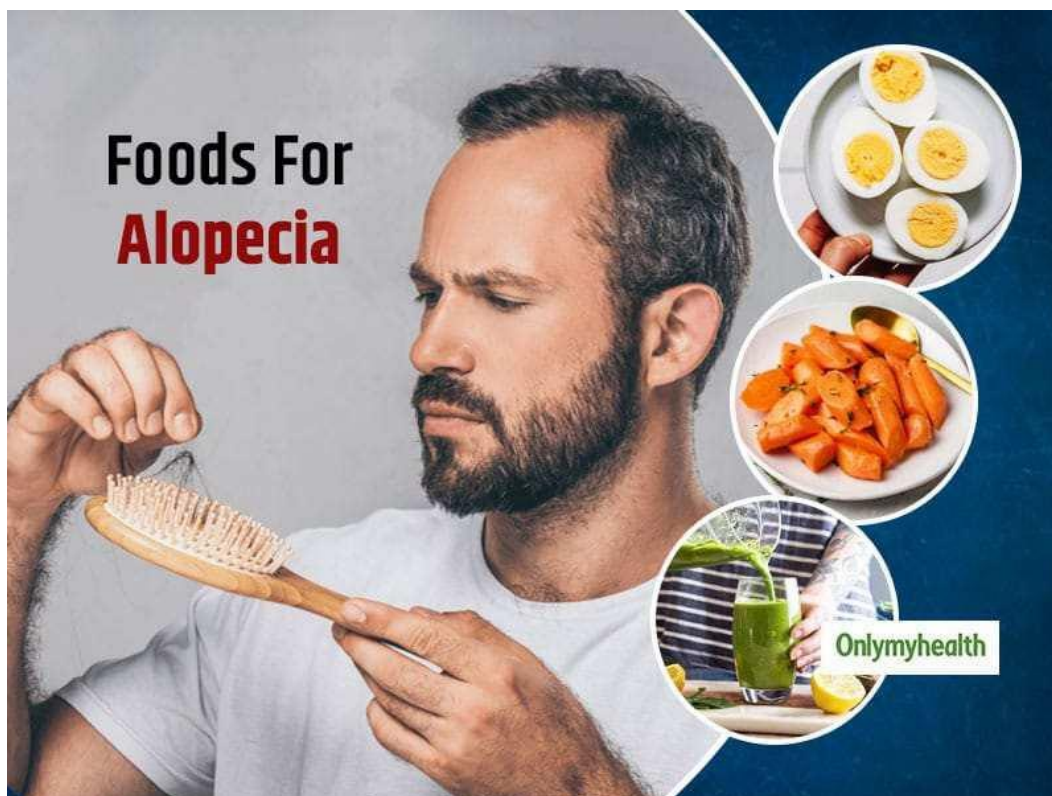
Good oils

All the good oils are good for your health. So, include canola oil, olive oil, and/or avocado oil in your diet. You can also use organic cold-pressed coconut oil which is tasty, nutritious and

great for your hair. These oils contain the oleic acid which is an omega 9 fatty acid which decreases the inflammation.

Nuts

Nuts like almonds, walnuts and hazelnuts contain omega 3 fatty acids which is a key ingredient to reduce inflammation.



Onions

Onions are a very good source of antioxidants. It helps in reducing cholesterol level and the risk of heart diseases along with inflammation, which is what you need. Add more raw onions in your food, sandwiches and salads. Onion is a great option for treating Alopecia.

Fish

Another food for alopecia areata, that is packed with omega 3 fatty acids is fish. Consuming wild fish can help in improving alopecia symptoms. They are very nutritious and are rich in protein and contain omega 3 fatty acids.⁶

Hairs is primarily made of protein. Include more protein-rich foods like eggs, meat, seafood,

liver, milk, sprouts and beans in your diet.

Description:

Alopecia areata (AA) is an autoimmune disease that causes hair loss. It is often presented as a good description of hair loss and can occur at any time. Epidemiology, clinical features, disease and new treatment options of AA with a focus on the immune system underlying therapy. While conventional treatments such as corticosteroids are effective, a better understanding of the pathogenesis may lead to the development of new, more targeted and effective treatments for AA.

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