

A Review on Drug Induced Alopecia

Dr. L. Siddhartha¹, G. Rajeshwari², K. Vaishnavi³, G. Sindhu⁴

Pullareddy Institute of Pharmacy Annaram (V), Domadugu (M), Sangareddy (dist)

Abstract: Alopecia is a very common problem today that can affect anyone while hair loss might be caused by various things. Like hormonal imbalances, drug side effects, etc. Drug induced alopecia may be partial or whole. The extent of hair loss depends upon dosage of medication. Medications like chemotherapeutic drugs, steroids, contraceptive pills, etc. cause drug induced alopecia. The signs include hair thinning, increase in shed hair in pillows, hair brushes, shower drains. Drug induced alopecia can be diagnosed by hair pull test, Scalp analysis, Scalp biopsy. It can be treated by Minoxidil (Rogaine) and Finasteride (Propecia).

Keywords: Alopecia, HRT (Hormone Replacement Therapy), PCOD (Polycystic Ovarian disease), Telogen phase, Anagen phase

1. Introduction

Alopecia is the medical term for hair loss. Many different factors contribute to their conditions, including certain medications. Doctor refer to alopecia that occur as a side effects of medication as drug-induced alopecia



Drug induced alopecia may be partial or complete. The temporal relationship between the introduction of the drug and the subsequent loss of hair depends on the part of the hair cycle with which the drug interferes cytotoxic drugs with the anagen phase or growth phase of the hair cycle, and so loss is rapid and complete; it begins shortly after administration of the drug and the effect is dependent and fortunately reversible, but delay of several weeks is common before growth begin. Drug induced alopecia can effect any part of the scalp or body. The extent and duration of hairloss depend on the medication that the person is taking, as well as dosage chemotherapy drugs may be the best known cause of drug induced alopecia. However, hairloss is a possible side effect of many different medications

a) Signs of Drug-Induced Alopecia

The Effects of drug induced alopecia often appear within three months of an individual starting on a particular medication

A person who experience drug-induced alopecia will usually notice thinning hair as opposed to patchy hairloss. However, the hairloss may be more apparent on the top of the scalp. Other early signs of alopecia include a noticeable increase in the number of shed hairs in hairbrushes and shower drains and on pillows

b) List of Medications that Cause Hair Loss

Different drugs cause hair loss at different stages of the hair growth cycle. Some medications affect hairs in the resting (telogen) phase, while others affect hairs in the growing (anagen) phase

c) Hair loss in the Telogen phase

Most medications that cause hairloss affect hairs in the resting phase it is normal for people to lose at least 100 telogen phase hairs per day. However such as fever, Nutritional Imbalances, and some medications, can cause this number to increase

d) Drugs that have an association with telogen hair loss include

- AMPHETAMINES
- ACE INHIBITORS (angiotensin converting enzyme)
- ANTIDEPRESSANTS (Paroxetine, Fluoxetine, and Sertraline)
- ANTIFUNGAL MEDICATIONS
- ANTISEIZURE MEDICATIONS
- BETA BLOCKERS
- BIRTH CONTROL PILLS
- BLOOD THINNERS (Heparin, warfarin)
- CHOLESTROL LOWERING DRUGS (Clofibrate, Gemfibrozil)
- HRT (Hormone replacement therapy)
- NSAIDS
- STEROIDS

e) Hair Loss in the Anagen Phase

Some medications that cause hair loss affects hair on the growing stage. The most notable example is chemotherapy drugs. Hair loss can begin within 2-5 weeks of starting chemotherapy. However individuals who receive the same drugs and undergo the same treatment can still have different hair loss experiences

Medication that contain following ingredients can cause hair loss in anagen phase

- Arsenic
- Bismuth
- Boric Acid
- Thallium

f) Diagnosing Drug Induced Alopecia

Early signs of excessive hair loss include:

- Noticing hairs on pillows
- Finding extra hairs in combs or hairbrushes
- Losing more hair than usual when showering

Tests to assist the diagnosis:

Hair Pull Test and Examination: Pulling on a small section of hair to see how many strands come away from the scalp



Scalp Analysis: Doctor will examine the scalp for signs of redness, flaking, and hair loss



Scalp Biopsy: Taking of skin samples from areas of the scalp where hair loss has occurred and analyzing them



Blood Tests: These tests reveal any nutritional or hormonal imbalances that may be causing hair loss

Metformin may play an indirect role in hair loss:

Metformin is a medication that doctors prescribe to treat type 2 diabetes and Polycystic ovarian syndrome (PCOD). Some people have concerns that this drug may cause hair loss, but little evidence supports that claim

Doctors typically prescribe metformin as a first-line treatment for people with type 2 diabetes. Alongside diet and exercise, metformin can help a person control their insulin and blood sugar levels

Doctors sometimes also prescribe metformin for people with Polycystic ovarian syndrome (PCOD). Raised insulin and blood sugar levels are common symptoms of PCOD, and metformin can help reduce them.

On rare occasions, people have reported a link between metformin and thinning hair or hair loss. However, it is unclear whether metformin is directly responsible for this issue or if other factors play a role.

Metformin might also reduce the risk of hair loss in people who take it to treat PCOD, according to a randomized clinical trial from 2016

Metformin, Vitamin B-12, and Hair Loss

Research from 2016 suggests that taking metformin long-term can cause B-12 deficiency and anemia. Hair loss is a potential symptom of both of these conditions.

In addition to hair loss, other vitamin B-12 deficiency symptoms include:

- Depression
- Constipation and bloating
- Irregular heartbeat and memory loss
- Shortness of breath and vision loss

A doctor may advise that people who are taking metformin should increase their intake of B-12 supplements to treat or prevent this deficiency.

Alternatively, they may recommend getting shots of B-12 that bypass the gut and enter the blood stream directly.

Medication for Hair Loss

Withdrawal of medications that cause alopecia

Reduce the dose of drug that cause alopecia or use an alternative.

Minoxidil (Rogaine): which is an over-the-counter (OTC) medication. The treatment takes at least 6 months to work, and a person must apply it to their scalp daily.

Finasteride (Propecia): It is a prescription medication for males who experience hair loss. It is available in pill form, and a person needs to take it on an ongoing basis to see significant results. Some females with PCOD may experience relief from hair loss if they take birth control pills. It is essential to consult a doctor before stopping any prescription drug.

Other Medications: Other oral options include Spironolactone (Carospir, Aldactone) and oral dutasteride (Avodart)

Hair Transplant Surgery

During this procedure, a surgeon or dermatologist will remove tiny sections of skin from other parts of the individual's head or body. They will then implant the hair follicles from this skin onto the areas. A person may require multiple sessions to achieve satisfactory results. Hair transplantation is often an expensive option.

Home Remedies

People can prevent further hair loss by doing the following:

- **Reducing Stress:** Stress is a common cause of thinning hair, although this type of hair loss is usually temporary. Yoga, meditation, and deep breathing exercises can all be beneficial for stress relief.
- **Checking for Nutrient Deficiencies:** A deficiency in B12 or other nutrients, such as iron, can cause hair loss. A doctor can use a blood test to check levels of these nutrients.
- **Avoiding Damaging Hair Treatments:** Tight hairstyles, including braids and ponytails, can pull on the hair and

contribute to hair loss. Heat treatments, such as straightening or curling, also damage the hair and may cause it to break off.

- **Treating Underlying Conditions:** A doctor can help establish a treatment plan for diabetes, PCOD, and other disorders that may contribute to hair loss. A person should follow the treatment plan carefully to prevent balding and other complications.

Foods that may boost hair growth include:

- **Eggs:** It contains protein, which is essential for hair growth. They also contain biotin, a B vitamin that may boost hair growth, though research results are mixed.
- **Brazil Nuts:** These are a source of selenium, a mineral that may improve hair health.
- **Fatty Fish:** This is a good source of Omega-3, which may improve hair growth.
- **Walnuts:** These also contain Omega-3.

2. Conclusion

In recent studies we came to know that metformin causes hair loss indirectly. Metformin might also decrease the hair loss in patients who take it to treat PCOD based on randomized clinical trials from 2016. Vitamin B-12 (Cyanocobalamin) deficiency also leads to alopecia

References

- [1] <https://www.webmd.com/skin-problems-and-treatments/hair-loss/drug-induced-hair-loss-2>
- [2] <https://pubmed.ncbi.nlm.nih.gov/7631289/>
- [3] https://www.researchgate.net/publication/292612874_Drug-Induced_Alopecia
- [4] <https://www.medicalnewstoday.com/articles/326955>
- [5] <https://www.news-medical.net/health/Medications-that-Can-Cause-Alopecia-Hair-Loss.aspx>
- [6] [search?q=dipiro+pharmacotherapy+pathphysiological+approach&oq=d&aqs=chrome](https://www.researchgate.net/publication/292612874_Drug-Induced_Alopecia)
- [7] <http://www.prip.edu.in/img/ebooks/Roger-Walker-Clinical-Pharmacy-and-Therapeutics-5th-Ed.pdf>
- [8] <https://accessmedicine.mhmedical.com/book.aspx?bookID=218>
- [9] <https://www.iliveactive.com/Blogs/Medications-That-Cause-Hair-Loss-Drug-Induced-Alopecia>
- [10] https://www.researchgate.net/figure/Pull-test-A-tuft-of-hairs-is-collected-between-two-fingers-and-with-the-other-hand-a_fig1_260378312
- [11] <https://www.dermacian.com/conditions/hair/hair-analysis/>
- [12] <https://www.thelondonskinandhairclinic.com/dermatology-treatments/scalp-biopsy>