

Androgenetic Alopecia: Causes, Symptoms, Diagnosis and Treatment

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Abstract

Androgenetic alopecia is a common type of hair loss that affects both men and women. It is a genetically determined condition that is characterized by a gradual and progressive thinning of the hair on the scalp, eventually leading to baldness in some cases. The condition is caused by a combination of genetic and hormonal factors, with dihydrotestosterone (DHT), a male hormone, playing a key role in its development. DHT can cause hair follicles to shrink, which results in shorter and thinner hair strands over time. Androgenetic alopecia is typically diagnosed based on the pattern of hair loss and the presence of other symptoms, such as itching or scaling of the scalp. Treatment options for androgenetic alopecia include medications, such as minoxidil and finasteride, which can help slow down or even reverse hair loss in some cases. In more severe cases, hair transplantation surgery may be necessary to restore hair growth. While androgenetic alopecia can be distressing, it is important to remember that it is a common condition and there are many effective treatments available to help manage it.

Keywords: Stem cells • Androgenic alopecia • Female pattern hair loss • Mesenchymal stem cell

Introduction

Androgenetic alopecia, also known as male or female pattern baldness, is the most common type of hair loss in both men and women. It is a genetic condition that results in thinning and miniaturization of hair follicles, leading to a gradual decrease in hair density and eventually baldness. While androgenetic alopecia is not a life-threatening condition, it can have a significant impact on a person's self-esteem and quality of life. Androgenetic alopecia, also known as male or female pattern baldness, is the most common type of hair loss, affecting millions of men and women worldwide. It is a genetic condition that results in the gradual thinning and loss of hair, typically on the top of the head and along the hairline. Androgenetic alopecia is caused by a combination of genetic and hormonal factors. In both men and women, the hormone dihydrotestosterone (DHT) is responsible for shrinking hair follicles, shortening the hair growth cycle and ultimately leading to hair loss. However, the pattern and extent of hair loss can vary between individuals [1].

Literature Review

In men, androgenetic alopecia typically begins with a receding hairline and thinning at the crown of the head, eventually leading to complete baldness in some cases. In women, hair loss tends to be more diffuse and spread out over the scalp, resulting in thinning hair rather than bald patches. There is currently no cure for androgenetic alopecia, but there are treatments available that can slow down or even reverse hair loss in some cases. These include medications such as minoxidil and finasteride, as well as hair transplantation surgery. However, the effectiveness of these treatments can vary and not everyone will respond equally well to them [2-5].

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Discussion

Causes and risk factors

Androgenetic alopecia is caused by a combination of genetic and hormonal factors. The condition is inherited in an autosomal dominant pattern, which means that a person only needs to inherit one copy of the gene from either parent to develop the condition. However, not everyone who inherits the gene will necessarily develop androgenetic alopecia. The gene responsible for androgenetic alopecia is located on the X chromosome and is called the androgen receptor gene. This gene encodes a protein called the androgen receptor, which is responsible for binding to androgen hormones such as testosterone and dihydrotestosterone (DHT). In people with androgenetic alopecia, the androgen receptor is more sensitive to these hormones, which leads to an increased production of DHT in hair follicles.

DHT is a hormone that plays a key role in the development of male secondary sexual characteristics, such as facial hair and a deep voice. However, in hair follicles, it has the opposite effect and can cause miniaturization of the hair follicles. This leads to shorter, finer and less pigmented hair, which eventually stops growing altogether.

Risk factors for androgenetic alopecia include a family history of the condition, age and sex. The condition is more common in men than women and the risk increases with age. However, women can also develop androgenetic alopecia, especially after menopause when estrogen levels decrease and androgen hormones become more prominent [6].

Symptoms

The main symptom of androgenetic alopecia is a gradual thinning of hair on the scalp. This typically starts at the crown of the head or the hairline and progresses over time. In men, it can lead to a receding hairline and baldness on the top of the head. In women, it can result in a widening of the part or thinning of the hair on the top of the head.

In some cases, androgenetic alopecia can also affect hair growth in other parts of the body, such as the beard, chest and pubic area. However, this is less common than scalp hair loss.

Diagnosis

The diagnosis of androgenetic alopecia is based on the pattern of hair loss and a family history of the condition. A doctor may also perform a physical exam and order blood tests to check for hormonal imbalances or other

underlying conditions that could be causing hair loss. In some cases, a scalp biopsy may be necessary to confirm the diagnosis. This involves taking a small sample of skin and hair follicles from the scalp and examining them under a microscope to look for signs of miniaturization and other changes associated with androgenetic alopecia.

Treatment

While there is no cure for androgenetic alopecia, there are several treatments that can help slow down or stop hair loss and promote new hair growth. The choice of treatment depends on the severity of the condition and the individual's preferences and needs.

Minoxidil: This is a topical medication that is applied directly to the scalp. It is available over-the-counter and is approved by the FDA for the treatment of androgenetic alopecia. Minoxidil works by increasing blood flow to the hair follicles, which can promote hair growth and prevent further hair loss.

Conclusion

Androgenetic alopecia is a common form of hair loss that affects both men and women. It is caused by a combination of genetic and hormonal factors, which lead to the miniaturization of hair follicles and the gradual thinning of hair on the scalp. It is important to note that androgenetic alopecia is a chronic condition and there is no known cure. While treatment can help to slow or even reverse the progression of hair loss in some cases, it is important to manage expectations and understand that the condition may continue to progress over time. Overall, if you are experiencing hair loss, it is important to speak with a healthcare professional or a dermatologist to determine the underlying cause and the best course of treatment for your individual needs.

Acknowledgement

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Conflict of Interest

No conflict of interest.

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