

# Central Centrifugal Cicatricial Alopecia

Central Centrifugal Cicatricial Alopecia (CCCA) is a primary form of scarring alopecia characterized by permanent hair loss in the central or crown region of the scalp. This disorder primarily affects middle-aged women of African descent, typically between the ages of 30 and 55, and is the most common cause of alopecia among African American women. The condition is often hereditary and rarely observed in men or children. CCCA presents as a gradual or rapid progression of hair loss that starts centrally and expands outward, usually in a circular pattern. Although the exact etiology of CCCA remains poorly understood, it is believed to be multifactorial, involving genetic predisposition, environmental factors, and certain hairstyling practices.

## Etiology and Pathogenesis

The precise cause of CCCA remains unclear, but several factors are hypothesized to contribute to its development:

- **Genetics:** A familial pattern of inheritance suggests a genetic predisposition to the condition. Research has indicated that certain genetic variations may increase susceptibility to CCCA, particularly among individuals of African descent.
- **Hairstyling Practices:** Mechanical and chemical trauma to the scalp, such as the use of excessive heat, tight hairstyles (e.g., braids or weaves), and chemical relaxers, are thought to exacerbate or trigger the condition. These practices can cause inflammation and scarring around hair follicles, leading to permanent hair loss.
- **Autoimmune Factors:** There is some evidence suggesting that CCCA may be associated with autoimmune mechanisms. However, the exact role of immune system dysregulation in the development of this condition requires further investigation.
- **Inflammation and Scarring:** CCCA is characterized by inflammation and scarring around hair follicles, which leads to the destruction of the follicular structures and subsequent permanent hair loss. Scalp biopsies show marked inflammation and fibrosis around the affected hair follicles.

## Clinical Features

CCCA typically begins as hair thinning in the central region of the scalp, which may gradually progress outward in a circular or centrifugal pattern. Patients may experience a range of symptoms, including:

- **Hair loss:** A progressive loss of hair in the central or crown area of the scalp.
- **Burning or Itching:** Some patients report discomfort in the affected area, including itching or a burning sensation.

- **Redness and Tenderness:** Inflammation in the scalp can cause redness and tenderness.
- **Scaling and Bumps:** Some individuals may experience flaking or small bumps in the affected areas of the scalp.

It is important to differentiate CCCA from other forms of alopecia, such as female pattern hair loss, tinea capitis, and lichen planopilaris, as these conditions can present with similar symptoms but require different treatment approaches. CCCA is diagnosed primarily through clinical examination and patient history, with confirmation provided by a scalp biopsy that demonstrates inflammation and follicular destruction.

### Diagnosis

The diagnosis of CCCA is primarily clinical, based on a detailed patient history and physical examination. A scalp biopsy is often performed to confirm the diagnosis, where characteristic features include inflammation and scarring around the hair follicles. Additionally, the severity of hair loss is typically staged using a scale from 0 to 5, where stage 0 indicates normal hair density and stage 5 represents severe alopecia with extensive scarring.

### Management and Treatment

There is currently no cure for CCCA, and treatment is aimed at controlling inflammation, preventing further hair loss, and promoting regrowth. Early intervention is crucial to prevent permanent scarring and irreversible hair loss.

- **Topical Treatments:** For mild CCCA, topical corticosteroids are commonly used to reduce inflammation and alleviate symptoms such as itching and redness. These steroids can be self-applied by the patient, and when used in combination with local corticosteroid injections, they can be effective in managing the condition. Corticosteroid injections are typically administered every 4-8 weeks by a healthcare provider.
- **Oral Immunosuppressants:** In more severe cases, oral medications that suppress the immune system, such as oral corticosteroids, mycophenolate mofetil, or hydroxychloroquine, may be used to control inflammation and prevent further hair loss. However, these treatments must be carefully monitored due to their potential side effects, including long-term immunosuppression.
- **Hair Transplantation:** In patients with advanced or severe CCCA, hair transplantation may be considered. However, this is typically only an option once the active phase of the disease has been controlled, as transplanting hair follicles into scarred areas can lead to suboptimal results.
- **Hair Care Education:** Women with CCCA should be educated about proper hair care practices to minimize further damage. Avoiding tight hairstyles, excessive heat, and chemical treatments can help reduce the risk of exacerbating the condition. Gentle hair grooming practices are recommended to maintain scalp health.
- **Sun Protection:** Patients with advanced CCCA, especially those with significant hair loss, should be educated on sun protection strategies to avoid scalp damage and reduce the risk

of skin cancer. Wearing hats or using sun protection products on the scalp is essential for individuals with severe alopecia.

### **Prognosis**

The prognosis for individuals with CCCA depends on the stage at which the condition is diagnosed and the effectiveness of treatment. Early intervention can help slow the progression of hair loss and prevent further scarring. However, once significant follicular damage has occurred, regrowth may be limited, and hair restoration options, such as transplantation, may be the only viable solution.

### **Conclusion**

Central Centrifugal Cicatricial Alopecia (CCCA) is a common cause of hair loss in African American women, characterized by permanent alopecia and scalp inflammation. Although its exact cause remains unknown, factors such as genetics, autoimmune disease, and hairstyling practices are believed to play a role in its development. Early diagnosis and treatment are crucial to prevent irreversible hair loss and scarring. Treatment strategies include topical steroids, oral immunosuppressants, and in some cases, hair transplantation. Education on hair care practices and sun protection is essential for managing CCCA and improving quality of life for affected individuals.

### **References**

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