Hair loss in children can be acquired or congenital. Acquired causes of hair loss can result in focal or diffuse alopecia. Tinea capitis, a fungal infection of the scalp, is characterized by focal patchy hair loss. Antifungal therapy usually results in hair regrowth with good cosmetic results. Children with alopecia areata, an autoimmune disorder characterized by partial or complete scalp hair loss or whole body hair loss, should receive topical or systemic immunosuppressive therapy depending on the extent of involvement. Children with congenital causes of diffuse hair loss should be closely monitored for possible syndromic associations. Finally, children who have androgenic alopecia might benefit from topical minoxidil or finasteride therapy.

Definition and Overview of Hair Loss in Children

Hair loss in children can be classified into **acquired alopecia** and **congenital alopecia**. Hair loss in children can be a manifestation of a systemic, metabolic, or immunologic
disease or it can be a focal problem secondary to primary scalp disorders. Focal hair loss can be associated with **nonscarring or scarring alopecia**.

**Epidemiology and Causes of Hair Loss in Children**

Hair loss is a common disorder in children that is usually not life-threatening but can be **associated with significant emotional or psychological stress**. The causes of hair loss are different among the different age groups of children.

Pre-school children with hair loss can have **congenital aplasia cutis, alopecia areata, or occipital alopecia**. School-aged children with hair loss might have **alopecia areata, trichotillomania, traction alopecia or tinea capitis**. Adolescents, especially boys, might have androgenic alopecia. Additionally, the use of chemical hair products by adolescents can be associated with hair thinning or hair loss.

The most common causes of focal scarring alopecia in children are scalp trauma, aplasia cutis and as a complication to kerions. Tinea capitis can cause focal nonscarring alopecia.

**Clinical Presentation of Hair Loss in Children**

To understand the different presentations of hair loss in children, it is easier to address each etiology of hair loss alone.

![Image](image1.png)  
*Image: Trichotillomania. By Robodoc. License: Public Domain*

![Image](image2.png)  
*Image: Traction alopecia from top=knot barette on a Yorkie. By self. License: CC BY-SA 3.0*
Acquired Focal Alopecia

*Tinea* capitis is a fungus infection that causes **patchy hair loss in children**. It is the most common cause of hair loss in children. The causative organism is the contagious fungus known as *Trichophyton tonsurans*. Children usually present with circular patchy alopecia with scaling involving the scalp, eyebrows, and eyelashes. Black dots are usually seen on a gray background. The black dots are broken hair. Boggy and pustular nodules, known as kerions, can also be seen in some children.

**Alopecia areata**

It is an **autoimmune disease** that can be also associated with other autoimmune disorders, such as Hashimoto thyroiditis. It is characterized by hair loss in **smooth, oval patches of hair loss** that are not confined to the scalp and with no apparent inflammation.

It presents in young adolescents representing a prevalence of 1.7% of the United States population.

The pathophysiology of the disease involves an autoimmune reaction against the body’s hair follicles in anagen state and rapid transformation to catagen, telogen and later dystrophic anagen status. Thus, follicles do not develop beyond anagen and no hair is formed. The follicular stem cell is spared, and hair follicles aren’t destroyed. Grey hair is also spared leading to the term ‘going grey overnight’. Alopecia areata can present with gradual hair loss over weeks to months and new patches appearing while others heal leading to continued progressive balding the patches may coalesce to form total hair loss. Normal hair openings are present.

**Alopecia areata is classified into:**

- Alopecia areata where there are solitary but multiple areas of hair loss.
- Alopecia areata totalis where there is a total loss of terminal scalp hair.
- Alopecia areata universalis where there is a complete loss of scalp and body hair.
- Ophiasis where there is band like a pattern of peripheral scalp hair loss sparing
the central part.
- Sisaiph where there is a pattern of central scalp hair loss sparing the peripheral parts of the scalp.

**Management:**
- Most children re-grow hair within 6-12 months
- More extensive hair loss associated with poorer prognosis
- Hair may be initially white but returns to the typical color

**Trichotillomania**

Children with focal hair loss, broken hairs, and otherwise a normal and healthy scalp might have *trichotillomania*. This condition is characterized by hair pulling by the child at times of psychological, emotional, or physical stress. The hair pulling is worse around the eyes and scalp on the side of the dominant hand. It is common among patients with obsessive-compulsive disorder and body dysmorphic disorder. Other causes of traumatic hair loss include excessive friction such as rubbing against a pillow or wheelchair.

**Congenital Focal Alopecia**

Aplasia cutis is a condition that is characterized by the *focal absence of skin in certain parts of the body at birth*. The child usually has a small and focal area of skin erosion that can be on the scalp. The eroded skin eventually heals, but hair fails to grow from the involved area.

Children born with an orange in color, waxy hairless well-demarcated plaque over the scalp might have a condition known as *Nevus Sebaceous of Jadassohn*. These nevi have the potential of malignant transformation.

**Acquired Diffuse Alopecia**

Children with malignancies, who have hypothyroidism, or who are receiving chemotherapy or radiotherapy, might develop diffuse alopecia. Retinoic acid and valproate are more commonly associated with hair loss due to telogen effluvium. This refers to arrest and loss of all hair in the telogen phase that represents up to 20% of the scalp hair. Other causes of telogen effluvium include high fevers, trauma, previous illnesses, and general anesthesia.

Chemotherapeutic agents usually cause hair loss due to anagen effluvium by inhibiting the follicle mitotic and metabolic activity. The most common incriminated agents are doxorubicin and cyclophosphamide. The hair loss begins 7-14 days after initiation of treatment and peaks after 1-2 months. Other causes of hair loss must be ruled out before reaching this diagnosis.

Boys with a family history of androgenic alopecia might develop diffuse hair thinning, and eventually, male-pattern hair loss in their adolescence.

Febrile illness in neonates and young infants, in addition to anemia, can also cause hair loss.

**Congenital Diffuse Alopecia**

Some genetic disorders, such as congenital hypotrichosis, can be *associated with*
diffuse nonscarring scalp hypotrichosis. Other genetic causes of diffuse alopecia may include shaft hair anomalies such as

- **Netherton syndrome** where there is a form of ichthyosis accompanying SPINK5 mutation.
- **Menkes Kinky Hair syndrome** is an x-linked disorder of copper metabolism characterized by microcephaly, pale skin and brittle scalp hair.

**Diagnostic Workup for Hair Loss in Children**

The main tool in the identification of the most likely cause of hair loss in a child is **adequate history taking and a complete physical examination**.

Children who present with acquired focal alopecia should be evaluated for possible scalp fungal infections. Scraping off the affected scalp areas can provide samples for potassium hydroxide preparation or fungal culturing.

Children with suspected alopecia areata should undergo **thyroid function testing** because of the strong association between alopecia areata and **Hashimoto’s thyroiditis**.

Children with suspected telogen effluvium should undergo erythrocyte sedimentation rate, a complete blood count and a serum ferritin test due to the association between systemic diseases and iron deficiency anemia with this type of alopecia.

**Hair mount examination by light and polarizing microscopy** is helpful in the differentiation between the different types of hereditary causes of hair loss.

**Treatment of Hair Loss in Children**

The management of hair loss in children is dependent on the etiology of hair loss. Children with confirmed tinea capitis should receive **systemic antifungal treatment**. **Griseofulvin, terbinafine, and itraconazole** are the most commonly used agents for the management of tinea capitis in children.

The adequate diagnosis of alopecia areata usually means that the child does not need any specific treatment because **hair regrowth within 1 year** has been described in most cases. When the child or his or her caregivers want a specific treatment for the condition, the choice of the therapeutic agent should be based on the extent of involvement. Children with localized scalp involvement can receive **topical and intralesional corticosteroids or minoxidil**. Children with alopecia totalis or alopecia universalis should receive **oral immunosuppressive therapy**. The most commonly used systemic treatments for alopecia areata are **methotrexate, sulfasalazine, and systemic corticosteroids**.

**N-acetyl cysteine, behavior modification therapy, and sertraline** have been used in the treatment of trichotillomania.

Unfortunately, most causes of congenital genetic diffuse alopecia cannot be treated nowadays. Children with syndromic causes of genetic diffuse alopecia usually have a severe form of hair loss that is associated with a poor prognosis.

The **discontinuation of radiotherapy or chemotherapy** is known to reverse anagen effluvium in most children who receive these therapies for the management of the malignant disease. The identification of the cause of telogen effluvium, and addressing
the etiology, usually results in hair regrowth within six to twelve months.

Boys with androgenic alopecia can receive **topical minoxidil or finasteride**. The response is usually good, but close follow-up is recommended.

**References**


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