

# Hair Problems

**Types of hair:** Hairs are classified into three main types.

- 1 *Lanugo hairs*. Fine long hairs covering the fetus before birth.
- 2 *Vellus hairs*. Fine short hairs covering much of the body surface.
- 3 *Terminal hairs*. Coarse long hairs e.g. scalp or pubic hair.

**The hair cycle:** There are three phases of follicular activity.

- 1 *Anagen*: The active phase of hair production.
- 2 *Catagen*: short phase of conversion from active to resting phase.  
Growth stops, and the end of the hair becomes club-shaped.
- 3 *Telogen*: resting phase at the end of which the club hair is shed.

On the scalp anagen lasts 3 years (6 months in eyebrows and chest hair), catagen 3 weeks, and telogen 3 months. It is estimated that 85% of scalp hairs are normally in anagen and 15% in the telogen phase. Scalp contains an average of 100 000 hairs, and shed about 100 hairs/day as a normal consequence of cycling. Hair growth rate is 1 cm/month.

## Alopecia

The term means loss of hair. It has many causes and patterns. It is important to decide whether or not the hair follicles have been replaced by scar tissue; if they have, regrowth cannot occur. The presence of any disease of the skin itself should also be noted.

Alopecia is conveniently divided into localized (patchy) and diffuse types. Each in turn is divided into scarring and non-scarring types.

### Scarring Alopecia

Hair follicles can be damaged in many ways. If the follicular openings can no longer be seen with a lens, regrowth of hair cannot be expected. Sometimes the cause is obvious: trauma (most commonly), a severe burn, radiodermatitis, a carbuncle or an episode of inflammatory scalp ringworm. Discoid lupus erythematosus, lichen planus and morphea can also lead to scarring alopecia. Epidermal warts, congenital naevi, Cysts and neoplasms are of the causes. The term 'pseudopelade' is applied to a slowly progressive non-inflamed type of scarring which leads to irregular areas of hair loss without any apparent preceding skin disease. If inflammation is present, a biopsy may help to establish the diagnosis.

### Non scarring Alopecia

Some of the most common types are listed below; only a few can be dealt with in detail.

**1-Alopecia areata:** discussed later.

**2-Androgenetic alopecia:** may present as a localized or a diffuse alopecia. (Discussed later).

**3-Neonatal alopecia:** is a transient, physiological event that occurs in the first 3 months of life, probably due to estrogen withdrawal or trauma of labor. It present mostly as patchy occipital hair loss (friction with the pillow) or sometimes as a diffuse hair loss, that recover spontaneously (after a period) and needs no treatment.

**4-Pyogenic infection:** folliculitis or boil of the scalp may cause transient localized non-scarring alopecia, followed by spontaneous regrowth that may last months. History of previous infection will suggest the diagnosis; otherwise, it may be confused with alopecia areata.

**5-Tinea capitis (human):** a common cause of localized alopecia among children in Iraq. The classical scalp ringworm derived from human sources causes areas of scaling with broken hairs.

**6-Traumatic hair loss:** 4 groups

**A-Traction alopecia:** Affects usually girls and young women due to excessive continuous pulling of hair. The pattern of hair loss is determined by the cosmetic procedure in use, hair being lost where there is maximal tug. The bald areas show short broken hairs, folliculitis and sometimes scarring. Patients are often slow to accept that they are responsible for the hair loss, or to alter their cosmetic practices. Even if they do, regrowth is often disappointingly incomplete.

**B- Hair-pulling habit (Trichotillomania):** Is a minor comfort habit in children or young adults. The hair is twisted and pulled continuously especially during psychological tension. The bald areas are irregular in outline and hair loss is never complete. Those hairs that remain are bent or broken, and of variable length. The bald areas do not show the exclamation-mark hairs of alopecia areata, or the scaling and inflammation of scalp ringworm or the hyperpigmentation of neurodermatitis. Common sites are mustache in males, eyebrows and lashes in females, and scalp hair in both. The patient usually deny the habit and some parents do not know what is going on.

**C- Neurodermatitis:** is a disease of adults, with a habit of scratching a localized area under psychological tension. In hairy areas this will result in alopecia with broken hair and hyperpigmented thick lichenified skin.

**D- Massage alopecia:** by massaging the hair.

## **Alopecia Areata**

A common disease, affects 2% skin clinics' patients. It affects any age group, mostly 5-40 years with equal male to female ratio.

**Cause:** An immunological basis is suspected because of an association with thyroid disease, vitiligo and atopy. Histologically, T lymphocytes cluster like a swarm of bees around affected hair bulbs, having been attracted and made to divide by cytokines from the dermal papilla. Alopecia areata is probably inherited as a complex genetic trait, with a positive family history in 30% of cases. The existence of trigger factors, such as stress, fits with this idea.

**Presentation:** Rapid and almost complete hair loss in patchy area(s). usually asymptomatic and discovered by others, although uncommonly preceded by itching and burning sensation. A typical patch is uninflamed, with no scaling,

but with easily seen empty hair follicles. Pathognomonic 'exclamation-mark' hairs may be seen around the edge of enlarging areas. They are broken off about 4 mm from the scalp, and are narrowed and less pigmented proximally. Patches are most common in the scalp and beard but other areas, especially the eyelashes and eyebrows, can be affected too. An uncommon diffuse pattern is recognized, with exclamation-mark hairs scattered widely over a diffusely thinned scalp. Up to 50% of patients show fine pitting or wrinkling of the nails.

**Course:** The outcome is unpredictable. In a first attack, regrowth is usual within a few months. New hairs appear in the centre of patches as fine pale down, and gradually regain their normal thickness and color, although the new hair may remain white in older patients. Subsequent episodes tend to be more extensive and regrowth is slower. Hair loss in some areas may coexist with regrowth in others. A few patients lose all the hair from their heads (alopecia totalis) or from the whole skin surface (alopecia universalis).

**Prognosis:** the following suggest a poor prognosis.

- 1 Onset before puberty.
- 2 Association with atopy or Down's syndrome.
- 3 Unusually widespread alopecia, (totalis, universalis).
- 4 Involvement of the scalp margin (ophiasiform type), especially at the nape of the neck.
- 5 Positive family history.
- 6 Association with nail changes.

### **Differential diagnosis**

- 1-Patches are not scaly, in contrast to ringworm.
- 2-Patches are usually uninfamed, in contrast to lupus erythematosus and lichen planus.
- 3-In the hair-pulling habit of children, and in traction alopecia, broken hairs may be seen but true exclamation-mark hairs are absent.
- 4-Secondary syphilis can also cause a 'moth-eaten' patchy hair loss (excluded with serological tests if necessary).

### **Treatment**

- 1- A patient with a first or minor attack can be reassured about the prospects for regrowth. Tranquillizers may be helpful at the start.
- 2- Topical irritants (dithranol, phenol, salicylic acid, plant extract, garlic, onion) and contact sensitizers (e.g. diphencyprone DNCP) are often used to induce dermatitis that disturb the already disturbed immunity hoping for hair regrowth.
- 3- Topical steroid lotions and creams.
- 4- Intradermal injection of steroid leads to localized tufts of regrowth while not affecting the overall outcome. This may be useful to re-establish eyebrows or to stimulate hope.
- 5- Ultraviolet radiation or even psoralen with ultraviolet A (PUVA) therapy may help extensive cases.
- 6- Topical immunosuppressive agents (e.g. tacrolimus).

- 7- Systemic therapy: in severe conditions such as systemic steroid, psoralen, oral zinc sulphate and immunomodulation with BCG vaccination.

### **Diffuse Alopecia**

Hair is lost evenly from the whole scalp; this may, or may not, be accompanied by a thinning visible to others. Some of the most common causes are listed below, but often a simple explanation cannot be found.

**1-Physiological**

A- Normally 100-hair fall/day, a common cause.

B- Neonatal, 3 months after birth.

C-Baldness, after age of 40years is a normal event in the life of every male or female.

**2- Androgenetic alopecia: discussed later.**

**3- Diffuse type of alopecia areata**

**4-Congenital causes:** eg. The *hypohidrotic ectodermal dysplasias* are a group of rare inherited disorders characterized by sparse hair, scanty sweat glands, and poor development of the nails and teeth.

**5-Telogen effluvium:** can be triggered by any severe illness, particularly those with bouts of fever or haemorrhage, by childbirth and by severe dieting. All of these synchronize catagen so that, later on, large numbers of hairs are lost at the same time. The diffuse hair fall, 2–3 months after the provoking illness, can be mild or severe. Regrowth, not always complete, usually occurs within a few months. This condition is unaffected by therapy, but patients can be reassured that their hair fall will be temporary.

**6-Deficiency state:** iron, zinc, marasmus and kwashiorkor.

**7-Endocrine causes:** hypopituitarism, hypo- or hyperthyroidism, hypoparathyroidism.

**8- Severe skin condition:** such as exfoliative dermatitis.

**9-Severe chronic illness:** lymphoma, leukemia.

**10-Drugs and chemicals:** especially antimitotic agents that stop the hair growth at the anagen phase causing diffuse hair loss few weeks later (anagen effluvium). Local ice pack application during therapy may prevent it. Of the other drugs are anticoagulants, vitamin A excess, oral contraceptives, colchicin.

**11-Hair shaft abnormalities** that result in fragile hair shaft fractured on simple trauma.

**12-Idiopathic:** it is true to say that often no cause for diffuse alopecia can be found.

The causes mentioned should be considered, However,.

### **Androgenetic Alopecia**

Physiologic process with increased follicle sensitivity to androgens leading to change from terminal to vellus hair follicles with distinct patterns of alopecia.

**Cause:** Clearly familial. Polygenic inheritance with variable penetrance seems more likely, but it runs as autosomal dominant in some families. The hair follicles have increased androgen receptors as increased activity of 5- $\alpha$ -

reductase type II (that change testosterone to the active form, dihydrotestosterone) leading to increased androgen sensitivity. In females, androgenetic alopecia, with normal circulating androgen levels, is seen only in those who are strongly predisposed genetically.

**Presentation:** Thinning of hair without scalp disease, In bald areas, terminal hairs are replaced by finer vellus ones. There are two classic patterns

**1- "Male pattern":** The common pattern in men is the loss of hair first from the temples, and then from the crown.

**2- "Female pattern":** the hair loss may be much more diffuse, particularly over the crown.

**Clinical course:** Hair loss is relentless, tending to follow the family pattern with some losing hair quickly and others more slowly. The diffuse pattern seen in women tends to progress slowly.

### **Differential diagnosis**

The diagnosis is usually obvious in men, but other causes of diffuse hair loss have to be considered in women (p. 168).

### **Investigations**

None are usually needed. In women, virilization may have to be excluded.

### **Treatment**

- Scalp surgery, hair transplants and wigs are welcomed by some.
- Topical application of minoxidil lotion may slow early hair loss and even stimulate new growth of hair in a few cases. Small and recently acquired patches respond best. When minoxidil treatment stops, the new hairs fall out after about 3 months.
- Anti-androgens help some women with the diffuse type of androgenetic alopecia.
- Finasteride, an inhibitor of human 5- $\alpha$ -reductase type II, reduces levels of dihydrotestosterone. It may increase hair counts and so lead to a noticeable improvement in scalp hair. However, the beneficial effects slowly reverse once treatment has stopped.