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Alopecia

Alopecia describes loss of hair from areas where hair normally grows. It comes in a variety of patterns with a variety of causes. The most common form is male pattern baldness, or androgenetic alopecia.

In all forms of acquired baldness, skin that has previously been protected may be subjected to strong sunlight. Hats should be worn to prevent burning and possibly later malignant change.

Normal hair cycle[1]

Each follicle produces a number of hairs during a lifetime. There are three phases:

- Anagen or growth phase on the scalp lasts between three and five years and the hair grows at approximately 1 cm a month. The duration of the anagen phase varies from person to person and it determines how long hair will grow if not cut. Usually about 85% is in anagen phase.
- Catagen phase follows the anagen phase and is an involutional stage that lasts around two weeks.
- Telogen, or dormant, phase lasts about three months. The hair remains in the follicle but does not grow.

At the end of the telogen phase the follicle starts production of new anagen hair which displaces the old one from the follicle, with the old one being shed. In some animals this is synchronised to produce moults but in humans it is unsynchronised and around 50 to 100 hairs drop out each day, mostly unnoticed. Sometimes people go through a period of more predominantly telogen phase and they lose a lot of hair in brushes and combs, causing much anxiety; however, baldness does not develop.

Aetiology

There are a number of types and patterns of alopecia. Aetiology, epidemiology and management will vary between them. Some of the more common forms of alopecia (further discussed below) are:

- Male pattern baldness, or androgenetic alopecia (male).
- Female pattern baldness, or androgenetic alopecia (female).
- Alopecia areata.
- Telogen effluvium (TE).
- Anagen effluvium.
- Trichotillomania.
- Alopecia related to or caused by skin conditions or systemic illness, including:
    - Seborrhoeic dermatitis.
    - Lichen planus and discoid lupus erythematosus.
    - Tinea capitis.
    - Impetigo.
    - Secondary syphilis.
    - Thyroid disease.
    - Iron deficiency.

Determining the cause will guide management and prognosis.

Androgenetic alopecia - male pattern

This is a characteristic pattern of balding in men, which becomes more common with age. There may be bitemporal recession and/or a central recession to produce a characteristic horseshoe shape of remaining hair.

Aetiology

- Genetic predisposition via a number of different genes.

- A number of mechanisms play a part. Hair follicles become smaller over time. Terminal hairs are gradually replaced by thinner hairs with less pigmentation. Hairs are in the anagen phase for less time and fewer hairs are in this growing phase. The end result is shorter hairs which do not reach the skin surface. Telogen hairs are more loosely attached and fall out more easily. Finally, there is increased time between telogen phase shedding and anagen phase regrowth.
- Believed to be androgen-dependent; however, androgen levels in affected men are usually normal. The condition is a matter of end-organ sensitivity to androgens and men who are deficient on their head may have an abundance of hair over the rest of their bodies. Dermal cells convert testosterone into dihydrotestosterone. For reasons that are not clear, affected hair follicles become more sensitive to dihydrotestosterone, which then causes the hair follicles to shrink.

Epidemiology

- Increasingly common with age.
- Initial signs seen in teenage years.
- Half of men are affected by the age of 50.
- Rate of progression and severity of end result are extremely variable.
- Significant ethnic variations - white men are affected four times more than those of Afro-Caribbean origin. Alopecia tends to occur later and more slowly in Asian men.

Management [2] [3]

Doing nothing is likely to be the best treatment option. For many men, there is no effective affordable treatment; therefore, acceptance is the management strategy. Counselling or support groups may be useful.

Aesthetic treatment options include wigs and hairpieces and surgical transplantation. The latter is expensive and not available on the NHS, although newer techniques result in improved results.

There are two pharmacological options approved for this condition. Neither is available on the NHS. There is a high rate of discontinuation of treatment due to lack of satisfaction with the results.

- **Minoxidil**. Topical application of minoxidil twice daily, in either 2% or 5% form may be used. It is available over-the-counter or by private prescription. The stronger formulation may be more effective; it may, however, cause more irritation. Minoxidil is more likely to be effective in the early stages of balding than once it is established. It should be used for at least six months to establish efficacy and then used indefinitely in order to maintain any effect.
- **Finasteride**. Oral finasteride in a dose of 1 mg daily may be effective. It is only available by private prescription. A trial of at least six months is needed and, if effective, treatment needs to be continued indefinitely. There is a small risk of adverse sexual side-effects. There is evidence of moderate efficacy.

Other options which have been used include dutasteride and low-level laser light therapy [4] [5]. Evidence is not yet sufficient for these, or for other miscellaneous options, as mainstream treatments [6].

Androgenetic alopecia - female pattern

This is a characteristic pattern of hair loss in genetically predisposed women. There is a more diffuse hair loss than in men, particularly affecting the top of the scalp.

Aetiology

- Terminal hairs are gradually replaced by smaller hairs with less pigmentation. Fewer hairs are in the anagen phase. Telogen hairs are more loosely attached and fall out more easily.
- The genetic basis and the role of androgens are less well established than in male pattern hair loss.
- There may be distinct early-onset and late-onset forms.

Epidemiology

- Reported prevalence rates vary widely.

- It increases after the menopause.
- It affects around one third of white Caucasian women over the age of 70.
- There is ethnic variation with it being less common in women of Oriental origin.
- Rate of progression is variable but women rarely go completely bald.

Management

- Address fears of baldness.
- Reassurance - total baldness is unlikely.
- Note that terms such as "hair thinning" are more acceptable than "balding".
- Encourage cosmetic improvements through hair styling, colouring and products.
- Support groups or counselling may be of benefit.
- **Doing nothing is likely to be the best treatment option**.
- Aesthetic options include hair pieces, wigs and surgical transplantation. Surgery is expensive and not available on the NHS.
- Topical 2% minoxidil is the only licensed pharmaceutical agent. It has to be applied twice-daily indefinitely. Response is modest and there may be side-effects (such as unwanted facial hair growth).
- Finasteride should not be used in women.
- Evidence is not sufficient to use anti-androgenic agents such as spironolactone, drospirenone and cyproterone[6].

Alopecia areata [7] [8]

Alopecia areata is a chronic inflammatory disease, which affects hair follicles and sometimes nails. The typical clinical presentation is with well-circumscribed bald patches on the scalp or beard area. There is no scarring or scaling on the skin. Exclamation mark hairs (short broken hairs tapering towards the proximal end) may be found around the margins and are said to be pathognomonic but not invariable. The more severe forms of alopecia areata are:

- Alopecia totalis - total loss of scalp hair.
- Alopecia universalis - total loss of all body hair.

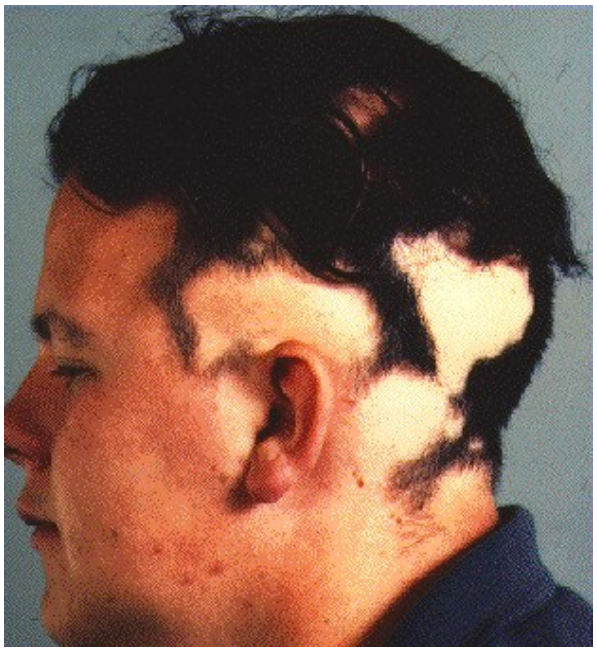
Aetiology

This condition is of unknown aetiology, although there is much support for an autoimmune component. It is more common in acquired thyroid disease, vitiligo, diabetes and collagen diseases. Stress is sometimes given as a factor but it may be that the disease is the cause rather than the result of stress. There is a tendency for it to run in families (especially the more severe cases) and it is linked to a variety of genes and gene complexes. Around 20% have a positive family history.

Epidemiology and natural disease course

- Estimated prevalence in the UK is 15 per 10,000 of the population.
- It can affect any age but onset is most common in childhood and adolescence. Incidence peaks between the ages of 15 and 29. 50-60% develop a first bald patch before the age of 21.
- Males and females are affected equally.
- There is nail involvement in 10-15%.
- Spontaneous remission occurs in up to 80%, although recurrence is the norm.
- 14-25% progress to alopecia totalis or alopecia universalis.
- Severity at presentation is the best indicator of long-term outcome.

- As well as severe disease, factors associated with a poorer prognosis include nail abnormalities, onset at a young age, extensive alopecia, involvement of the scalp margin, atopy and associated autoimmune disease.



Alopecia areata showing fairly extensive, well-demarcated areas of hair loss

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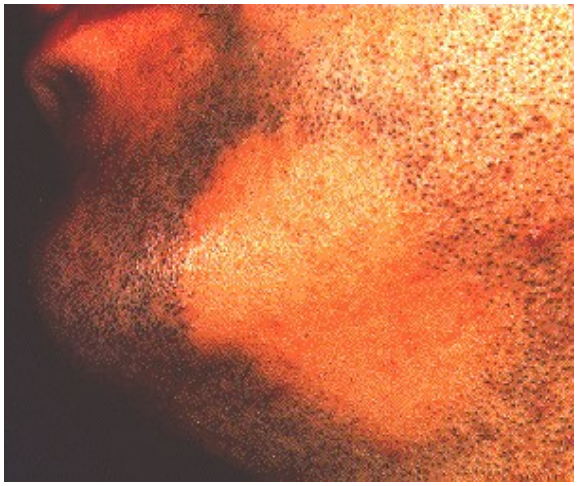

Alopecia areata on the beard area. It can occur off the scalp but is less obvious

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Management

Assessment

- Extent: over 50% hair loss is considered extensive and should prompt specialist referral.
- Investigate further if there is suggestion of other autoimmune disease.
- Assess psychological distress.

Explanation and education are important. Stress high levels of spontaneous remission when considering treatment in milder cases.

No treatment option should be discussed and is appropriate if:

- There is evidence of hair regrowth.
- Treatment is not wanted.
- There is less than 50% hair loss (unless the person affected wishes for treatment).

Primary care treatment options

- For non-pregnant adults only.
- Not for use on the face.
- Trial of potent topical steroid - eg, betamethasone valerate 0.1%, fluocinolone acetonide 0.025% or hydrocortisone butyrate 0.1%.
- Off-licence use of a very potent topical steroid - eg, clobetasol propionate 0.05% scalp application.
- Warn of high failure rate of treatment and also that it may take at least three months to take effect.
- Warn that if hair growth occurs, it initially may be fine and depigmented. It can be dyed with a non-peroxide-based dye while awaiting return to its usual colour.
- Consider counselling and psychological support.

Specialist treatment options
Although a number of treatments have been shown to result in hair regrowth, none alter the long-term outcome. Response rates are generally poor. Options dermatologists may consider include:

- Intralesional corticosteroids.
- Topical corticosteroids.
- Topical immunotherapy.
- Topical minoxidil.
- Topical dithranol
- Topical or systemic psoralen plus ultraviolet A (PUVA) light therapy.
- Oral ciclosporin.
- Dermatography (tattooing). Particularly effective for eyebrow loss.
- Wigs. (Certain wigs can be prescribed on the NHS by a specialist. Human hair wigs are better but more expensive and only available on the NHS if there is a contra-indication to acrylic hair.)

Telogen effluvium[9] [10]

Telogen effluvium (TE) occurs when physiological or hormonal stress triggers many hairs to move into telogen phase. When new hairs appear in anagen phase they push out the telogen hairs and this is between one and six months, on average three months, after the initial insult. People with TE notice they are shedding more hair than usual and often present with handfuls of hair found on the pillow, on a brush or in the plughole.

This can be an acute or chronic condition but the chronic condition may go unnoticed. The acute condition may be precipitated by a variety of factors:

- Childbirth. TE is estimated to affect one third to one half of women following childbirth. It is also called telogen gravidarum.
- Crash dieting, anorexia nervosa or low protein intake.
- Sudden weight loss or dietary restriction following bariatric surgery.
- Iron deficiency.

- Acute febrile illness or severe infection.
- Major surgery and severe trauma.
- Heavy metal poisoning, including selenium, arsenic and thallium.
- Medication changes - eg, contraceptives, antidepressants.

Chronic diffuse telogen hair loss may be idiopathic (affecting women only) or may be secondary to an organic cause. Possible causes include:

- Thyroid disease.
- Iron-deficiency anaemia.
- Chronic illness such as malignancy, particularly lymphoproliferative malignancy and any chronic debilitating illness, such as systemic lupus erythematosus, end-stage chronic kidney disease or liver failure.
- Zinc deficiency.
- Chronic starvation, malabsorption or hypoproteinaemia.
- Medication, including beta-blockers, anticoagulants, retinoids, lithium, carbamazepine and immunisations.

Management is the correction of any matters that require attention (such as poor diet) and reassurance that hair will return in a matter of months. Minoxidil is occasionally prescribed for this condition.

Anagen effluvium[11]

Anagen effluvium occurs when hair production is arrested in the anagen phase. This mainly happens when cancer chemotherapy, immunosuppression or radiotherapy causes rapid hair loss. Doxorubicin and cyclophosphamide are especially notorious but most antimitotics can have this effect.

Rarely, anagen effluvium can be a feature of pemphigus vulgaris, or be caused by trauma, pressure or exposure to chemicals such as thallium, boron and arsenic.

Within a few months of stopping chemotherapy the hair will usually return. It can be very psychologically damaging for people in a vulnerable situation. Scarves, hairpieces and wigs may be useful. Patients undergoing cancer chemotherapy are entitled to free NHS wigs. If the treatment includes hormonal manipulation that may induce hot flushes, a wig may be very uncomfortable to wear. Minoxidil shortens the alopecia by about 50 days. Local cooling of the scalp may also be helpful.

Trichotillomania[12] [13]

Trichotillomania, or hair-pulling disorder, is a behavioural disorder which may have links with obsessive-compulsive disorder. It may be associated with other conditions, particularly mood and anxiety disorders. It can occur at any age, but starts most often in adolescence. Hair loss is asymmetrical and has an unusual shape, with broken hairs across the bald patch which are not easily removed. Single or multiple areas can be affected, including eyebrows, eyelashes and pubic hair. There is minimal or no inflammation.

Genetic and environmental factors have been implicated. It may be possible to see that the individual wraps the hair around a finger and pulls on it, perhaps when concentrating on something such as when studying. Most individuals report pleasurable feelings during or after pulling out hairs. There may be boredom, tension or anxiety before pulling episodes and a significant reduction in such negative emotions following pulling. Management involves behavioural modification.

This is classified as a psychiatric disorder but results in a form of traumatic alopecia. Traction alopecia can also occur with hairstyles that pull tightly on the hair and it may lead to frontal recession.

Trichobezoar (swallowing hair which forms a ball in the intestines) can be a complication.

Psychotherapy (specifically habit-reversal therapy) and cognitive behavioural therapy are usually first-line treatments with some evidence base. Unlicensed medications occasionally found to be helpful and which have been studied include:

- Antidepressants of all classes.
- Antipsychotics, particularly olanzapine.

- N-acetylcysteine.
- Opioids.
- Anticonvulsants.

A Cochrane review found moderate evidence for efficacy of clomipramine, olanzapine and N-acetylcysteine but warned that results should be interpreted with caution due to the small number of studies and small size of those studies.

Other causes of alopecia

There are a number of other conditions that can lead to loss of hair. These include:

- Scalp conditions:
    - Infection - impetigo, boils, abscesses, tinea capitis (especially animal ringworm).
    - Psoriasis.
    - Seborrhoeic dermatitis - produces large amounts of dandruff and is often associated with thinning of hair.
    - Atopic dermatitis.
- Trauma:
    - Traction alopecia can be caused by tight hairstyles and hair grooming devices such as curling irons and straighteners.
- Scarring alopecia. Conditions causing alopecia that are associated with scarring of the skin are known collectively as cicatricial alopecia. These are rare and include:
    - Certain infections such as folliculitis, boils or tinea capitis.
    - Scleroderma.
    - Discoid lupus erythematosus.
    - Lichen planopilaris.

- Secondary syphilis:
    - Causes a typical pattern of hair loss called glades in the wood.

Further reading

- Hair loss; DermNet NZ

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