Alopecia, androgenetic - female - Management

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Overview of diagnosis

- **The diagnosis of androgenetic alopecia in women is usually made from the history and clinical findings alone.**

- **Take a history** to assess the severity, impact, and possible causes of hair loss.

  - Include a gynaecological/obstetric history to help identify possible hormonal disorders.

  - Remember to ask specifically about features of androgen excess.

- **Suspect** an underlying cause or alternative diagnosis for the hair loss if assessment reveals:

  - Systemic disease — particularly a recent severe systemic infection, iron deficiency, or thyroid dysfunction (which may indicate effluvium).

  - Drugs — particularly anabolic steroids or supplemental androgens (less common in women than men), or other drugs with an androgenic effect, such as progestogens, drugs with an antithyroid action, or chemotherapy.

  - Extreme dietary habits or rapid weight loss.

- **Examine the pattern and distribution** of hair thinning and inspect the scalp.

  - The typical pattern involves slowly progressive and often diffuse reduction in the density of hair at the crown, with retention of the frontal hairline.

- **Consider whether any investigations are required.**

What history should I take in a woman with suspected androgenetic alopecia?

- **Ask women with suspected androgenetic alopecia about the following:**

  - Timing and pattern of the hair loss:

  - When did it start?

- Was it sudden or gradual?
- Where was it noticed most?
- Past medical problems in previous months, including systemic or endocrine disorders.
- Family history of hair loss.
- Use of medication.
- Dietary habits.

- **Ask about the normal haircare routine,** including changes in hairstyle to compensate for alopecia and use of any haircare procedures or products.

- **Ask about gynaecological / obstetric history,** including:

- Age of menarche and menstrual pattern (prior to using hormonal contraception).
- Use of hormones (contraception, hormone replacement therapy, fertility treatment).
- History of pregnancy or infertility.

- **Ask specifically about features of androgen excess,** such as:

- Excessive facial and body hair (hirsutism).
- Severe acne.
- Seborrhoea of scalp and skin.
- Virilization.
- Menstrual irregularities.
- Infertility.
- Galactorrhea.
- History of polycystic ovary syndrome.

- **Ask specifically about the psychological impact** of hair loss and the impact on quality of life.

Basis for recommendation

These recommendation are based on expert opinion from two guidelines [Drake et al, 1996; Blume-Peytavi et al, 2010] and expert opinion from review articles [Shapiro et al, 2000; Camacho-Martinez, 2009; Hillman and Blume-Peytavi, 2009].

How should I examine a woman with suspected androgenetic alopecia?

- **Examine the pattern and distribution of hair thinning.**

o Typically there is thinning in the density of hair at the crown and frontal scalp, and widening of the central parting with retention of the frontal hairline.

o The degree of hair loss can be assessed using the Ludwig Scale.

o Presentation may vary, however, and less frequent patterns are:

o Thinning and widening of the central part of the scalp with breach of frontal hairline (Christmas tree pattern).

o Thinning associated with bi-temporal recession (male pattern). See the section on Hamilton-Norwood Scale in the CKS topic on Alopecia, androgenetic - male.

o The onset is usually slowly progressive and hair loss is often diffuse.

o Short, thin vellus hairs may be present (but are more common in males).

o Women tend not to develop completely bald areas. Hair density often remains greatest over the occipital scalp.

o Shedding, if present, is generally mild. Profound shedding may indicate telogen effluvium.

- **Examine the scalp for any bald patches, scarring, erythema, or scaling.**

- **Consider the pull test (only if personal experience allows).**

- The technique is to tug a bundle of approximately 50–60 hairs firmly, but not forcibly, away from the scalp, sliding the fingers along the hair shaft. The test is positive if more than 10% of grasped hairs (around six hairs) are pulled away from the scalp. It indicates active hair shedding.

- The pull test is usually negative in androgenetic alopecia, except in active periods where there may be a moderate degree of telogen hair shedding.

- A positive pull test requires investigation for telogen effluvium (but androgenetic alopecia may still coexist).

▪ **Look for features of hyperandrogenism,** such as excessive facial and body hair (hirsutism), severe acne, and seborrhoea of scalp and skin.

▪ The 'pull test' is a crude tool to determine the ongoing activity and severity of any type of hair loss. It is of value only in experienced hands, as it shows high inter-observer variation and is influenced by shampooing. Examiners should standardize their own procedure. More advanced specialist tools for assessment are now available, such as the trichogram (microscopic examination of hair roots), photographic techniques, and dermatoscopy.

The Ludwig Scale

▪ The degree of female alopecia can be assessed using the Ludwig Scale, which ranges from stage 1 to stage 3 [Ludwig, 1977].

▪ An illustration can be found at www.americanhairloss.org/women.

▪ The three stages of the Ludwig Scale:

- Stage 1 — Minimal

- Thinning of hair is seen from the anterior part of the crown with slight widening of the parting width. Women tend to hide the frontal area of hair loss by combing the hair forward, exposing a visible area of alopecia in the anterior centroparietal area while the frontal hairline is maintained.

- Stage 2 — Moderate

o Thinning of the crown has gradually become more evident because of an increase in the number of thin and short hairs. Combing the hair forward is less effective.

o Stage 3 — Intense

o The crown becomes almost total bald. There is significant widening of the parting width, but the frontal hairline is maintained. Combing the hair forward is not very effective.

Basis for recommendation

These recommendations are based on expert opinion from two guidelines [Drake et al, 1996; Blume-Peytavi et al, 2010] and expert opinion from review articles [Shapiro et al, 2000; Camacho-Martinez, 2009; Hillman and Blume-Peytavi, 2009].

Investigations

▪ **Laboratory testing for the diagnosis of androgenetic alopecia is generally unnecessary,** as the diagnosis is usually made on clinical grounds.

▪ **Consider checking thyroid function, full blood count, and ferritin level,** particularly if telogen effluvium is suspected, the presentation is atypical, or there are features that suggest anaemia or hypothyroidism.

▪ **Consider basic endocrine investigations if there are features of androgen excess.**

o Initial tests are:

o Free-androgen index (combined hormonal contraception should be stopped 2 months before measuring this).

o Prolactin level.

o Seek specialist advice if levels are abnormal, because further investigation may be required.

Basis for recommendation

Iron and thyroid status

▪ The recommendation to consider checking iron status and thyroid function is based on a European consensus guideline [Blume-Peytavi et al, 2010]. Iron deficiency and thyroid dysfunction are both associated with telogen effluvium, which may coexist with androgenetic alopecia. There is uncertainty regarding the role of iron deficiency specifically in androgenetic alopecia, and routine testing is not recommended.

Endocrine screening tests

▪ The recommendation is based on expert consensus that an extensive endocrinological workup is not necessary in most women with androgenetic alopecia, but that basic endocrine investigations should be carried out if the woman has features suggestive of androgen excess [Blume-Peytavi et al, 2010]. Recommended tests are measurement of the free-androgen index (FAI) and prolactin level.

▪ However, CKS expert reviewers differed on their opinion of the initial endocrine testing to perform when hyperandrogenism is suspected.

o **FAI**

o Androgen status can be assessed by measuring free testosterone, but this test is not commonly available. Calculation of the FAI, which requires measurement of total testosterone and sex-hormone binding globulin (SHBG), is a suitable alternative.

o Testosterone is almost entirely bound to transport proteins in the blood, mainly SHBG and albumin. Only free testosterone is biologically active, and its concentration is strongly influenced by the level of SHBG.

o The FAI equals the total testosterone level (in nanomol/L x 100) divided by the SHBG level (in nanomol/L). The normal value for FAI is less than 5. Levels above this indicate androgen excess, as can occur in conditions such as polycystic ovary syndrome.

o Oestrogens lead to elevated SHBG levels, whereas testosterone levels may be only slightly changed; therefore, the FAI can be markedly improved by

combined oral contraceptive (COC). In view of this, cessation of COC for at least 2 months before carrying out the test is recommended [Blume-Peytavi et al, 2010]. CKS expert reviewers commented that this is not always practical.

- The test should be taken early in the morning, ideally between the second and the fifth day of the menstrual cycle.

- **Prolactin**

- Prolactin tends to decrease normal levels of sex hormones (oestrogen in women and testosterone in men). It decreases gonadotrophin-releasing hormone pulsatility, which results in the inhibition of release of luteinizing hormone and follicle stimulating hormone, and reduced gonadal steroidogenesis [Kumar and Clark, 2005].

- CKS expert reviewers were not unanimous on whether it is necessary to include prolactin as part of endocrine testing in primary care. This reflects a degree of uncertainty regarding the relationship between prolactin levels and alopecia. However, several reviewers thought that identifying a possible prolactinoma justified testing. Expert opinion should be sought if in doubt.

Further testing if initial endocrine tests are abnormal

- In women, elevated androgen levels may be due to polycystic ovary syndrome, but other causes should be considered, such as congenital adrenal hyperplasia, androgen secreting tumours, and Cushing's syndrome. More detailed testing can be guided by expert advice [Blume-Peytavi et al, 2010].

What else might it be?

Alternative diagnoses include other diseases affecting hair growth, diseases of the scalp, and associated underlying factors.

- **Telogen effluvium** is the most common alternative diagnosis.

- Sudden and severe shedding may occur when a higher percentage of hairs are in the resting phase.

- Shedding may follow significant events — it may occur up to 3 months after childbirth, severe infection, crash diets, or major surgery, or may be precipitated by some medications.

- Usually scalp coverage is good, because more than half the hair must be lost before it is objectively apparent.

- In the active phase, the pull test may be positive. Later, regrowth with tapered short hairs may be seen.

▪ **Underlying causes of hair loss to consider,** particularly in telogen effluvium, include:

- Thyroid disease (hypo- and hyperthyroidism) and other endocrine disorders.

- Drugs, such as those implicated in telogen effluvium (for example antidepressants, anticoagulants, cancer treatments, birth control pills, and hormonal treatments).

- Iron deficiency and poor nutritional status.

- Severe pyrexial infection.

- Systemic disease, such as systemic lupus erythematosus.

- Cancer.

▪ **Less common causes of hair loss**

- **Alopecia areata** — this can occasionally present as diffuse hair loss. See the CKS topic on Alopecia areata.

- **Scarring alopecia or frontal fibrosing alopecia.**

- **Trichotillomania** — a psychiatric condition in which people pull their hair out. It may be associated with obsessive-compulsive disorder and is more common in females than males. Hair loss is asymmetrical and has an unusual shape. Single or multiple areas can be affected, including eyebrows and eyelashes.

- **Traction alopecia** — such as from hair being pulled back in styles like a ponytail or tight plaiting, or during use of hair rollers.

o **Hair fragility from chemical application** — such as bleaching.

Basis for recommendation

This information is based on expert opinion from two guidelines [Drake et al, 1996; Blume-Peytavi et al, 2010] and expert opinion from review articles [Shapiro et al, 2000; Thiedke, 2003; Mirmirani, 2007; Hillman and Blume-Peytavi, 2009].

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What general advice should I give women?

- Inform the woman, where possible, what she may expect in terms of continuing hair thinning.
- Address the fear of going bald — it may be unspoken.

o Avoid the word 'bald' unless using it in the phrase 'You will not go bald'. Androgenetic alopecia rarely results in totally bald areas in women.

o Such wording as 'hair loss' and 'thinning' is preferable.

- Encourage (rather than discourage) the use of hairstyling, colouring, and hairsprays to improve cosmetic effects.
- Hair may be shampooed as frequently as desired without fear of worsening hair loss.
- Discuss available treatment options (see Treatment).
- Local support groups or counselling may be of value if the woman requires psychological support, such as Hairline International (www.hairlineinternational.com), or Alopecia Online (www.alopeciaonline.org.uk).

Basis for recommendation

These recommendations are based on expert opinion from a guideline [Drake et al, 1996] and expert opinion from review articles [Thiedke, 2003; Mapar and Omidian, 2007; Mirmirani, 2007]. The support groups were recommended by CKS expert reviewers.

How should I treat women with androgenetic alopecia?

- **Discuss expectations, wishes, and goals, give general advice, and discuss the following management options.**
- **Doing nothing** may be the best option in many women.
- **Using a medical treatment.**
  - **Topical minoxidil 2%** is the only drug licensed for use in female androgenetic alopecia.
  - It is not prescribable on the NHS but can be bought over the counter or prescribed privately.
  - To gain and maintain benefit, twice-daily application must continue indefinitely.
  - The women who respond best are those who have androgenetic alopecia of recent onset or small areas of hair loss.
  - About 1 in 4 women report 'moderate' or more hair regrowth.
  - Hair regrowth may not be noticed for 4 months. Subjective improvement may take even longer.
  - Cessation of treatment will lead to loss off all results within 4 months, and this rebound shedding may be severe.
  - Hypertrichosis (unwanted non-scalp hair, including facial hair) occurs in about 4% of women. The woman can be reassured that this hair disappears after 1 year with continued treatment. If application is discontinued, the hair disappears in 1–6 months.
  - **Do not offer other medications.**

- Finasteride is contraindicated in women.

- Medications with anti-androgenic effects, such as spironolactone and cyproterone, are not routinely recommended without specialist expertise.

- **Use of aesthetic options.**

Aesthetic options

- **Hairpieces and wigs** — can be interwoven (these are more expensive and need regular readjustment) or worn on top of the woman's own hair.

- In certain circumstances, women on low incomes may be eligible for free or reduced cost wigs on the NHS.

- More information on buying wigs and NHS policy is available at www.nhs.uk/wigs.

- **Cosmetic options** to camouflage hair loss are not prescribable on the NHS. They include:

- **Hairstyling —** waving, dyeing, sprays, and mousses.

- **Hair camouflage products** — which provide scalp cover.

- **Hair extensions** — provide fullness but may result in further pulling and traction on existing follicles.

- **Surgical hair transplantation** for androgenetic alopecia is not available on the NHS and the cost to the woman may be prohibitive.

- Modern techniques use micrografting to produce a more natural appearance than older techniques which transplanted plugs of hair follicles.

Basis for recommendation

Minoxidil

- There is evidence (with a moderate risk of bias) that topical minoxidil 2% is of some benefit in the treatment of women with androgenetic alopecia.

- In the trials, peak effects usually occurred by about 12 weeks and remained relatively constant thereafter.

- Change in hair count from baseline was up to twice as much in women applying topical minoxidil 2% than those applying placebo, but only about 1 in 4 women rated themselves as having at least moderate hair regrowth by the end of the studies. This may be an overestimate of benefit, as none of the studies carried out intention-to-treat analysis of the data.

▪ Unlike in men, CKS found no convincing evidence that topical minoxidil 5% is superior to topical minoxidil 2%. Only the 2% strength is licensed for use in women.

▪ Information on the adverse effect of hypertrichosis (excessive non-scalp hair growth) is from expert reviews [Dawber and Rundegren, 2003; Thiedke, 2003]. Facial hypertrichosis has been reported to be a dose-related adverse effect in around 4% of women treated with topical minoxidil.

Finasteride in women

▪ Finasteride should not be used in women.

- It is contraindicated in women of childbearing age because 5-reductase inhibitors are likely to cause abnormalities of the external genitalia in a male fetus [ABPI Medicines Compendium, 2010b].

- CKS found just one 12-month, randomized, double-blind, placebo-controlled trial (in 137 women) of finasteride in postmenopausal women with androgenetic alopecia [Price et al, 2000]. This trial failed to show benefit.

- However, several CKS expert reviewers noted that some specialists do prescribe finasteride to women, particularly if the woman is postmenopausal, and occasionally to premenopausal women who are taking effective contraception. CKS is not recommending this in primary care settings.

Anti-androgenic medications

▪ The role and place of anti-androgenic drugs in female androgenetic alopecia in both pre- and postmenopausal women has not been conclusively established.

- Drugs which have been used for this purpose include cyproterone and spironolactone. Evidence for their use is extremely limited, and there is considerable uncertainty about their usefulness [Thiedke, 2003; Mirmirani, 2007; Scheinfeld, 2008].

Aesthetic options and hair transplantation

- Information on hair transplantation is based on an expert review [Avram and Rogers, 2009].

- Unless it is part of reconstructive surgery, hair transplantation is considered cosmetic surgery and is not covered by the NHS. It is therefore important to consider both the risk and price of surgical hair treatments. Many women cannot afford this type of elective surgery.

- Cloning hair is another possibility for the future but expert reviewers advised that studies have been disappointing and the expense of transplanting will still be prohibitive for most.

Can I use medication during pregnancy and breastfeeding?

- No medical treatment for androgenetic alopecia is recommended while a woman is trying to get pregnant, or is pregnant or breastfeeding.

- If her male partner is taking finasteride, she can be reassured that it is safe for her to try to become pregnant or to breastfeed. However, she should be advised not to handle crushed or broken finasteride tablets, because breaking the tablet coating exposes the active ingredient.

Basis for recommendation

Minoxidil

- There are no controlled studies of topical minoxidil in pregnant and lactating women.

- Advice is based on the manufacturer's Summary of Product Characteristics [ABPI Medicines Compendium, 2010a].

- Expert opinion adds that women attempting to conceive should avoid minoxidil owing to early case reports of the possibility of birth defects, mostly related to the oral form of the medication [Avram and Rogers, 2009].

- Minoxidil is excreted into breast milk in very small amounts [American Academy of Pediatrics Committee on Drugs, 2001]. Although it is thought that this is unlikely to be harmful, the manufacturer recommends that topical minoxidil should be avoided in lactating women [ABPI Medicines Compendium, 2010a].

Finasteride

- The information on finasteride is based on the manufacturer's Summary of Product Characteristics [ABPI Medicines Compendium, 2010b].

When should I refer a woman with androgenetic alopecia?

- Referral to a dermatologist is not usually necessary.
- Consider referral to the appropriate specialist if the woman has:

o Atypical presentation — preferably to a dermatologist with a special interest in hair.

o Biochemical evidence of androgen excess — further investigation by an endocrinologist to exclude an androgen-secreting tumour may be necessary.

o Requirement for further support — referral to a psychological services may be necessary.

Basis for recommendation

Recommendation for referral is based good clinical practice extrapolated from information in two guidelines [Drake et al, 1996; Blume-Peytavi et al, 2010].

Prescriptions

For information on contraindications, cautions, drug interactions, and adverse effects, see the electronic Medicines Compendium (eMC) (http://emc.medicines.org.uk), or the British National Formulary (BNF) (www.bnf.org).

Topical minoxidil (private prescription)

Age from 18 to 65 years

Minoxidil 2% solution

Minoxidil 2% solution
Apply 1ml to the affected area(s) of hair loss on the scalp twice a day.
Supply 60 ml.

Age: from 18 years to 65 years
Licensed use: yes
Private prescription: yes
Patient information: Allow hair to dry naturally. Wash your hands after use.