

Hair loss, alopecia areata, cicatricial alopecia

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No need to pull your hair out about it!

- * Summary:

- * Hair Structure
- * Hair growth cycle
- * Male pattern baldness
- * Female pattern baldness
- * Telogen effluvium
- * Alopecia areata
- * Cicatricial vs non cicatricial alopecia

Hair Structure

- **Papilla** contains capillaries
- **Bulb** is the “living part”
 - Cells divide every 23 – 72 hours.
 - Fastest in the body!
- 2 x **sheathes** protect and form the hair
 - Inner → before sebaceous gland opening
 - Outer → to sebaceous gland
- **Sebaceous gland** produces sebum
→ conditions skin and hair
- **Erector Pili** attached to fibrous layer around outer sheath
 - Contraction makes hair stand up
 - Contraction also secretes sebum



Figure 1: A Hair Follicle

Structure Cont...

- * Shaft:
 - * Made from keratin
 - * 3 layers
 - * Medulla → Holds pigment
 - * Cortex → Majority of hair shaft + holds pigment
 - * Cuticle → tightly formed structure of overlapping “shingle-like” scales

Hair Growth Cycle

- * By 22 weeks gestation we have 5 million hair follicles
 - * The most we will ever have!
 - * 1 million of the head
 - * 100,000 of these are on the scalp
- * Hair on the scalp grows about 0.3-0.4mm / day
 - * That's about 6 inches per year!
- * 3 phases:
 - * Anagen
 - * Catagen
 - * Telogen

Anagen

- * The active phase of hair growth
- * Cells at the root of a hair rapidly divide
- * The new hair that is formed pushes the club hair up and out
 - * Club hair = hair that stopped growing / no longer in the anagen phase
- * Grows at 1cm / 28 days
 - * Scalp hair stays in this phase for 2-6 years

Catagen

- * Transitional stage
- * 3% of hair is in this stage at any one time
- * Lasts for 2 – 3 weeks
- * Growth stops
- * Outer sheath shrinks and attaches to hair root
- * This is now called a hair club

Telogen

- * Resting phase
- * Accounts for 6 – 8% of all hairs
- * Lasts for about 100 days for scalp hair
- * Hair follicle is completely at rest
- * Hair club is completely formed
- * (pulling a hair out at this phase will reveal a solid, dry, white material at the root)
- * Approx. 25-100 telogen phase hairs are shed normally each day

Male Pattern Baldness (Androgenetic alopecia)

- * Affects 6.5 million men in UK
 - * Can start in late teens
- * Usually inherited + can affect women
- * Caused by over-sensitive hair follicles
 - * Dihydrotestosterone (produced by testosterone) causes hair follicles to shrink and stop functioning
 - * NOT due to men having “more testosterone”
- * Follows pattern: receding hairline → thinning of crown and temples → horseshoe → complete baldness

Treatment

- * Minoxidil
 - * Originally an antihypertensive vasodilator
 - * NO agonist / K^+ channel opener
 - * Increase in blood flow to follicles may allow those in telogen phase to be shed → new anagen follicles can grow
- * Finasteride
 - * Also for BPH
 - * Type II α -reductase inhibitor → decrease in DHT

Female Pattern Baldness

- * Thinning of top and crown of scalp
- * Preservation of frontal hair line
- * Rarely progresses to total or near baldness
- * Workup:
 - * Signs of excess androgen
 - * Abnormal new hair growth (face, navel, pubic area)
 - * Changes in menstrual cycle / enlargement of clitoris
 - * New acne

DDX

- * Anagen effluvium (i.e. chemotherapy induced)
- * Alopecia areata
- * Telogen effluvium

Telogen effluvium

- * Aka “general thinning”
- * When more hair than usual falls out
- * Temporary → usually grows back
- * Who gets it?
 - * 1 – 3 months after a major stressful event
 - * Childbirth, accident, illness
- * Interruption of growth for some hairs = early telogen phase
 - * Therefore more hairs are ready to fall out
- * DDX
 - * Iron / zinc deficiency
 - * Hypothyroidism
- * No treatment → usually resolves

Alopecia Areata

- * “Patchy / spotty” baldness
 - * Affects 0.1-0.2% general population
 - * Account for up to 3% of patients seen by dermatologists
- * Peak incidence between 15-29 years old (but anyone can be affected)
 - * 44% of patients have an onset before 20 years old
- * Equal Male : Female ratio in younger ages
 - * Female predominance in older ages

DDx of alopecia areata

- * Trichotillomania
 - * “Hair-pulling disorder” → 7x more prevalent in children
- * Tinea Capitis
 - * Superficial fungal infection → attacks hair shafts + follicles
- * Telogen effluvium
- * Lichen planopilaris
 - * Rare inflammatory condition → smooth white patches of alopecia
- * Traction alopecia
- * Syphilis
- * Brocq Pseudopelade
 - * Type of cicatricial alopecia which resembles alopecia areata

Clinical Features of alopecia areata

- * Only 14% of patients experience symptoms of burning / pruritus at affected areas
- * Localised alopecia areata:
 - * Episodic and localised (<50% involvement)
 - * Self-limiting + spontaneous regrowth within a few months
- * Extensive alopecia areata:
 - * >50% involvement
 - * 7% will progress to alopecia totalis / universalis

Pathophysiology

- * Autoimmune response (T-cell mediated, but can also be antibody mediated)
 - * Multiple targets of the hair follicle during their anagen phase
 - * Usually the outer sheath
- * Genetic predisposition → HLA DQ3 (in >80%)

Associated conditions

- * Possible association with other autoimmune diseases, especially:
 - * Atopic dermatitis (9 - 26%)
 - * Vitiligo (1.8 – 3%)
 - * Thyroid disease (0.85%)
- * 6.8 – 8% of those with Down Syndrome have alopecia areata (but only 0.1% of patients with alopecia areata have Down Syndrome)
- * Anxiety, personality disorders, depression, paranoid disorders are seen in 17-22% of patients
 - * Lifetime prevalence of Psychiatric disorders is 74%

Cicatricial alopecia

- * Aka “Scarring alopecia”
- * Group of disorders that destroy hair follicles, replace it with scar tissue, and lead to permanent hair loss
 - * Histological evidence of scarring/fibrosing process with loss of hair follicles is the best diagnosis

Some Causes

- * Discoid lupus erythematosus
 - * Affects women
 - * Scalp is the only site affected in 11-20%
 - * Accompanied by burning / stinging / pruritus
 - * Small bare patch that enlarges → erythema + follicular hyperkeratosis
- * Lichen planopilaris
 - * Frontal fibrosing alopecia (associated w/ menopause)
 - * Fibrosing alopecia in pattern distribution (overlaps with androgenetic alopecia)
 - * Graham little syndrome
 - * Cicatricial alopecia on scalp, non-cicatricial alopecia in axilla+groin, follicular lichen planus on trunk+extremities
- * Scleroderma



Thank you