Hair Loss in Children

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Children vs Adults

- Possible aetiologies expanded
- Higher probability of genetic disorder
- Investigations & Treatments may be different
- Prognosis may be modified
Normal Growth

• Anagen hairs (lanugo, unmedullated) cover entire scalp by 18-20 wk

• 5th month: Wavelike transition from Anagen to Telogen, Frontal>Parietal

• Occiput do not change

• 7-8 months, second wave of anagen hairs, vellus replace lanugo second pelage

• Hair cycling is synchronised in utero and 7-12 months postnatally
Normal Growth

- Density highest at birth and will halve by 30 years due to growth of head and age related changes.
- Through childhood gradual transition from vellus to intermediate to terminal hairs.
- Colour of hair generally darkens.
- Newborns can have full head of hair, or little or no hair.
- Scalp pelage will thicken and assume normal growth by end of first year - inherited problems may not be obvious till after 1yr.
Evaluation of Child with Hair Loss - History

• When first noticed?
• Normal at birth?
• Does it ever achieve any length or needs to be cut?
• Other affected family members?
• Isolated or other problems (Teeth, Nails, Sweating, Temperature problems) or Rashes?
• Development eg milestones, failure to thrive
Evaluation of Child with Hair loss - Physical

• Physical examination - Any syndromic features?
• Hair loss? Focal (scarring vs non-scarring) vs diffuse
• Pigment abnormalities
• Tumours/Nodules - Perifollicular papules
• Eczema
Evaluation of Child with Hair loss - Microscopic

- Hair pull - examine proximal parts - Anagen vs Telogen
- Hair shaft
  - light microscopy
  - Scanning EM
- Hair Pluck (trichogram), Biopsy, Hair window?
Hair Loss in Children

- My child has had a bald patch since infancy
- My child’s hair won’t grow
- My child’s hair keeps coming out
- My child has developed bald patches
- My child’s hair is unruly
My child has had a bald patch since infancy

- Congenital Aplasia cutis
- Triangular alopecia
- Occipital hair loss
- Atrichia with papular lesions
Congenital Aplasia Cutis

- Skin, bone and dura may be absent
- Usually limited to dermis and epidermis, largely on scalp
- Rare 2-3 per 10,000 newborns
- Cause unknown: Trauma, Vascular compromise, Teratogens, Infection?
- Vertex 0.5-3cm
- Secondary intention healing leads to scarring
Triangular Alopecia

- Congenital, but often presents later eg age 2
- Frontotemporal, usually unilateral
- Triangular area of hair loss - non-scarred
- Surgical reduction is possible
Occipital Hair loss

• Foetal lanugo hair is shed around 8th month and replaced with terminal/vellus hair
• This transition can be delayed on occiput
• Hairs shift to Telogen after birth, with delayed synchronised hair shedding 2-3 months later
• Head rubbing adds to loss
Atrichia With Papular Lesions

- Genetic condition, rare, AR
- Born with normal hairs
- Hairs shed in first few month and not replaced
- Develop papular lesions later (from 2 years) in childhood
- Papular lesions are milia like keratinous cysts
My Child’s Hair Won’t Grow

- Hair Shaft defect - Increased Fragility
- Telogen Effluvium
- Loose Anagen
- Short Anagen
- Hypotrichosis
How to approach suspected hair shaft defect?

- Increased fragility vs normal
- Fragility may present as hair loss
- Other defects present with irregularities along hair shaft
- Associated symptoms/syndromes
Hair Shaft Defects - Increased Fragility

- Trichorexis Nodosa (commonest)
- Monilethrix
- Pili Torti
- Trichorexis Invaginata - Bamboo hair
- Trichothiodystrophy - Tiger tail
Trichorrhexis Nodosa
Trichorrhexis Nodosa

- Loss of cuticle with frayed cortical fibres producing a fragile node
- Traumatic in origin
  - Acquired distal = split ends
  - Acquired proximal - mechanical trauma, chemicals, straightening
- Congenital
  - Alone
  - Genodermatoses
  - Metabolic (Arginosuccinicaciduria, Citrullinaemia) + Biotin or Zinc def
Pili Torti
Pili Torti

- Twisted hair; flattened and twist thro’ 180°
- **Classical PT:** presents in first 2 years of life, AD, AR or sporadic, eyebrows, eye lashes and scalp hair
- **Late onset PT:** puberty, spangled, dry brittle hair, breaks at different lengths, which may stand out from scalp
- **PT + Hearing loss:** Bjornstad syndrome, sensorineural hearing loss
- **Menkes:** X-linked Rec, disorder of copper metabolism, present with white steely hair
Monilethrix
Monilethrix

[monile = necklace, thrix = hair (Greek)]

• Vellus hair at birth, but soon replaced with dry, lusterless, brittle moniliform hair
• Beaded hairs; Narrowings of non-medullated hair = fragile
• Rarely grow between 1-2 cm, leading to stubble appearance
• Can be localised eg occiput or widespread
• AD, genetic defect linked to type 11 keratin gene cluster Chr 12q13
• Associated with keratosis pilaris type lesions
• Topical minoxidil and oral retinoids may help, some improve with age
Trichorrhexis Invaginata

Bamboo hair
Trichorrhexis Invaginata

- Feature of Netherton’s syndrome (defect SPINK 5 gene, Chr 5q32, encoding LEKTI, lymphoepithelial Kazal type inhibitor) AR 1 in 200,000

- Ichthyosis linearis Circumflexa, Tricorrhexis Invaginata, and Atopic diathesis (NBCIE)

- Occurs in infancy, short brittle lusterless hair, sparse eyebrows/lashes

- Distal hair shaft invaginates into proximal hair shaft > Golf tee hair

- May improve with age, as follicles become thicker
Trichothiodystrophy

- Heterogenous group of AR conditions that share distinctive feature of short brittle hair and abnormally low sulphur content
- Half of patients will have abnormality of DNA repair of UV damage
- Three patterns seen
  - Trichoschisis - transverse fracturing
  - Tiger tail - polarising light only
  - Extreme weathering
Ectodermal Dysplasia

• Large & complex group of diseases comprising more than 170 clinical conditions

• Hair sparse, curly and fair

• Alopecia due to either hair shaft anomaly (PT) with increased fragility or hypotrichosis

• Eyebrows and eye lashes may be lacking

• Teeth: hypodontia or anodontia, peg or cone shaped teeth

• Nails: leukonychia, dystrophic nails
If you suspect hair shaft defect:

- Test for Fragility
- Cut hair at base and send for microscopy
My Child’s Hair Won’t Grow

• Hair Shaft defect - Increased Fragility
• Telogen Effluvium
• Loose Anagen
• Short Anagen
• Hypotrichosis
Loose Anagen

- Girls more common to present
- Blonde, aged 2-5
- Hair sparse and does not grow long
- Hair pull 3-10 Anagen hairs painlessly extracted
- Hair can be dull and unruly
- Can be patchy or diffuse
- Gentle hair care
Short Anagen

- Under recognised and described > short hair, never grows or needs cutting
- No microscopic abnormality, normal tapered tips rather
- Massive increase of hairs in telogen hairs (cf LAS) but congenital/early onset (cf TE)
- Hair window shows normal growth rate but short anagen phase
Marie Unna Hypotrichosis

- Born with normal to coarse hair, little or no eyebrows/lashes
- Coarsens within first few years of life
- Hair loss parietal and vertex with sparing of occiput after puberty
- AD, gene not yet identified - Chr 8
Hypotrichosis Simplex

- Generalised (all hair) or localised to scalp
- Normal hair at birth and first years of life
- Progressive gradual loss from middle of 1st decade
- Thinning to almost complete loss by 20
- Not associated with other syndromes
My Child’s Hair Keep’s Coming Out

• Loose Anagen
• Telogen Effluvium
• Alopecia Areata
Telogen Effluvium

- Present with abrupt diffuse hair loss, inc shedding + thinning
- May have trigger approx 3 months before
- Infections, iron deficiency and thyroid problems common in children and may be relevant
- Positive hair pull
- Differential - Loose Anagen/Diffuse Alopecia Areata
My Child Has Developed Bald Patches

- Alopecia Areata
- Trichotillomania
- Tinea Capitis
- Scarring Alopecia
Alopecia Areata

- Common cause of patchy loss
- May be more generalised and diffuse, leading to totalis
- May be triggered by illness or vaccination
- Onset pre-puberty associated with a worse prognosis
- Most effective treatments are unacceptable in children
- Management aimed at coping strategy for child and family
Trichotillomania

• Form of traction alopecia
• Irresistable compulsion to twist or pull or break off hair
• Increasing sense of tension before, pleasure and gratification or relief when pulling
• Impulse compulsive disorder
• Common
Trichotillomania

• Benign form
  • Early childhood, M:F 3:2, analogous to other habitual childhood behaviours, eg thumb sucking
  • Short duration with spontaneous resolution

• Severe form
  • Puberty, predominantly female, persistent into adulthood
Trichotillomania

- Hair loss parietal/vertex
- Irregular patches
- Hair of different lengths with short hairs present in patches - no area smooth or devoid of hairs
- Extracted hairs are often played with, manipulated, examined or even eaten!
- Occurs when mind is occupied, hands are idle eg watching TV, reading
Trichotillomania

- Diagnosis is clinical
- Cognitive Behavioural Therapy - Habit reversal
- Trichotillomania learning centre [www.trich.org](http://www.trich.org)
Tinea Capitis

- Young children, Urban,
- Patchy hair loss
- Scale, pustules, black dot, kerion
- Mycology
- Systemic anti-fungals - Terbinafine
Scarring Alopecia

- Rare in children
- Keratosis Follicularis Spinulosa Decalvans
  - Rare, X linked
  - KP on face, limbs,
  - Scarring patches associated with follicular hyperkeratosis
My Child has unruly or funny hair

- Pili Annulati
- Uncombable hair - Cheveux incoiffable
- Woolly hair
- Curly hair
Pili Annulati

- Air cavities within hair give appearance of light and dark bands
- AD or sporadic
- Growth rate is normal and no fragility
Uncombable Hair
pili trianguli et canaliculi, spun glass hair

- Hair shaft is ridged and can not be combed flat
- Scalp hair has typically > 50% involvement
- ?Premature keratinisation of triangular shaped IRS or abnormal dermal papilla or asymmetric matrix defect?
- Tends to become more manageable with age
Uncombable hair
Woolly Hair

- Hair is tightly curled in non-African patients
- AD, AR
- Woolly hair with cardiac abnormalities, Naxos, Carvajal
- Woolly hair without cardiac abnormalities
- Woolly hair naevus
Curly Hair

- Large loose spirals
- Can be seen associated with a number of genetic disorders
  - tricho dento osseous
  - CHAND curly hair, ankyloblepharon, nail dysplasia
  - Costello
  - Noonan
Acquired Progressive Kinking of the Hair

• Puberty - development of kinking hair - curly, frizzy, lusterless

• Frontotemporal hair line

• Association with premature male pattern baldness and strong FHx of androgenic hair loss
Hair Loss in Children

- Not Easy!
- Common things are common
- Hair microscopy and usual hair loss investigations may help
- Time may be your best friend