Hair and Nail Disorders

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Hair Classification

• **Terminal (large) hairs**
  – Found on the head and beard
  – Larger diameters and roots that extend into sub q fat

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Hair Classification

- **Vellus hairs** are smaller in length and diameter and have less pigment
- **Intermediate hairs** have mixed characteristics
Life cycle of a hair

- Hair grows at 0.35 mm/day
- Cycle is typically as follows:
  - **Anagen** phase (active growth) - 3 years
  - **Catagen** (transitional) - 2-3 weeks
  - **Telogen** (preshedding or rest) about 3 Mon.

- > 85% of hairs of the scalp are in Anagen
  - Lose 75 – 100 hairs a day

- Each hair follicle’s cycle is usually asynchronous with others around it
Alopecia Definition

• Defined as *partial or complete loss of hair from where it would normally grow*
• Can be total, diffuse, patchy, or localized
## Classification of Alopecia

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<th>Scarring</th>
<th>Non-scarring</th>
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<td>Medications</td>
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<td>Nevoid</td>
<td>Congenital</td>
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<td>Injury such as burns</td>
<td>Infectious</td>
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<td>Systemic illnesses (LE)</td>
<td>Genetic (male pattern)</td>
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<td>Toxic (arsenic)</td>
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<td>Immunologic</td>
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<td>Physiologic</td>
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General Evaluation of Hair Loss

• Hx is still most important aspect
  – Shedding vs. thinning
  – Duration of problem
  – Pertinent family illness
  – Grooming practices
  – Medications
  – Serious past or current illnesses
Evaluation

• **PE: Focus is on pattern of hair loss**
  – Patchy or localized = confined to several areas of the scalp leaving some areas unaffected
  – Diffuse implies uniform density decrease

• **Gauge hair fragility**
  – Squeeze and roll hair within a gauze pad
  – If fragile, short fragments remain on the pad
Evaluation

- Examine the scalp looking for erythema, scale, pustules, bogging, edema, loss of follicle openings, scarring or sinus tract formations
- Not all scalp changes relate to alopecia nor alopecia cause all scalp changes
- May consider scalp punch biopsy
  - Trim hair, inject 1-3 cc of lido with epi, use a 4mm punch, place single suture
  - Attempt to get both affected and normal
Laboratory Studies

• **RPR** or **VDRL**

• **KOH prep** or **PAS** for fungal elements
  – Use in patchy hair loss
  – Hair shaft stubs from periphery of lesion
  – Can obtain culture for fungi

• **Hair pull test**
  – Lock of hair is grasped firmly in thumb and forefinger and steady traction applied as fingers dragged along the lengths of hairs
  – Examine hairs microscopically
Androgenic Alopecia

- AKA as **male pattern baldness**
- Complain of **thinning** vs. shedding
- 30-40% adults

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Androgenic Alopecia

- Multi-allelic trait: obtain history of baldness in grandparents and 1st degree relatives on both maternal and paternal sides of family

Courtesy of Dr. E.J. Mayeaux, Jr.
Androgenic Alopecia

• Usually **crown** with sparing of occipital and lower parietal fringe of hair

• In **women** may need to consider androgenic excess

Courtesy of Dr. E.J. Mayeaux, Jr.
Androgenic Alopecia Treatment

• **Topical Minoxidil or Oral finasteride**
  - ♂ Finasteride 1mg orally = $60/month*
  - ♂ Minoxidil 5% 1ml BID = $17/month*
  - ♀ Minoxidil 2% 1ml BID = $30/month*
    * www.drugstore.com, accessed 4/5/10

• **Surgical restoration or excision does not slow or reverse hair loss**

• **No head to head comparisons**
  – Both beneficial compared to placebo
Alopecia Areata

• Usually circumscribed patches
  – Total scalp (Totalis)
  – Entire body (Universalis)
Alopecia Areata

- Scalp may be slightly red or edematous
- Exclamation mark hairs characteristic
  - Short hairs that taper as they approach the scalp surface, then root.
- Poor prognosis
  - Severe disease (esp. Totalis/Universalis)
  - Nail or peripheral scalp disease
  - Onset before puberty
  - Duration >1 yr
Alopecia Areata

Courtesy of the Color Atlas of Family Medicine
Alopecia Areata Treatment

- **Reassurance** – 80% limited cases regrow
  - May ask for tx even for a small patch
- **Mild cases (<10% scalp)** - *intralesional steroids* to decreasing inflammation around the follicle
  - May pretreated with topical anesthetic cream
- **Potent topical steroids** – little evidence
- **Severe forms** hard to treat (referral)
Alopecia Areata Treatment

- Intralesional steroids - triamcinolone acetonide (Kenalog) 10mg/ml
- Inject while advancing needle using only enough to blanch the skin momentarily
- Can repeat q 4 weeks
- Major side effect is skin atrophy
Alopecia Areata Treatment

- **Systemic steroids** for larger areas
  - May lose hair when tapered or D/C
- **Minoxidil** topically with steroids but success is varied and is slow
- **PUVA**, but 1993 study by Healy, et al noted it was not an effective treatment
- **Anthralin** applied to induce erythema has been tried to induce hair growth and may be tried in combination for refractory cases
Telogen Effluvium

• **Acute hair loss** (up to 20% at peak)
• Occurs 3-4 months after a trigger
  – Pregnancy, severe wt loss, major illness or Sx, traumatic psych events
• **Women > men**
• Anagen hairs *precipitated* into catagen
• As reach the telogen phase, new anagen hairs develop and cause the hair to abruptly fall out
Telogen Effluvium

• Patient complains that the hair comes out “in handfuls” or pillowcase is covered in the morning with hair
Telogen Effluvium

• Patients often do not associate with precipitating illness due to time interval
• **Drugs** can cause telogen effluvium
  – PTU, Tapazol, heparin, and coumadin
  – Hypervitaminosis A
• Pull test: > 5 blub (telogen) hairs
• Lab: TSH, Iron studies, RPR or VDRL
• No specific treatment
Trichotillomania

• First identified 1889 by Hallopeau

• **Obsession with hair** - pt pulls and plucks hair = bald patches or diffuse hair loss

• **2-3%** of all people with hair loss

Courtesy of the Color Atlas of Family Medicine
Trichotillomania

• Mean onset age 13
• Dx usually by the pattern of loss, sometimes with unusual shapes
• Women > men
• Geometric patterns

Courtesy of the Color Atlas of Family Medicine
Trichotillomania

• Broken hairs on physical exam

Courtesy of the Color Atlas of Family Medicine
Trichotillomania

- Usually not scarring, but plucking over years may result in immune cell infiltrate
- RPR, TSH
- Behavioral tx
- Wear gloves - difficult to pluck

Courtesy of the Color Atlas of Family Medicine
Traction Alopecia

• Unintentional traumatic hair loss
• Often seen in African-Americans when hair is placed in tight braids
  – Outermost hairs subjected to most tension
  – Given time, a zone of alopecia results between braids and along scalp margin

Courtesy of Ed Jackson, M.D.
Traction Alopecia

• Usually seen in temporal, frontal and periauricular regions of scalp
• Rx would be hair restoration techniques
Scarring Alopecias

• Very heterogeneous group
• Trend for hair destruction in early or even mild stages of the disease
• Hair loss permanent
• Erythematous papules, pustules, scaring, loss of follicle openings
• Polytrichia
Lupus Alopecia

- Most common scarring alopecia
- Usually affects scalp
- Well circumscribed, erythematous infiltrated patches w/ follicular hyperkeratosis
- Later atrophic smooth depressed hypopigmented patches
- Bx = immune deposits
- Tx = treat lupus
Lupus Alopecia
Nail Disorders - Introduction

• May be intrinsic to the nail unit, due to infection, or systemic disease
• Need careful history and exam
• Laboratory examination
  – Biopsies
  – Slide examination
  – Cultures
Examining the Nail

• Remove polish
• Examine all 20 nails
• Digits relaxed
  – Note shape, contour, and color
  – Observe obliquely for superficial plate changes
  – Distal groove, folds, or eponychium
Examining the Nail

- Examine lunula
- Squeeze the digit tip
  - Assess lesion color changes
  - Assess refill
- Transilluminate
- Make simple drawings

Courtesy of Dr. E.J. Mayeaux, Jr.
Examining the Nail

• 3mm per month
  – 6 months to regenerate a nail
  – Toenails grow at 1/2 to 1/3 that rate
• Changes from matrix are concave
  – Mimic shape of lunula
• Changes from cuticle are convex
  – Mimic shape of cuticle
Normal Variants

• Longitudinal ridging
  – Benign, parallel, elevated nail ridges
  – More common with aging
Normal Variants

• Leukonychia punctata and transverse striate leukonychia
  – Benign, white spots or lines in the nails
  – Typically don’t extend width of nail

Courtesy of Dr. E.J. Mayeaux, Jr.
Normal Variants

• May result from minor trauma
• Most common childhood nail condition
• Reassure no Tx is necessary
• Behavior modification helpful

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Habit Tic Deformity

Courtesy of the Color Atlas of Family Medicine
Onychogryphosis

Courtesy of Dr. Richard Usatine
Longitudinal Melanonychia

• Tan, brown, or black stripe
  – Runs longitudinally through nail

Courtesy of Dr. Richard Usatine

Courtesy of Dr. E.J. Mayeaux, Jr.
Longitudinal Melanonychia

• Increased nail melanin deposition
  – Simulated by deposition of other chromagins in or under nail

• Melanoma must be considered
  – Bx if cause not apparent

Courtesy of Dr. E.J. Mayeaux, Jr.
Longitudinal Melanonychia

• More common with darker skin
  – 77% of African Americans >20 years and ~100% >50 years
  – 10% to 20% of Japanese descent
  – Common in Hispanics
  – Unusual among whites

• More common in frequently used fingers and thumb
Subungual Melanoma

• Small number of patients with LM have subungual melanoma

• Separating benign from malignant lesions is often difficult

Courtesy of Dr. Richard Usatine
Subungual Melanoma

- 45% to 60% arise on hand
  - Most in the thumb
- On foot, occurs on great toe
- Median age = 60s and 70s
- Males = females

Courtesy of The Color Atlas of Family Medicine
Subungual Melanoma

• Hutchinson's sign
  – Periungual spread of pigment into the proximal or lateral nail folds
  – Presumes melanoma

• Pseudo-Hutchinson's sign
  – Benign LM visible through nail fold
Subungual Melanoma

- Biopsy if etiology uncertain
- Provide adequate tissue
- No single bx method best
  - Dystrophy less with distal matrix bx
  - Appearance less crucial in the toes
  - Bx more aggressively in older patients

Courtesy of the Essential Guide to Primary Care Procedures
Psoriasis

• Hereditary skin disorder
  – Affects 2% to 3% of U.S. population
  – Prevalence increases with age
Psoriasis

- Chronic scaling papules and plaques are most common and characteristic findings
Psoriasis

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Psoriasis

- Nail involvement - 10% to 50%
- Usually coexists with skin psoriasis
- Nail involvement = higher incidence of arthritis
- Nail plate pitting
  - Proximal matrix forms superficial plate
  - Pinpoints to punched out lesions
  - Not specific for psoriasis
Psoriasis - Nail Plate Pitting

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

Courtesy of Dr. Richard Usatine
Psoriasis - Nail Plate Pitting

Courtesy of Dr. Richard Usatine
Psoriasis

- Longitudinal matrix involvement produces ridging or splitting
- Transverse produces Beau's lines
- Intermediate produces leukonychia and diminished integrity

Courtesy of Dr. Richard Usatine
Psoriasis –
Onycholysis/Onychorrhexis

Courtesy of Dr. Richard Usatine
Psoriasis

• Bed psoriasis = local onycholysis
  – Oil drop sign  Salmon patch sign

Courtesy of Dr. Richard Usatine

Dr. E.J. Mayeaux, Jr.
Psoriasis

- Vascular dilatation & tortuosity
- Splinter hemorrhages of bed

Courtesy of Dr. E.J. Mayeaux, Jr.
Psoriasis

- Distal onycholysis enhances microbial colonization
  - Greenish-blue discoloration suggests Candida or Pseudomonas

Courtesy of Dr. E.J. Mayeaux, Jr.
Psoriasis Diagnosis

- Must DDx from onychomycosis
  - KOH prep and fungal culture
- Nail biopsy may be necessary
  - H&E and fungal staining
- Withhold Tx until a specific diagnosis is confirmed
  - Psoriasis and onychomycosis may occur concomitantly
Psoriasis Treatment

• Nail disease often refractory
• IntraleSIONAL corticosteroid injection into the proximal nail fold
  – Pain minimized by precooling or block
  – Nail bed ds = proximal injection
  – Matrix disease = fold injection
Psoriasis Treatment

• Mid- to high-potency corticosteroid solution under edge of distal plate
  – Don’t force solution under the plate
  – Mechanical trauma increases uplifting

• Oral and topical Psoralen (PUVA)
  – UVB not effective

• Oral etretinate, acitretin, and cyclosporine
Lichen Planus

• Uncertain etiology

Courtesy of The Color Atlas of Family Medicine
Lichen Planus

- Nail involvement in 10% of patients
  - Brittle, ridged nails most common
  - Onychorrhexis or splitting

Courtesy of Dr. Richard Usatine
Lichen Planus

- Proximal matrix ds produces onychorrhexis or splitting

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Lichen Planus

- Diffuse matrix atrophy produces thinning of the plate
- Tends to predominate centrally, producing "angel wing" deformity
- Pterygium results of matrix scarring
  - Specific for lichen planus
  - Total matrix scarring - anonychia
Lichen Planus - Pterygium

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Lichen Planus

• Onset at any age
  – Most common in fifth or sixth decade
• Fingernails and toenails affected
• Involvement of nail bed or hyponychium produces subungual hyperkeratosis or distal onycholysis
Lichen Planus Diagnosis

- Straightforward when the disorder coexists with cutaneous signs
- Mycologic studies to exclude onychomycosis
- If negative, a nail biopsy will likely be needed to confirm the diagnosis
  - Examination should include H&E and PAS staining
Lichen Planus Treatment

- Unless matrix scarring has occurred, the disease is treatable
- Intraleisional corticosteroid
- If this fails, Prednisone 60mg daily for several weeks then slow tapering
  - Then alternate-day therapy
- Oral etretinate and topical PUVA
Paronychia

- Acute inflammation of the lateral and/or proximal nail folds
Paronychia

• Red, tender, throbbing, intensely painful
• Usually caused by infection
  – Staph aureus, Strep pyogenes, and Pseudomomonas most common
• Small abscess forms
Paronychia

• Chronic paronychia by Candida

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Paronychia I&D Technique
Onychomycosis

• Fungal infection of the nails
• Dermatophytes most common
  – May be other fungi and Candida
• Single digit or multiple digits
• Very common in adults
  – May also occur in children
• Trauma predisposes to infection
Onychomycosis

- *Trichophyton rubrum* and *T. mentagrophytes* more frequent
  - *T. violaceum*, *T. tonsurans*, & *Scytalidium* species
Distal Subungual Onychomycosis

• Most common type
  – Discoloration
  – Debris build-up

Courtesy of Dr. Richard Usatine
Distal Subungual Onychomycosis

- Plate crumbles
- Accumulation of hyperkeratotic debris

Courtesy of Dr. Richard Usatine
Onychomycosis Diagnosis

• Tendency to label any process involving nail as a fungal infection
• Confirm species before treatment
  – Sabouraud's medium
  – Trim excess nail before samples taken
• Leukonychia and psoriasis may be confused with onychomycosis
  – Also eczema or habitual picking
Onychomycosis Treatment

• Treating onychomycosis difficult
  – Topical meds ineffective
  – Reinfection when oral meds stopped
• Oral therapy has best success
  – Beware drug interactions
• Ketconazole and griseofulvin can cause liver damage
• A Cochrane review found no evidence of benefit for topical treatments compared with placebo
  
  • http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001434/frame.html

• Terbinafine significantly increased the mycological cure rates compared with placebo, itraconazole and griseofulvin
  
  • http://www.mrw.interscience.wiley.com/cochrane/cldare/articles/DARE-20021632/frame.html
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Course</th>
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<tbody>
<tr>
<td>Griseofulvin (Grifulvin V)</td>
<td>500mg PO qday or 15-20mg/kg/day</td>
<td>4-9 months (f), 6-12 months (t)</td>
</tr>
<tr>
<td>Terbinafine (Lamisil)</td>
<td>250mg PO qday or &lt; 20kg: 62.5mg/day 20-40kg: 125 mg/day</td>
<td>6 weeks (f), 12 weeks (t)</td>
</tr>
<tr>
<td>Terbinafine (Lamisil) pulse (not FDA indicated)</td>
<td>500mg 1wk/mo x4mo (not thoroughly studied)</td>
<td>6 weeks (f), 12 weeks (t)</td>
</tr>
<tr>
<td>Itraconazole (Sporanox)</td>
<td>200mg daily</td>
<td>2 months (f), 3 months (t)</td>
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<tr>
<td>Itraconazole (Sporanox) pulse</td>
<td>200mg BiD or 5mg/kg/day capsules for 1 wk/month</td>
<td>2 months (f), 3 months (t)</td>
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<tr>
<td>Fluconazole (Diflucan) (not FDA indicated)</td>
<td>150mg or 3-6mk/kg once weekly (not thoroughly studied)</td>
<td>12-16 weeks (f), 18-26 weeks (t)</td>
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<tr>
<td>Ciclopirox 8% nail lacquer (Penlac)</td>
<td>Apply daily to nail and surrounding 5mm skin.</td>
<td>Up to 48 weeks.</td>
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Myxoid Cysts

• Most common ungual tumor except for HPV lesions
• Dorsum of distal digit between DIP and proximal nail fold
• Sermitranslucent, flesh to pink, compressible nodules
Myxoid Cysts

- May be associated with evidence of osteoarthritis (Herberdon's nodes)
- Localized degenerative tissue reaction
- Connecting to joint, complete excision is required
- Impinges on nail matrix
  - Produces longitudinal grooves and thinning
Myxoid Cyst Excision

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.
Myxoid Cysts

- Nonconnecting variety treated with repeated evacuation with a needle
  - Cavity and base injection with 0.1 to 0.2 mL triamcinolone acetonide, 5 mg/mL
  - 15- to 20-sec cryotherapy (2 to 3 mm iceball) freeze-thaw-freeze pattern
  - Sclerosants (Na tetradecyl sulfate)
  - If unresponsive - excise proximal fold with 2nd intention healing
Pincer Nails

- Result of inward folding of the lateral edges of the nail
Pincer Nails

• Tube-shaped nail
• Nail bed may be painfully enclosed
• Lateral pressure from shoes is a likely etiology
• Nail removal or reconstruction may be necessary if pain is significant
Changes Associated with Systemic Disease

• Beau's lines
  – Transverse linear depressions
  – Suppressed nail growth secondary to local trauma or severe illness
  – Appear symmetrically in several or all nails

 Courtesy of The Color Atlas of Family Medicine
Changes Associated with Systemic Disease

• Beau's lines
  – Grows out over several months
  – Time since onset of systemic illness
  – Nails grow 1mm every 6 to 10 days
Changes Assoc. with Systemic Disease

• Mees’ lines
  – Multiple white transverse lines
  – Historically arsenic intoxication
  – Begins in matrix & extends across nail
  – Usually single, but may be multiple
  – Move distally as the nail grows
  – Bx showed plate fragmented
  – Chemical analysis of nail or hair

Courtesy of Dr. Richard Usatine