Dermatologic Pearls Part I: Continued

Janet Tcheung, MD, FAAD
Case 1

- 72 yo female with burning, itching right foot
- Duration: over a year
- Started after orthopedic surgery requiring special boot on right foot
- Prior Treatments: vinegar, unknown creams
What is your diagnosis?

A. Psoriasis
B. Atopic Dermatitis
C. Irritant Dermatitis
D. Tinea Pedis
Tinea Pedis / Athlete’s Foot

- Most common fungal infection in U.S.
- Trichophyton rubrum, T. mentagrophytes, Epidermophyton floccosum
- Predisposing Factors: warm, moist environment (occlusive footwear, excessive sweating)
Tinea Pedis

• Transmission: walking barefoot on contaminated floors
• Symptoms: asymptomatic, itching, burning
• 3 clinical patterns of infection
Moccasin Pattern

- Well demarcated erythema
- Fine white scaling
- Hyperkeratosis
- Distribution: lateral feet, soles, heels
- 1 or both feet may be involved
- Bilateral involvement more common
Interdigital Pattern

• Dry scaling or maceration/peeling/fissuring of toe webs
• Hyperhidrosis common
• Most common site: between the 4th and 5th toes
Inflammatory/Bullous Pattern

- Vesicles or bullae filled with clear fluid
- S/p rupture, erosions with ragged ringlike border
- May be itchy or painful
Diagnosis: KOH Exam

• Inexpensive, effective
• KOH dissolves keratinocytes → hyphae more easily seen
• Sensitivity depends on clinician (65-80%)
• May use gentle heat (alcohol lamp) to accelerate reaction
• May add chlorazol black (fungal stain) to better visualize
KOH Exam: Step by Step

1. Vigorously scrape scale onto glass slide
2. Collect scale onto center of slide
3. Add 1 drop of KOH 10% or 20% on pile of scale
4. Place coverslip over slide
5. View under microscope starting at 10x magnification → 45x for confirmation
Treatment

• Topical Treatments Comparable
  – Clotrimazole, miconazole, econazole, oxiconazole, naftifine, terbinafine, tolnaftate, ciclopirox
  – Directions: apply to entire foot, between toes, around toenails

• Treat BID for 4-6 weeks, including 1+ week after lesions cleared

• Apply at least 3cm past advancing margin

• Oral: terbinafine 250mg PO daily x 14 days
Tip 1: Moccasin Pattern

• Most difficult to treat
• Use keratolytic agent for hyperkeratosis
  – Salicylic acid
  – Urea acid
  – Lactic acid
  – Hydroxy acid
• Apply along with topical antifungal
• May occlude with plastic bag to increase penetration
Tip 2: Interdigital Pattern

• Exacerbated by excessively sweaty feet (hyperhidrosis)
• OTC aluminum chloride 20%
• Apply to feet only after washing and drying well → do not apply to wet skin due to irritation
Tip 3: Vesiculobullous

- Cool compress to help with pain
- If severe → systemic glucocorticoid
Case 2

- 59 yo healthy female
- Discolored and “loose” great toenails
- Discomfort notable when jogging
- Noted for at least 1 year
- Bleach and miconazole cream not helpful
How would you diagnosis this?

A. Biopsy
B. Nail clipping for fungal culture
C. Nail avulsion
D. Xray
Differential Diagnosis

- Trauma (typically affects big toenails)
- Onychomyocis (subungual hyperkeratosis)
- Psoriasis (nail pits, onycholysis)
- Drugs (terbinafine, captopril, hydroxyurea)
- Yellow Nail Syndrome (a/w lymphedema, pleural effusion, ascites)
- Subungual Melanoma (solitary red, brown, black streak)
What’s your diagnosis?

A. Melanoma
B. Onychomycosis
C. Psoriasis
D. Trauma
Onychomycosis

• Fungal infection of the nails
• Typically affects 1+ nails
• Most often great/little toenail
• Clinical presentation varies
  – Subungual hyperkeratosis
  – Yellowish, white discoloration (may be black)
  – Distal onycholysis
  – Flaky white patches and pits on nail plate
  – Complete nail destruction

→ Thickened, discolored, dystrophic
Causative Organisms

• Dermatophytes
  – T. rubrum
  – T. interdigitale
• Yeasts
  – Candida albicans
• Molds
  – Scopulariopsis brevicaulis
  – Fusarium species
Diagnosis

- KOH exam
- Fungal Culture
  - Nail clippings
  - Scrape under the nail if subungual debris
  - Scrape discolored portion of nail
- Nail clipping/nail biopsy for histologic exam
Topical Treatments

- Often insufficient due to inability to penetrate
- Ciclopirox 8% solution
  - Penetrates through nail plate
  - Low efficacy as single agent (adjunct with oral, prophylaxis)
  - Daily x 48 weeks
- Eficonazole 10% solution
  - Dermatophytes, molds, yeast
  - Daily x 48 weeks
  - Complete cure (clinical and mycologic): 15-18%
- Tavaborole (boron-containing topical)
  - Indicated specifically for T. rubrum or T. mentagrophytes
  - Daily x 48 weeks
  - Complete cure (clinical and mycologic): <30% (low as 6.5%)

Rotta, Br J Derm, 2012
Rotta, JAMA Derm 2013
Elewski, JAAD 2014 and 2015
Gupta, J Derm Treat 2017
Oral Treatments

- Terbinafine
- Itraconazole
- Fluconazole
First Line: Terbinafine

- 250mg PO daily x 12 weeks
- Risks: idiosyncratic hepatotoxicity, reversible taste disturbance, headache, GI upset, drug interactions (P450 CYP2D6), skin rash
- Clinical cure: ~42%
- Complete cure: ~35%
Monitoring

- CBC, LFTs q4-6 weeks
- May continue to look dystrophic s/p cure
- Measure disease-free nail growth
- Growth rate ~1.5-2mm / month → 1 year to look normal
- Retreat if outgrowth distance slows/stops
• Terbinafine 250mg daily x 3 mos
Summary

- Topical: superficial and distal onychomyocosis
  - Tioconazole (level D)
  - Ciclopirox (level D)
- Terbinafine or Itraconazole 1st line (not for active/chronic liver dz) (level A)
- Fluconazole 2nd line (level B)
- Consider combination treatment (oral + topical) if response to monotherapy poor
Take Home Points

• Clinical presentation may vary
• Obtain fungal culture to confirm diagnosis
• Topical treatments: low efficacy or $$$
• If no contraindications: oral terbinafine 1st line
• Nails may continue to look dystrophic after treatment course → monitor for distal growth
Case 3

- 22 yo female presents with new onset expanding rash on leg
- Duration: weeks
- Symptoms: itching
- Other history: multiple cats and dogs at home
What’s your first line treatment

A. Topical oxiconazole
B. Dilute bleach bath
C. Triamcinolone cream
D. Alcohol rub
E. Tea tree oil
Tinea Corporis ("Ring Worm")

• Superficial dermatophytic infection of the body and limbs

• Presentation:
  – sharply demarcated
  – annular plaque
  – central clearing
  – raised scaly red borders
Tinea Corporis

• Symptoms: asymptomatic, itchy
• Etiology: T. rubrum, M. canis
• Transmission:
  – Autoinoculation
  – Exposure to infected animal
  – Infected soil
• Diagnosis: KOH exam, fungal cx, rarely biopsy
Differential Diagnosis

Nummular Eczema

Psoriasis

Pityriasis Rosea

Granuloma Annulare

Dermnetnz.org
Treatment

Topical Treatments
• Apply qday/BID x 2 wks
• Imidazoles:
  – Clotrimazole
  – Miconazole
  – Econazole
  – Oxiconazole
• Allylamines:
  – Naftifine
  – Terbinafine

Systemic Treatment
• If not responsive to topical
• If large surface area
• Terbinafine 250mg PO daily x 2 wks
• Fluconazole 150mg PO qweekly 2-6wks
Tinea Incognito
Tinea Incognito

- Misdiagnosed tinea corporis
- Treated with topical steroids
- Leads to altered appearance / exaggerated features:
  - Less scaling
  - More pustules
  - More Papules
- Systemic Treatment
Take Home Points

• Scrape for KOH at the active red, scaly margin of plaque

• Check bottoms of feet for possible autoinoculation site (tinea pedis)

• Avoid causing tinea incognito ➔ do not treat all red scaly rashes with topical steroids
Dermatologic Pearls Part II: Moles, Mimickers, and Melanoma

Janet Tcheung, MD, FAAD
Objectives

• Identify and describe benign skin lesions
• Manage benign skin lesions
• Identify and describe malignant skin lesions
• Know when to refer for suspicious malignant lesions
Road Map

- Benign skin lesions
  - Moles
  - Lentigines
  - Seborrheic keratosis
  - Angiomas
  - Actinic Keratosis

- Malignant skin lesions
  - Basal cell carcinoma
  - Squamous cell carcinoma
  - Melanoma
BENIGN NEOPLASMS
Case

- 46 yo male with no significant PMH would like full skin exam
- “Too many” to tell if any are changing/new
- Grew up in Florida and sustained multiple sunburns as a child
- Family history of melanoma in father
Your patient feels that one in particular has grown rapidly.
What do you do next?

1. Reassure him that moles may change and grow with age.
2. Scrape the mole for KOH microscopic exam
3. Freeze the mole with liquid nitrogen
4. Evaluate for possible biopsy
Tools for Further Evaluation

• Magnification
  – Magnifying glass
  – Dermatoscope

• Mole mapping
Dermoscopy

• Surface microscopy or epiluminescent microscopy
• Noninvasive technique
• Allows visualization of surface colors and structures within the skin in vivo
• Allows visualization to reticular dermis
• Requires training to be proficient
Dermatoscope

• Similar to otoscope with a specific contact lens
• Generates a beam of light that falls on skin at 20 degrees
• Usual magnification: 10x up to 70x
• Serves as interface between clinical and histopathology
Mole Mapping

• Surveillance program
• High-resolution digital images of entire body
• Typically includes:
  – Total body skin examination by dermatologist
  – Head to feet photographs by medical photographer
Advantages of Mole Mapping

- Allows for ongoing surveillance if not removed
- Determine if lesion is new or changed
- Early detection and diagnosis
- Minimize removal of unchanged lesions
  - Reducing costs
  - Reducing risks and complications of surgery
- Reassurance to patient
Nevi / Moles

• Benign neoplasm of pigment forming cells
• Congenital or acquired
• Acquired: 6mo – early 30’s
• Progressive decline in # thereafter
• Acquired nevi → sun exposed skin
• # nevi : amount of sun exposure
Moles

• May change during pregnancy, adolescence
• Symptomatic or changing moles unusual
• Almost half of melanomas develop in preexisting nevi
• Increased risk of melanoma >50 moles
Clinical

• Vary in color
• Flat or elevated
• Frequently contain hair
• Symmetric
• Smooth borders
• Uniform color and surface
Atypical Nevi

- Clinically and pathologically difficult to distinguish from melanoma
- Large size
- Varied colors
- Irregular, indistinct border
- Uneven surface feel
- Pathologically:
  - Cytologic atypia
  - Architectural atypia
<table>
<thead>
<tr>
<th>Normal Mole</th>
<th>Melanoma</th>
<th>Sign</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Normal Mole Image" /></td>
<td><img src="image2.png" alt="Melanoma Image" /></td>
<td>Asymmetry</td>
<td>when half of the mole does not match the other half</td>
</tr>
<tr>
<td><img src="image3.png" alt="Normal Mole Image" /></td>
<td><img src="image4.png" alt="Melanoma Image" /></td>
<td>Border</td>
<td>when the border (edges) of the mole are ragged or irregular</td>
</tr>
<tr>
<td><img src="image5.png" alt="Normal Mole Image" /></td>
<td><img src="image6.png" alt="Melanoma Image" /></td>
<td>Color</td>
<td>when the color of the mole varies throughout</td>
</tr>
<tr>
<td><img src="image7.png" alt="Normal Mole Image" /></td>
<td><img src="image8.png" alt="Melanoma Image" /></td>
<td>Diameter</td>
<td>if the mole’s diameter is larger than a pencil’s eraser</td>
</tr>
</tbody>
</table>

*Photographs Used By Permission: National Cancer Institute*
Take Home Points

• Suspicious Moles
  – Moles developing after early 30’s
  – Changing moles outside of pregnancy
  – Irregular color, border, symmetry

• Patients with atypical nevi should see a dermatologist

• Remember, ½ of melanomas develop in existing moles
Case

• 66 yo male presents with darkening of a lesion on the left side of the forehead
• Denies symptoms
• Owns a house on the lake and enjoys fishing on the weekend
What’s on your list of differential diagnosis?

- Melanoma
- Atypical mole
- Lentigo
- Seborrheic keratosis
Lentigines

- Brown/tan, flat, moth-eaten borders
- Common with age and UV exposure
- Indicates excessive sun exposure
- Distribution: face, shoulders, dorsal hands
- Persistent
- Present in 90% of Caucasians >60yo
Differential Diagnosis

- Freckles (disappear during winter months)
- Moles (smooth borders)
- Melanoma (more color variation)
  - Especially lentigo maligna melanoma
Treatment

• Sun protection

• Elective:
  – Laser
  – Cryotherapy
  – Hydroquinone
  – Chemical Peels
Case

- 79 yo male presents with new growth on the back, present for about 4 months
- Denies any symptoms
- Reports that wife had wanted lesion checked but not bothersome to him
What is your diagnosis?

A. Melanoma
B. Lentigo
C. Atypical Nevus
D. Seborrheic Keratosis
E. Angioma
Seborrheic Keratosis

• Benign neoplasm of epidermal cells
• Typically appear in 30’s and continue to grow → more common with age
• Clinically:
  – May vary in color
  – Vary in size
  – “Stuck on” appearance
  – Verrucous, waxy, or crumbly surface
  – Usually papular but may be macular
  – All body surfaces, sparing palms and soles
Treatment

• Not medically necessary → reassurance
• Unless becomes inflamed (itchy, red, crusted, bleeding)

• Cryotherapy
• Shave removal
• Electrodesiccation
• Curettage
More Seborrheic Keratosis
Sign of Leser-Trelat

- Rapid increase in size and number
- Typically shoulders and extremities
- Accompanied by pruritus
- May be sign of adenocarcinoma
  - Stomach/colon
  - Ovary
  - Uterus
  - Breast
Case

- 36 yo female reports multiple new red lesions during pregnancy
- Asymptomatic
- Mainly on trunk
What is your next step?

A. Discuss possibility for malignancy and encourage excision.
B. Discuss possibility for malignancy and scrape for KOH.
C. Discuss benign nature and tell patient she can clip these at home on her own.
D. Discuss benign nature and that treatment is not necessary.
Angiomas

- Acquired benign overgrowth of blood vessels
- AKA cherry angioma
- Clinical: round, oval, dome-shaped
- Colors may vary: bright red, purple, blue
- Increase in 40’s and pregnancy
- Treatment: elective (cryotherapy, electrodessication, curettage)
Traumatized Cherry Angiomas

• May bleed, thrombose
• Mimic melanoma
• When in doubt, refer out
Take Home Points

• Benign skin lesions $\rightarrow$ treatment elective
  – Lentigines
  – Seborrheic keratosis
  – Angiomas

• May mimic skin cancers:
  – Lentigines $\rightarrow$ melanoma
  – Seborrheic keratosis $\rightarrow$ melanoma, squamous cell carcinoma
  – Angiomas $\rightarrow$ melanoma (when traumatized)

• When in doubt
  – Cut it out (biopsy)
  – Refer out (dermatology referral)
Case

- 82 yo female presents with multiple scaly lesions on the face
- Feel like “seeds”
- Asymptomatic
- Loves gardening and history of working in the tobacco fields as a child
MALIGNANT NEOPLASMS
Case

- 57 yo male presents for full body skin exam
- No significant past medical history
- No new lesions
- No family history of skin cancer
What is your next step?

A. Reassurance that the lesion is a benign mole
B. Shave biopsy
C. Cryotherapy
D. Punch excision/biopsy
E. Electrodesiccation
✓ A: Asymmetry
✓ B: Border irregularity
✓ C: More than 2 colors
✓ D: Diameter greater than 6mm

Melanoma in situ
Melanoma

- Cancer of melanocytes
- Any skin surface (eyes, mouth, genitalia)
- Men: chest and back
- Women: legs

https://seer.cancer.gov
Melanoma: New Cases and Deaths

Incidence Increases Yearly

Incidence of melanoma is rising at a rate of 2.5% a year in NC.

https://statecancerprofiles.cancer.gov
Percentage of New Cases by Age Group

Median Age at Diagnosis: 64
Percentage of New Cases by Age Group

~1/3 of cases: 20-54 years old

Incidence

• Most common cancer in young Caucasian women
• Lifetime risk 1:150 for those born in 1980
• Overall lifetime risk:
  – 1:50 Whites
  – 1:200 Hispanics
  – 1:1000 Blacks
• 2017 Estimated Melanoma Cases:
  – 87,110 new diagnosis
  – 9,730 deaths
Risk Factors

- Family history of dysplastic nevi or melanoma
- Ultraviolet radiation
  - Blistering sun
  - Intermittent burning
- # >50 and size >5mm of melanocytic nevi
- >5 atypical nevi
- Personal history of melanoma
- Fair skinned
- Immunosuppression
Clinical

• ABDCEs
• Ugly Duckling Sign
• Amelanotic Melanoma
Table 114.10 Major independent prognostic factors of survival in multivariate analyses.63

<table>
<thead>
<tr>
<th>Prognostic factor</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor thickness</td>
<td>1 mm low risk, &gt;1 mm higher risk melanoma</td>
</tr>
<tr>
<td>Ulceration</td>
<td>Worse prognosis with ulceration</td>
</tr>
<tr>
<td>Age</td>
<td>Higher age with worse prognosis</td>
</tr>
<tr>
<td>Sex</td>
<td>Only for localized disease, males with poorer prognosis</td>
</tr>
<tr>
<td>Anatomic Site</td>
<td>Trunk, head and neck with poorer prognosis than extremities</td>
</tr>
<tr>
<td>Number of involved lymph nodes</td>
<td>Cut off points: 1, 2–3, 4 or more lymph nodes</td>
</tr>
<tr>
<td>Regional lymph node tumor burden</td>
<td>Macroscopic (palpable) nodal metastases with poorer prognosis than microscopic (non-palpable) nodal metastases</td>
</tr>
<tr>
<td>Site of distant metastases</td>
<td>Visceral metastases with poorer prognosis than non-visceral (skin, subcutaneous, distant lymph nodes)</td>
</tr>
</tbody>
</table>
You biopsied a melanoma with 1.2mm Breslow depth. What would you recommend?

A. Wide local excision with 1cm margins.
B. Wide local excision with 5mm margins.
C. Wide local excision with sentinel lymph node biopsy
D. Wide local excision with complete (elective) nodal dissection.
Treatment

• Surgery *
• Radiation therapy

• Systemic Therapy (Stage III/IV):
  – Chemotherapy
  – Immunotherapy
    • Checkpoint blockade therapy
  – Molecularly targeted therapy
    • BRAF inhibitor
    • MEK inhibitor
Patient Resources

• American Academy of Dermatology: aad.org
• American Cancer Society: skincancer.org
Take Home Points

• Prevention and early detection are key!

• Dermatology:
  – Family history of melanoma
  – Atypical nevi
  – Personal history of melanoma
Case

• 36 yo female reports bleeding lesion on nose
• Notices scant blood after washing face
• On and off x 1 year
• Family history of non-melanoma skin cancer
Basal Cell Carcinoma

- Most common skin cancer in humans
- 4 million in U.S. / year
- Chronic and intermittent, intense sun exposure
- Fair skinned
- Metastasis rare
- Local growth, disfigurement
Clinical

- Nonhealing, sore
- Pink, scaly patch
- Shiny, bump or nodule
- Scar-like area
- Sun-exposed site
- +/- itching
Treatments

- Topical chemotherapy (imiquimod, 5-fluorouracil)
- Cryosurgery
- Electrodessication and curettage (ED&C)
- Surgical excision
- Mohs Micrographic Surgery
- Radiation
- Oral hedgehog inhibitors
  - Vismodegib
  - Sonidegib
Case

- 72 yo male with new ‘growth’ for several months on the left side of neck
- Describes itching on and off
- Farming history
What is your next step?

A. Reassurance with close follow up
B. Liquid nitrogen
C. Excision with margins
D. Bacterial culture
E. Shave biopsy
Squamous Cell Carcinoma

• Arises from keratinocytes
• Less common than BCC
• 4,000 – 9,000 deaths / year
Risk Factors

• Fair skin
  – Lifetime risk for Caucasians 15%
• Chronic sun exposure
• Tanning bed use
Increase Risk of Metastasis

- Neglected tumors (large: >2cm diameter, deep >4mm)
- Immunocompromised hosts
- H-region of face
- Tumors arising within scars, chronic ulcers, burns, or genitalia
Clinical

- Papule, plaque, nodule
- Flesh-colored to red
- Scaly → cutaneous horn
- Bleeds easily
- Itch, burn, tender
Treatments

• SCC in situ
  – Topical creams
  – Cryotherapy
  – ED&C
  – Photodynamic Tx

• SCC, invasive
  – Surgical excision*
  – Mohs surgery
  – Radiation
NMSC: Regular Surveillance

- Treatment related complications
- Local or regional recurrence
- Development of new skin cancers

- Regular skin checks q3-6 months x 2 years
- Yearly thereafter
QUIZ TIME!
Basal Cell Carcinoma
Basal Cell Carcinoma
Nevus
Melanoma
Seborrheic Keratosis
Melanoma
Squamous Cell Carcinoma
Seborrheic Keratosis
Traumatized Angioma
Basal Cell Carcinoma
Sebaceous Hyperplasia
Squamous Cell Carcinoma
Melanoma, 2.55mm Breslow depth
Melanoma
Take Home Points

• Melanoma can look like anything!
• Pigmented basal cell carcinoma
• Pigmented squamous cell carcinoma
• Early diagnosis $\rightarrow$ better prognosis
References

- http://missinglink.ucsf.edu/lm/dermatologyglossary/tinea.html
- www.aad.org
- www.pcds.org
- www.dermnetnz.org
- Skincancer.org
- Cancer.org