Skin Lesions and Cancers: When is a Spot More than a Spot? ...and also... Sunscreens

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I have no conflicts of interest to disclose
Outline

• Common benign skin lesions
• Non- melanoma skin cancers
  – Actinic keratoses (“pre-cancers”)
  – Basal cell carcinoma
  – Squamous cell carcinoma
• Moles (Nevi)
• Melanoma
• Sunscreen
Common Skin Lesions

- Seborrheic keratosis
- Dermatofibroma
- Cherry angioma
- Pyogenic granuloma
- Chondrodermatitis nodularis helices
- Sebaceous hyperplasia
Seborrheic Keratoses

- BENIGN
- Appear beginning at age 40, earlier in sunny regions
- Stuck-on (above the skin)
- Greasy/waxy/warty texture
- Face, under breasts, trunk
- 0.1 to 2.0 cm in diameter
Seborrheic Keratoses Treatment

• None required
  – No malignant potential
• Most common
  – Liquid nitrogen
Dermatofibroma

- Firm, 3-7 mm slightly rough surfaced, slightly elevated papules
- Overlying hyperpigmentation
- Firm to palpation; Dimple sign
- Often at sites of minimal trauma
  - Bug bite, ingrown hair, etc
- Treatment: Reassure, cryotherapy, removal
- Often recur after removal
Cherry Angioma

• Very Common
• Increases with age (senile angioma)
• F>M (?hormonal)
• 1-5 mm bright red dome-shaped bump
• Not easily compressible
• Association: None
• Complications: None
Pyogenic Granuloma

- Friable, 5-10 mm papule
- Occurs after trauma
- Children and adults
- Biopsy: Excess granulation tissue
- Treatment: Surgical removal (curette), electrodesiccation of base
- Complication: Rarely may recur and form satellites
Chondrodermatitis Nodularis Helices

- Benign inflammation of the cartilage of the ear (helix or antihelix)
- Middle aged men
- Painful!
- “can’t sleep on that side”
- May mimic skin cancers
- Treatment
  - Relieve pressure, surgical removal, time
  - LN2, steroid injections, laser therapy
“CNH pillow”
Sebaceous Hyperplasia

• Common, benign
• Single or multiple pink to yellow bumps on the face, often with telangiectasias (visible blood vessels) and central depression
• May mimic BCC
• Treatment- electrodesiccation, laser, shave removal, photodynamic therapy (“blue light”), cryotherapy
Nonmelanoma Skin Cancer (NMSC)

- Actinic Keratosis (“pre-cancer”)
- Basal Cell Carcinoma
- Squamous Cell Carcinoma
- Caused primarily by ultraviolet radiation
Actinic Keratosis

- In-situ dysplasia from ultraviolet exposure
- Sign of sufficient sun injury to develop NMSC
- Precancerous (low rate <1%)
- Prevented by sun screen use, even in adults
Actinic Keratosis

- Diagnosis - Clinical inspection
  - Red, scaly patch < 6mm.
  - Tender to touch.
  - Sandpaper consistency.
- Location - Scalp, face, dorsal hands, lower legs (women)
Basal Cell Carcinoma

• Most common of all cancers
  – > 1,000,000 diagnosed annually in USA
  – Lifetime risk for Caucasians: up to 50%
• Intermittent intense sun exposure and overexposure (sunburns)
• Locally aggressive, very rarely metastasize
Basal Cell Carcinoma

- Clinical Subtypes
  - Nodular (classic)
  - Superficial
  - Pigmented
  - Morpheaform (scar-like)

- Clinical and histologic subtypes (microscopic description) influence behavior
  - Most concerning: morpheaform, sclerotic, micronodular, infiltrative
Basal Cell Carcinoma- Superficial

• Clinically pink, slightly scaly, slightly shiny patch
• Looks like an actinic keratosis
Basal Cell Carcinoma- Pigmented

- May be entirely pigmented or there may be specks of pigment within what otherwise looks like a nodular or superficial BCC
- Melanoma is on the differential!!
Basal Cell Carcinoma- Morpheaform

- Clinically scar-like
- Difficult to determine clinically where lesion begins and ends
Squamous Cell Carcinoma

- Presents as red plaque, ulceration, or wart-like lesion
- Risk factors:
  - Fair skin
  - Inability to tan
  - Chronic sun exposure
- Special situations:
  - Organ transplant recipients
Keratoacanthoma

- Rapidly growing (1 month)
- Dome-shaped nodule with central core of keratin
- May spontaneously regress, but treat as an SCC
Treatments

Actinic Keratoses
Basal Cell Carcinoma
Squamous Cell Carcinoma
Liquid Nitrogen
Electrodesiccation

- Damped, high-voltage current
- Causes superficial tissue damage via dehydration
Actinic Keratoses - Treatment

- Liquid nitrogen (single freeze-thaw cycle)
- Topical treatment
  - 5-fluorouracil (0.5-5%) (Efudex)
  - Imiquimod 5% cream (Aldara)
  - Diclofenac (Solareze)
  - Picato (ingenol mebutate); 0.015%, 0.05%
- Photodynamic therapy
AKs treated with 5-fluorouracil
Actinic Keratoses- Treatment

• Always biopsy if an AK is not responding to appropriate therapy
  – r/o SCC, superficial BCC
Basal Cell Carcinoma- Treatment Location, Size, and Subtype Guide Therapy

- **Superficial**
  - Imiquimod
  - Electrodesiccation and curettage (ED+C)
- **Nodular or pigmented**
  - ED+C
  - Excision
  - Mohs micrographic surgery
  - Radiation- comorbidities, tumor size and location
- **Morpheaform, infiltrative, micronodular**
  - Excision
  - Mohs micrographic surgery
Squamous Cell Carcinoma Treatment

• SCC in situ
  – 5-FU
  – Imiquimod
  – Liquid nitrogen
  – Electrodesiccation and curettage

• Invasive SCC
  – Excision with 4-6 mm margins
  – Mohs micrographic surgery
Topical Treatment of Skin Cancer

- Patient selection is the key
- Work for superficial cancers (NOT invasive)
  - Superficial BCC, SCC in situ
- Long courses (months) may be required
- **Biopsy to confirm diagnosis should be done before treating**
Topical Treatment of Skin Cancer

• Scarring may be reduced compared to surgery
• Superficial BCC’s and SCC in situ

• Imiquimod 5% cream
  – 5X per week for 6-10 weeks depending on the host reaction
  – Efficacy 75%-85%

• 5 fluorouracil
  – Topically twice daily for up to 12 weeks
What is Mohs Micrographic Surgery?

• Named after Frederic E. Mohs who developed technique
• High cure rate
• Surgeon (dermatologist trained in MMS)
  – Removes only the skin with the cancer cells
• Performed in the office
• Appropriate for tumors (BCC, SCC) that are
  – Aggressive or large
  – Appear in areas with little tissue beneath it
  – Has been treated but recurred
Mohs surgery

**what to expect:**

1. The visible tumor and a small segment of surrounding skin are removed.

2. The tissue is examined under a microscope for cancer cells.

3. If cancer cells are found, skin continues to be removed and examined.

4. This continues until no more cancer cells are found.
Acquired Nevi (Moles)
Acquired Nevi (Moles)

- Almost universal
- In areas of sun exposure
- Change throughout life, appearing at preschool age, growing during young adulthood, and involuting in old age
- 5mm in diameter or less (size of pencil eraser)
- Size (>6mm), number (more than 50) and pattern (not in sun exposed sites) predicts melanoma
Atypical Moles

• Not in sun exposed sites
• Larger than 6 mm in diameter
• Greater than 50
Question: The most important prognostic indicator in melanoma is:

1. Duration of lesion before diagnosis
2. Depth of lesion
3. Presence of ulceration
4. Size of radial growth phase
5. Location of lesion
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Malignant Melanoma

- Estimated New Cases in 2017: 87,110
- % of All New Cancer Cases: 5.2%
- Estimated Deaths in 2017: 9,730
- % of All Cancer Deaths: 1.6%

Current lifetime risk of melanoma in US is 2.2%
5 year survival 91.7%
# Malignant Melanoma

<table>
<thead>
<tr>
<th>Common Types of Cancer</th>
<th>Estimated New Cases 2017</th>
<th>Estimated Deaths 2017</th>
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<tbody>
<tr>
<td>1. Breast Cancer (Female)</td>
<td>252,710</td>
<td>40,610</td>
</tr>
<tr>
<td>2. Lung and Bronchus Cancer</td>
<td>222,500</td>
<td>155,870</td>
</tr>
<tr>
<td>3. Prostate Cancer</td>
<td>161,360</td>
<td>26,730</td>
</tr>
<tr>
<td>4. Colorectal Cancer</td>
<td>135,430</td>
<td>50,260</td>
</tr>
<tr>
<td>5. <strong>Melanoma of the Skin</strong></td>
<td><strong>87,110</strong></td>
<td><strong>9,730</strong></td>
</tr>
<tr>
<td>6. Bladder Cancer</td>
<td>79,030</td>
<td>16,870</td>
</tr>
<tr>
<td>7. Non–Hodgkin Lymphoma</td>
<td>72,240</td>
<td>20,140</td>
</tr>
<tr>
<td>8. Kidney and Renal Pelvis Cancer</td>
<td>63,990</td>
<td>14,400</td>
</tr>
<tr>
<td>9. Leukemia</td>
<td>62,130</td>
<td>24,500</td>
</tr>
<tr>
<td>10. Uterine Cancer</td>
<td>61,380</td>
<td>10,920</td>
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Melanoma of the skin represents 5.2% of all new cancer cases in the U.S.

SEER.cancer.gov
Percent of Deaths by Age Group: Melanoma of the Skin

The percent of melanoma of the skin deaths is highest among people aged 75-84.

Median Age At Death

70

U.S. 2010-2014, All Races, Both Sexes
New Cases, Deaths and 5-Year Relative Survival

Number per 100,000 Persons

--- | --- | --- | --- | --- | --- | --- | --- | ---
5-Year Relative Survival | 81.8% | 83.9% | 86.2% | 89.3% | 90.2% | 92.1% | 93.3% | 93.1%

Diagnosis of Melanoma

- The prognosis is DEPENDENT on the depth of lesion and lymph node status
- Melanoma of < 0.8mm in thickness is low risk
- Sentinel lymph node biopsy
  - Recommended for melanoma depth ≥1.0mm
  - May be recommended for melanoma depth <0.8 mm with ulceration or 0.8-1.0mm with or without ulceration
Risk factors for melanoma

- M oles - atypical
- M oles - typical > 50
- R ed hair and freckling
- I nability to tan – skin types 1 and 2
- S evere childhood sunburns
- K indred - first degree relatives with melanoma; genetic mutations: CDKN2A, CDK4, others
Acral Melanoma

- Suspect in African American, Latino, Asian patients
Malignant Melanoma

- Asymmetry
- Border
- Color
- Diameter
- Evolution

Thinking of "ABCD" can help you remember what to watch for:

- Asymmetry—The shape of one half does not match the other.
- Border—The edges are ragged, notched, or blurred.
- Color—The color is uneven. Shades of black, brown, and tan may be present. Areas of white, grey, red, or blue also may be seen.
- Diameter—There is a change in size.
Malignant Melanoma

• Asymmetry – *Two halves of lesion not the same*
• Border
• Color
• Diameter
• Evolution
Malignant Melanoma

- Asymmetry
- *Border – Irregular, notched, vague*
- Color
- Diameter
- Evolution
Malignant Melanoma

- Asymmetry
- Border
- Color - Variations in color: red, white and blue
- Diameter
- Evolution
Malignant Melanoma

- Asymmetry
- Border
- Color
- Diameter - Approximately 6mm (pencil eraser)
- Evolution
Malignant Melanoma

- Asymmetry
- Border
- Color
- Diameter
- Evolution - Changing
Amelanotic Melanoma

- Form of melanoma that lacks pigment
- Must THINK about it in order to make the diagnosis
NEW Systemic Therapies for the Treatment of Advanced Skin Cancer

- **BCC**
  - Vismodegib (Erivedge)
    - Hedgehog signaling pathway inhibitor
    - Metastatic, relapsed, inoperable, or not amenable to radiation

- **Melanoma**
  - BRAF inhibitors (V600E mutation)
    - Vemurafenib (Zelboraf); Dabrafenib (Tafinlar)
  - Monoclonal Ab to CTLA4
    - Ipilimumab (Yervoy)
  - Monoclonal Ab to PD-1
    - Pembrolizumab (Keytruda); Nivolumab (Opdivo)
  - MEK inhibitor
    - Trametinib (Mekinist); Cobimetinib (Cotellic)
You May Have Heard....

• Aspirin can prevent melanoma
  – Studies still inconclusive

• Blood pressure medications may increase the risk of skin cancer
  – True only for hydrochlorothiazide
  – Still need more information

• Nicotinamide 500 mg twice a day*
  – Decreases AKs (by 11%)
  – Decreases NMSC in high risk patients (by 23%)

*NEJM 2015; 373: 1618-26
Sunscreens 101
Why Sunscreens?

- Prevention of skin cancer
- Prevention of photosensitivity (UVA)
  - Medications
  - Diseases: e.g. lupus erythematosus
- Prevention of skin aging
New Sunscreen Labeling (Summer 2012)

- Broad spectrum = blocks UVA and UVB
- SPF = UVB blockade
- For sunscreen to say can prevent skin cancer AND sunburn, must
  1. be broad spectrum
  2. SPF ≥ 15
- Water resistant for 40 min or 80 min
  - No more “water proof”, “sweat proof”
  - Suggests that always need to re-apply every 2h
Chemical vs Physical Sunscreens

• Chemical sunscreens have UV absorbing chemicals
  – Benzophenone, Parsol 1789, Mexoryl, etc
  – Chemical UVA blockers are photo-unstable (degrade)
    • Stabilizers are now common (e.g. Helioplex)

• Physical sunscreens scatter or block UV rays
  – Zinc and titanium are physical blockers
  – More photostable
  – Block UVA well
  – Inelegant (white film)
Sunscreen and Coral Reefs

• AVOID
  – Oxybenzone (benzophenone-3)
    • Also allergic contact dermatitis
  – Butylparaben (preservative)
  – Octinoxate (ethylhexyl methoxycinnamate)
  – 4-methylbenzylidene camphor
    • Not allowed in US

• DO
  – Water resistant sunscreen
  – Biodegradable
  – Sunprotective clothing
  – Zinc oxide
How to Apply Sunscreen

• Every morning before leaving house
  – at least 20 min before sun exposure

• For heavy sun exposure
  – Reapply 20 minutes after exposure begins

• Reapply every 2 hours or after swimming/sweating/towel-drying

• Apply liberally
  – 1oz application = shot glass = covers the body
Sunscreen Myths

- **Antioxidants in sunscreens**
  - Vit E, Vit C, tea extract, etc
  - No SPF value, prob no beneficial effect
- **Nanoparticles in sunscreens** (e.g. zinc and titanium)
  - Coated when in sunscreen, do not penetrate intact skin, remain on surface of the skin
  - No evidence of any consequences when used on intact skin, not sufficient data when there is barrier dysfunction
Melanoma and Sunscreen Use

Childhood sunscreen and lifetime sunscreen use sig assoc with decreased risk of melanoma
SPF 100+ sunscreen is more protective against sunburn than SPF 50+ in actual use: Results of a randomized, double-blind, split-face, natural sunlight exposure clinical trial

Joshua D. Williams, PhD, Prithviraj Maitra, PhD, Evren Atillasoy, MD, Mei-Miau Wu, DrPH, Aaron S. Farberg, MD, and Darrell S. Rigel, MD, MS

Skillman, New Jersey, and New York, New York
Vitamin D

- Typical sunscreen use does not affect Vit D levels
- Strict use will lead to low Vit D levels
- Supplement those at risk for osteoporosis who obey stringent sun-protections practices
  - E.g. organ transplant patients
Summary

• NMSC is common
  – Treatments are done in the office

• Melanoma
  – Finding it early is ideal

• Sunscreens
  – Put on a high SPF, a lot of it, and often