

Melanoma: Diagnosis, Staging and Treatment

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The Bad Guy (Girl)



Definition

- Malignant transformation of melanocytes
- Most melanocytes occur in skin at the epidermal/dermal junction but can also occur in the retina and certain neural tissue since the melanocyte is derived from the neural crest embryologically

Epidemiology

- Lifetime risk between 1 in 75-1 in 50
- 55,000 new cases of melanoma yearly in USA
- 5% of all new cancers in the USA
- 8,000 deaths per year and is the most fatal skin disease in the world

Risk Factors

- **Skin type**
 - Type 1. always burns never tans
 - Type 2. always burns and sometimes tans
 - Type 3. sometimes burns and always tans
 - Type 4 never burns and always tans
- **The correlation of eye color and freckling or phenotypes also relates to skin type and risk**

Commercial Tanning Beds



Risk Factors

- **Sunlight exposure “Latitude gradient”**
 - The incidence of melanoma is inversely proportional to the latitude
 - If you live closer to the equator, you’re more likely to get melanoma
- **Occupation and socio-economic status**
 - May relate to sunlight exposure

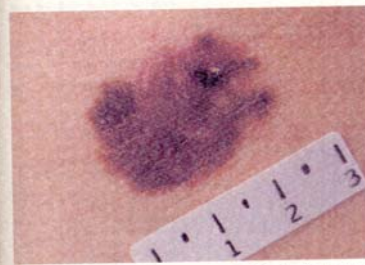
Risk Factors – cont'd

- **Family history**
 - Melanoma more likely to occur if a positive family history
- **Gender and hormonal status**
 - Women generally have a more favorable prognosis of melanoma than men which may relate to female hormonal status.

Types of Melanoma

- **Superficial Spreading Melanoma**
 - Most common and represents 70% of all melanomas
 - Initially has a radial growth phase before evolving into a vertical growth phase
 - Depth determines prognosis

Superficial Spreading Melanoma



Superficial Spreading Melanoma



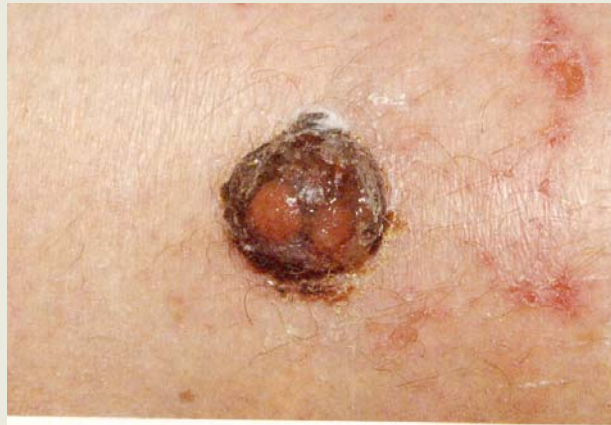
Superficial Spreading Melanoma



Types of Melanoma

- Nodular melanoma starts as a raised lesion and lacks the horizontal or lateral growth phase
- Occurrence 15-30% according to different studies
- Growth is much more rapid and consequently has a more guarded prognosis

Nodular Melanoma



Nodular Melanoma with Ulceration

Nodular Melanoma



Types of Melanoma

- **Lentigo Maligna Melanoma** occurs 4-15% and as would expect occurs almost exclusively on the head and the neck

Lentigo Maligna Melanoma



Lentigo Maligna Melanoma

Lentigo Maligna Melanoma



Types of Melanoma

- **Acral Lentiginous Melanoma**
 - Racial divide
 - Only 2-8% in fair skin whites
 - Represents the most common in African Americans – 60-72%
 - Occurs on palms and soles and subungal of the nail bed

Acral Lentiginous Melanoma



Acral Lentiginous Melanoma



Spilling of pigment from the nail onto the skin which separates clinically from traumatic hemorrhage

Diagnosis:

1. Clinical – Macroscopic
2. Dermoscopy
3. Consultation
 - A. Specimen to Pathologist (Biopsy)
 - B. Patient with specimen to Dermatologist for a clinical consultation

Clinical (Macroscopic)

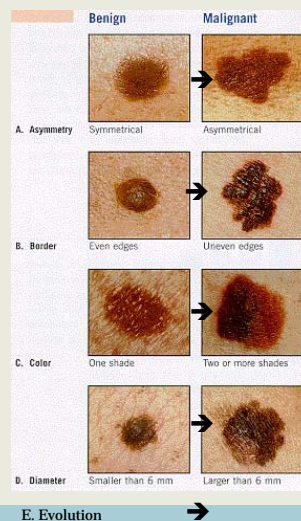
- A – Assymetry
- B - Border (Irregular)
- C - Color changes
 - Variations of the American Flag Sign (Red, White and Blue)
- D - Diameter > 6mm

Clinical (Macroscopic) – cont'd

• E - Evolving

- Looks different that it did before
- Importance of photography with the advent of digital photography it has becomes less dependent on history
- Can map out at risk patients or lesions with ease and store them in your computer for future evaluation.
- Photography for documentation of existing lesions for location and observation for change
- Nikon D 40 camera with a Macro lens which allows close-up examination of photos
- Our office has switched to EMR (EHR) and we download the photos to each patient's records to become a permanent part of the medical record

Clinical Evaluation




Dermoscopy

- **Clinical evaluation with with enhanced epiluminescence (ELM)**
 - Hand-held scope similar to a otoscope held against the lesion which magnifies 5x-10x with light the pigmented lesion
 - Would represent an evaluation between gross vision and histology

Dermoscopy – cont'd

- **Basic three parameters**
 - Symmetry (Asymmetrical or Symmetrical)
 - Pigment pattern (Atypical or Typical)
 - Blue-White Structures
- **Other Features**
 - Brown globules (large brown dots in melanoma)
 - Pseudo pods sticks with dots at the ends
 - Depigmentation

Dermoscopy




3-POINT CHECKLIST

- Asymmetry
- Atypical network
- Blue-white structures

Total score: 3

Figure 1 Melanoma
 Criteria to diagnose melanoma can be very subtle or obviously present as in this case. This lesion clearly demonstrates all of the 3-point checklist criteria.

Asymmetry in all axes, an atypical pigment network (circle), and blue-white structures (asterisk).



3-POINT CHECKLIST

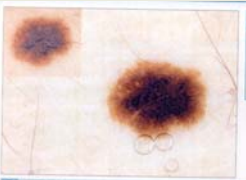
- Asymmetry
- Atypical network
- Blue-white structures

Total score: 0

Figure 2 Nevus
 In contrast to Figure 1, none of the features of the 3-point checklist are seen in this lesion. The lesion is symmetrical and the pigment network is regular.

although it might seem to be atypical because the blue segments are slightly thickened.

Dermoscopy




3-POINT CHECKLIST

- Asymmetry
- Atypical network
- Blue-white structures

Total score: 0

Figure 3 Nevus
 A nevus can't be said with precision to be lesions that look like this will be recurrent. This is highly symmetrical and there is a great example of a regular pigment network in this basal nevus. Do not be fooled by the dark central color - it is not always a sign of malignancy. No blue-white structures are seen.



3-POINT CHECKLIST

- Asymmetry
- Atypical network
- Blue-white structures

Total score: 3

Figure 10 Melanoma
 This lesion is a straightforward case of melanoma. The diagnostic criteria are striking: obvious asymmetry of color and structure, a markedly atypical pigment network (arrow) and blue-white structures (circle).

Dermoscopy

3-POINT CHECKLIST

Asymmetry

Atypical network

Blue-white structures

Total score

Figure 7 Seborrheic keratosis
 The seborrheic keratosis demonstrates a great deal of asymmetry of color and structure, but the other two criteria needed to diagnose melanoma are absent. If the multiple milium-like cysts (arrows) of seborrheic keratosis cannot be recognized, extra the lesion.

3-POINT CHECKLIST

Asymmetry

Atypical network

Blue-white structures

Total score

Figure 8 Nevus
 Some dermatologists use Seborrheic, no longer. The color and structure in the right half of the lesion is not a mirror image of the left half. The presence of irregular black dots in the left upper corner (circle) and the asymmetry. Pigment network and blue-white structures are not seen.

Dermoscopy – cont'd

- **Units Available**

- Retail: DermLite® DL 100 – Cost: \$275
- Reister ri- derma-dermatoscope® on Arial Medical Equipment site – Cost: \$326
- Heine Delta 20 Dermatoscope (Delasco®) – Cost: \$1,100

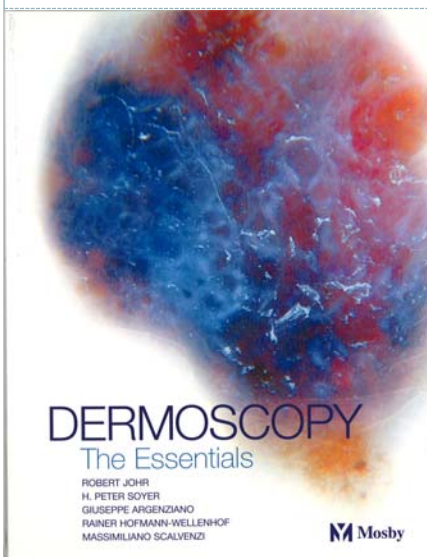


Dermscopy – cont'd

- Many of these have photographic attachments to Nikon Coolpix and Sony cybershot digital cameras to place your dermscopy photos into your electronic records
- Many of these companies retail attachments for the camera that can be attached to the dermscopic instruments
- All of this can be easily researched through that great medical search engine Google.



Reference Text



- **Dermscopy the Essentials by Robert Johr, et al (Mosby Publishers)**
- **ISBN 0-323-02896-9**
- **Retails \$72.00 on E-bay \$66.43**

Consultation

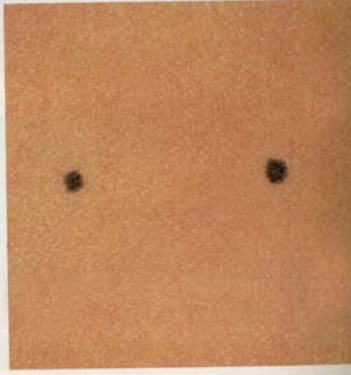
- **Pathologist (by performing a biopsy)**
 - Incisional vs. Excisional
 - Shave vs. Punch
- **The more specimen a pathologist has the more likelihood of a diagnosis**
- **Excisional biopsy is generally preferred over incisional**
 - However, there is no evidence in the literature that an incisional bx increases the risk of metastasis or affects the course of the disease
- **Since depth determines staging and treatment, a punch would be preferable to shave for it will include fat and guide you in surgical therapy of the patient**

Consultation

- **Consultation with a specialist (pre- or post-biopsy)**
 - Dermatologist (External Medicine)
 - Etc.

Differential Diagnosis

- **Melanocytic Nevus**
 - Junctional Nevus



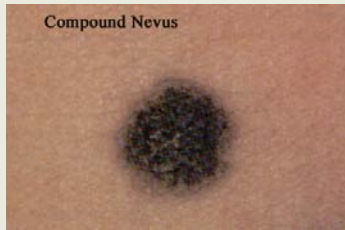
Differential Diagnosis

- Intradermal Nevus



Differential Diagnosis

- Compound Nevus



Differential Diagnosis

- Melanocytic Nevus with Atypia or Dysplastic Nevus



Atypical Melanocytic Nevi
Dysplastic Nevus Syndrome



B.

Differential Diagnosis

- Lentigo



Differential Diagnosis

- Ephelids (freckles)



Differential Diagnosis

- Blue Nevus

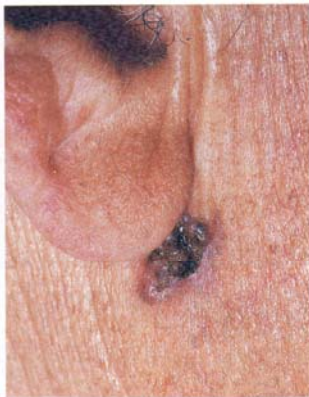


Common blue nevus. This is a solitary, asymptomatic, blue and blue-gray nodule.

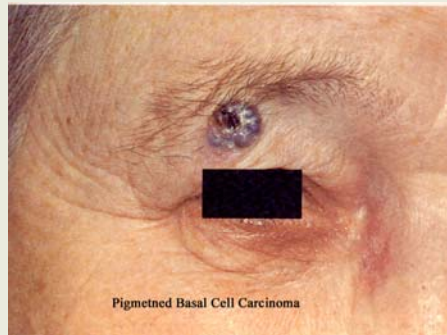
Blue Nevus

Differential Diagnosis

- Pigmented Basal Cell Carcinoma



Pigmented Basal Cell Carcinoma



Pigmented Basal Cell Carcinoma

Differential Diagnosis

- **Seborrheic Keratosis**



Dermoscopy

Differential Diagnosis

- **Traumatic Tattoo**



Staging

- T (Tumor Depth)
- N (Nodal Involvement)
- M (Metastasis)

Staging – cont'd

| Stage | Tumor (T) | Node (N) | Metastasis (M) |
|-------|--------------------|----------------------|----------------|
| 0 | is | NO | MO |
| IA | 1a | NO | MO |
| IB | 1b | NO | MO |
| | 2a | NO | MO |
| IIA | T2b | NO | MO |
| IIB | T3b | NO | MO |
| IIC | T4b | NO | MO |
| IIIA | T1-T4a | N1a or N2a | MO |
| IIIB | T1-T4b or T1-T4a/b | N1a, N1b, N2b or N2c | MO |
| IIIC | T1-T4a/b | N1b, N2b or N3 | MO |
| IV | Any T | Any N | M1b /M1c |

<http://www.melanomacenter.org/staging/stages.html>

Tumor Thickness

| T0 | Insitu (not penetrated the dermis) | a. without ulceration b. with ulceration |
|-----------|---|---|
| T1 | <1.0 mm | a. without ulceration b. with ulceration |
| T2 | 1.01-2.0mm | a. without ulceration b. with ulceration |
| T3 | 2.01-4.0mm | a. without ulceration b. with ulceration |
| T4 | >4.01 mm | a. without ulceration b. with ulceration |

Number of Nodes Involved

| N0 | 0 | a. micrometastasis b. macrometastasis |
|-----------|-----------|--|
| N1 | 1 | a. micrometastasis b. macrometastasis |
| N2 | 2-3 | a. micrometastasis b. macrometastasis |
| N3 | 4 or more | a. micrometastasis b. macrometastasis |

Site Location for Metastases

| | |
|------------|--|
| M1a | Distant skin, subcutaneous and/or nodal involvement |
| M1b | Lung Metastases |
| M1c | All other visceral metastases or any other distant mets |

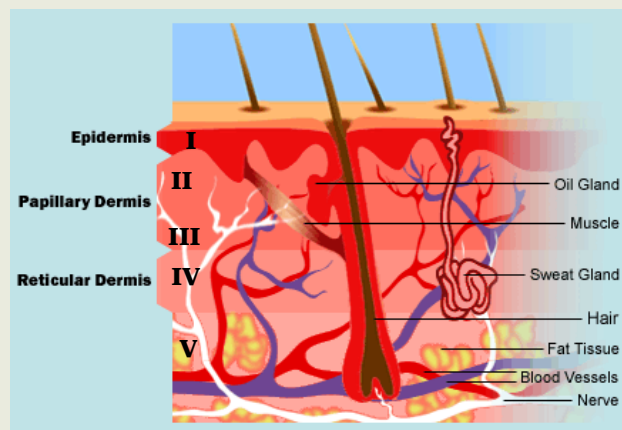
Sentinel Node Biopsy

- **Definition**
 - Location with a radio-opaque dye of closest node to the malignant lesion and removal of that node for microscopic examination
- **Melanomas of greater than 1.0 mm in depth histologically generally require sentinel node biopsy**
- **Controversy in the Dermatology Literature**
- **Controversy over staging vs. means of treatment**
- **Most authorities will agree that removal of a sentinel node does not adversely or positively affect the course of the disease. The patient's outcome remains unchanged whether a sentinel node biopsy is performed**
- **Its values lies in staging the disease**

Clark's Level of Depth of Invasion For Tumor Thickness

- Level 1 - Melanoma confined to epidermis
- Level 2 - Melanoma invaded sparsely into the top layer of the papillary dermis
- Level 3 - Melanoma invasion into the papillary dermis extensively
- Level 4 - Invasion into deeper lower dermis the reticular dermis
- Level 5 - Invasion into the subcutaneous fat

Clark's Level



Treatment

| T0 | In situ | Simple excision with 5mm border |
|----|--------------|---|
| T1 | 0.1mm- 1.0mm | Simple excision with 10mm border |
| T2 | 1.1mm-2.0mm | Simple excision with 10-20mm border with sentinel node biopsy |
| T3 | 2.1mm-4.0mm | Simple excision or graft or flap 20mm border and sentinel node bx |
| T4 | >4.0mm | 20-30mm excision with graft or flap and sentinel node biopsy |

- Protocols for nodal or metastatic lesions require referral to an oncologist
- As a dermatologist I routinely refer patients with >1.1 mm lesions in depth to a general surgeon for sentinel node or more complete nodal evaluation
- Most surgeons will perform the appropriate excision at the time of nodal resection

Treatment

- Since it's unlikely as primary care physicians that you are going to perform node biopsies and consequently larger excisions, you're most likely to refer all lesions greater than 1.0 mm in depth
- Your options may include referral on clinical suspicions or referral on pathological diagnosis for appropriate treatment
- **Controlled microscopic excision is not of benefit when excising melanoma**
 - Neither frozen sections or MOHS chemosurgery can adequately demonstrate malignant cells

Advanced Metastatic Melanoma

- **Melanoma Vaccine**
 - Metastatic disease without lung involvement has increased survival rates by 50% in patients receiving melanoma vaccine
 - A vaccine of patient's own melanoma cells is prepared and boosts significantly the body's own immune response
 - Longevity increased from approximately 12 months survival to 20 months
- **Pegylated Interferon Alfa- 2B and High dose Interferon**
 - Both have slight benefit for advanced metastatic disease but invariably have significant side effects requiring discontinuance in over 35% of patients
- **Chemotherapy/Oncologist**

Five Year Survival Rates by Lesion Thickness

| | |
|------------|-----------------|
| T0 | > 98% |
| T1 | >95% |
| T2a | >90% |
| T2b | 80% |
| T3a | 75% |
| T3b | 60% |
| T4a | 70% |
| T4b | 40% |

Clinical or microscopic Ulceration reduces survival rates approximately by 5% per tumor depth

Five Year Survival Rates

- **Nodal Involvement**
 - 40 % survival with any node involvement
- **Metastasis**
 - 10% survival rate

Summary

*Location is to real estate as suspicion is to diagnosis in medicine.
So what really counts in life for the realtor is location, location,
location and for us practitioners is suspicion, suspicion, suspicion!*

- **Suspicion** → **Diagnosis** → **Treatment**
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