Imaging Technologies to Assist in Melanoma Detection
Practical Considerations for Patients with Melanoma/Dysplastic Nevi

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Summer AAD Meeting 2017, NYC
Saturday, July 29\textsuperscript{th}, 9:40 AM
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Violações desta política resultará na remoção de sessão e possível revogação do registo da reunião.
Diretores de sessão irão acompanhar de perto tais ocorrências.
DISCLOSURES

IGNYTA: Consultant – Honoraria
Objectives

1) Identify goals of using imaging technologies to aid melanoma diagnosis

2) Describe practical imaging technologies for melanoma detection
   a. Dermoscopy
   b. Total body photography
   c. Sequential digital dermoscopic imaging
Importance of earlier detection

Although prognosis of melanoma <1mm is excellent, 27% of deaths in US are secondary to these cancers

Balch CM, et al. JCO. 2009
Geller AC, et al. JAAD. 2011
Dermoscopy
Three meta-analyses show that dermoscopy improves diagnostic accuracy for melanoma over naked-eye examination alone.
Practical Tips

• Use dermoscopy on all lesions in absence of TBP
  – Only way to improve sensitivity
• Apply clinical context
  – “Moles breed true”
• Tape test
• Ink test
• Oblique Dermoscopy
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Fig. 1. The ordinary dermoscopy view (a) showed a typical regular fibrillar pattern, whereas the oblique dermoscopy view (b) revealed a parallel furrow pattern.
Total body photography
Total body photography catalogues skin surface
Practical Tips

• For efficiency – can train nurse or other staff to perform side-by-side comparison and flag all concerning lesions
  – MD can then evaluate flagged lesions

• Involve patient
  – SSE aided by TBP
TBP improves sensitivity of SSEs in detecting new and changing moles

**Study**

Diagnostic Accuracy of Patients in Performing Skin Self-examination and the Impact of Photography

Susan A. Oliveria, ScD; Dorothy Chau, MD; Paul J. Christos, MPH; Carlos A. Charles, MD; Alvin I. Mushlin, MD; Allan C. Halpern, MD

[Bar chart showing comparison of Sensitivity and Specificity with and without TBP]
Sequential digital dermoscopic imaging (SDDI)
Sequential dermoscopy imaging (SDI) involves repeating dermoscopy images* over time to detect change.

*Must examine side-by-side on monitor
Short-term (3-4m) - Monitor suspicious melanocytic lesions without diagnostic features for melanoma

- **No change** – benign; nevus
  - ~99.2% unchanged lesions are benign
- **ANY Change** – biopsy; melanoma in situ
  - 93-96% melanomas will change w/in 3m
  - 16% benign nevi change w/in 3m

*Arch Dermatol. 2011;147(6):655-659*
What are suspicious melanocytic lesions without “diagnostic” features of melanoma???
100% sure benign

<- Observe

Biopsy ->

100% sure melanoma
100% sure benign

Biopsy ->

<- Observe

<- Benign

Malignant ->

100% sure melanoma
1.0
0.0

100% sure benign

<- Observe

Biopsy ->

<- Benign

Malignant ->

This is when I consider 3m STMM

100% sure melanoma
1.0

0.0

<- Observe

Biopsy ->

<- Benign

Malignant ->

100% sure benign

100% sure melanoma

Do not monitor these lesions!!
Long-term (>6m) – Monitoring greater number of “less” suspicious nevi in patients undergoing long-term screening

No or non-significant change
95% of lesions

“Significant change”
4-5% of lesions
- Melanoma-specific structures
- Focal changes
- Asymmetric changes
Long-term monitoring

1. Melanoma-specific structures
2. Focal changes
   - color, structure, size
3. Asymmetric change
Practical Tips

• Never monitor raised or indurated lesions
  – In case nodular or desmoplastic melanoma
• Don’t perform 3-4m monitoring of lesions with peripheral globular pattern or streaks
  – Expected change
• Rarely melanomas may not change within 3-4 months
• Right patient/lesion
• How to counsel patients
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• How to counsel patients
Considerations – Decrease Sensitivity

• Missed melanomas
  – No change

<table>
<thead>
<tr>
<th>Melanoma Subtype</th>
<th>Detected at 6 wk (n=27)</th>
<th>Detected at 3 mo (n=42)</th>
<th>All Detected at 6 wk to 4.5 mo</th>
<th>All Detected at Longer Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lentigo maligna</td>
<td>6 (22)</td>
<td>6 (14)</td>
<td>15 (75)</td>
<td>5 (25)</td>
</tr>
<tr>
<td>In situ non-lentigo maligna</td>
<td>13 (48)</td>
<td>19 (45)</td>
<td>40 (93)</td>
<td>3 (7)</td>
</tr>
<tr>
<td>Invasive</td>
<td>8 (30)</td>
<td>17 (40)</td>
<td>26 (96)</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Breslow thickness, median (range), mm</td>
<td>In situ (0-0.8)</td>
<td>In situ (0-0.5)</td>
<td>In situ (0-0.8)</td>
<td>In situ (0-0.3)</td>
</tr>
</tbody>
</table>

a Data are given as number (percentage) of column total unless otherwise indicated.

b Data are given as number (percentage) of total of both rows unless otherwise indicated.

There was no significant difference between the proportion of lentigo maligna melanomas correctly identified by change at short-term sequential digital dermoscopy imaging compared with in situ melanoma (P=.10) and invasive melanoma (P=.07) (Fisher exact test).

d There was no significant difference in median Breslow thickness between melanomas detected at 6 weeks vs 3 months (P=.47, Wilcoxon rank sum test) or those detected during the short-term digital monitoring period (<4.5 months) vs longer follow-up (P=.18, Wilcoxon rank sum test).

N.B. Facial and non-facial lesions suspected to be possible lentigo maligna melanoma should be monitored for greater than 3-months

Altamura, Arch Dermatol. 2008
Practical Tips

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  – Expected change
• Rarely melanomas may not change within 3-4 months
• Right patient/lesion
• How to counsel patients
• **Right patient**
  – Always give the pt option of biopsy today vs. short-term monitoring
  – People who will be returning to see you

• **Right lesion**
  – If you worry about the lesion when the patient leaves, call pt back
  – “lecture test”
Practical Tips

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I never completely dismiss a lesion as benign. I state that the lesion has no features of concern today but that if change is noted in the future, the patient should return for prompt re-examination.

**Why?**
(a) early melanomas are difficult to identify
(b) sensitivity is not 100%
(c) melanomas can arise in association with nevi
(d) collision tumors are not infrequent
(e) I have many patients who tell me their dermatologist said their melanoma was nothing to worry about
Use of dermoscopy, SDI, TBP together is complementary and effective in monitoring those at high-risk for melanoma.

311 patients, median f/u 3.5 years
75 melanomas detected (14 baseline) postbaseline median thickness was in situ
38% TBP; 39% SDI
5 > 1mm thickness (desmo/nodular types)
NNB of 4.4 to 1 (melanocytic lesions)
Baseline

TBSE (clinical and dermoscopy all lesions)

Suspicous/Outlier

SDDI

Melanoma

Biopsy

Follow-up

1. TBP

New, changing, outlier

Dermoscopy

Suspicious/Outlier

Short SDDI

Biopsy

Long-term SDDI

Concerning change

Biopsy
Thanks