

Dermoscopy of Melanoma

Ilspfi Browne



Overview

- The device
- Dermoscopic criteria (terminology)
 - Colour
 - Patterns
 - Global features
 - Local features
- Approach to diagnosing pigmented lesions
- Other uses in general practice

The device

Also called:

- Dermatoscopy
- Epiluminescopy
- Epiluminescent microscopy



DermNet NZ. Dermoscopy. 2009. <http://www.dermnetnz.org/procedures/dermoscopy.html>
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Dermatological Society, Inc. Published online at: <http://www.dermnetnz.org>.

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Instruments

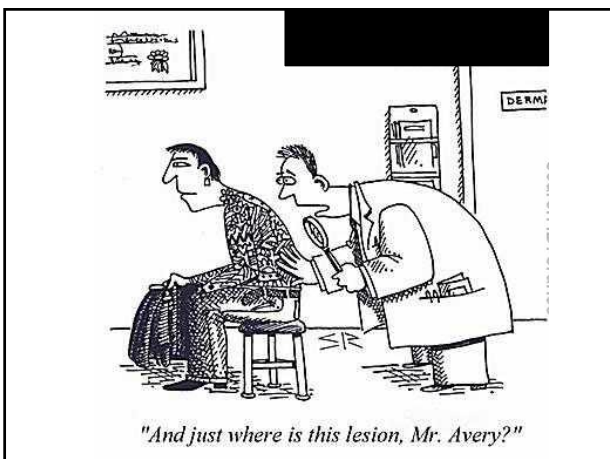
- Non-polarized light (always contact)
- Contact liquid – mineral oil, immersion oil, alcohol, water



Instruments

- Polarized light ↗ contact
↘ non-contact

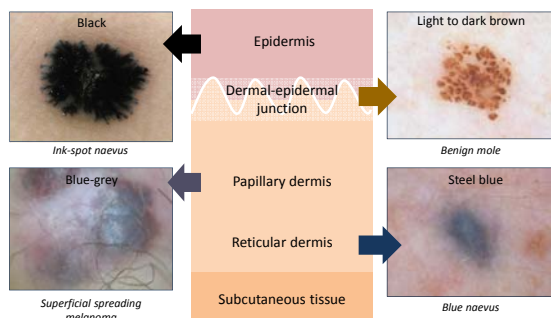




Dermoscopic criteria

Terminology used in dermoscopy

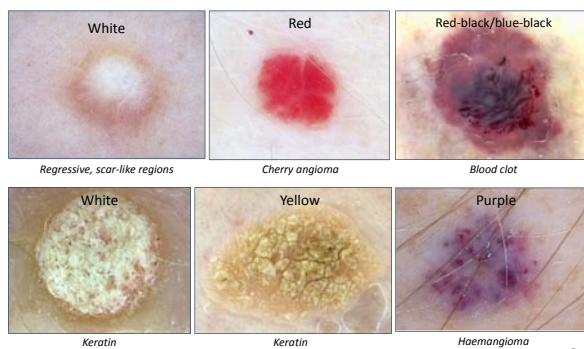
Colour



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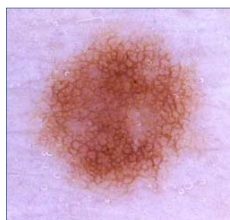
Colour



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Pattern: Global features



Reticular pattern



Globular pattern

Pattern: Global features



Pseudonetwork



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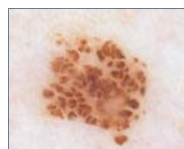
Pattern: Global features



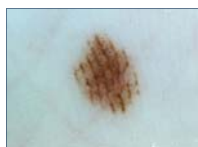
Homogeneous pattern



Starburst pattern



Cobblestone pattern



Parallel pattern

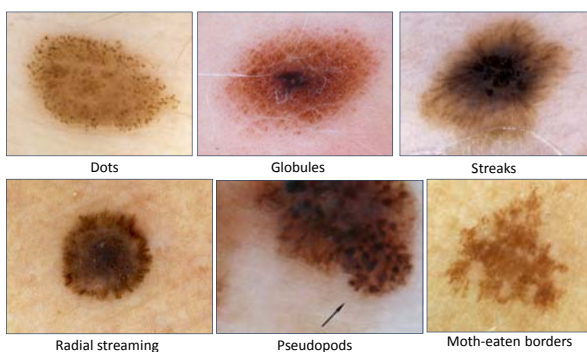


Lacunar pattern

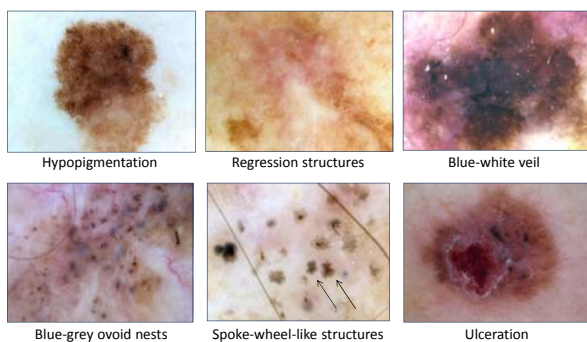


Unspecific pattern

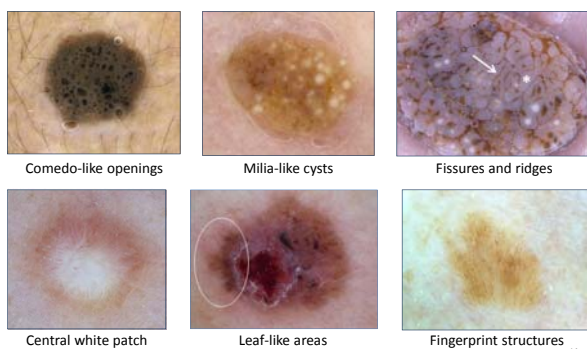
Pattern: Local features



Pattern: Local features

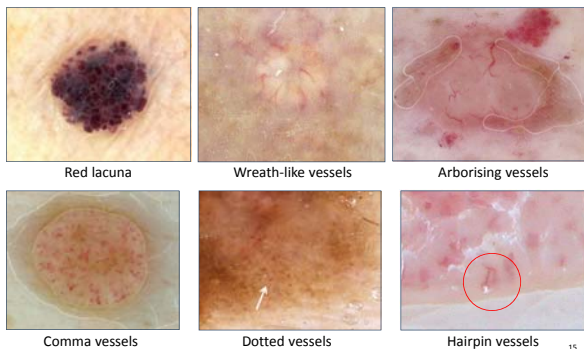


Pattern: Local features



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Pattern: Local features



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Melanoma features

- **Global features**
 - Multicomponent pattern (3 or more patterns)
 - Parallel pattern (along ridges; palms & soles only)
- **Local features**
 - Atypical pigment network (branched, broken-up, thickened, asymmetrical)
 - Dots/globules distributed irregularly and of different sizes and shapes
 - Asymmetrical blotches (featureless colours)
 - Focal irregular streaking or peripheral linear projections (radial streaming and pseudopods)
 - Five or six colours (black, brown, tan, grey, blue, red, white)
 - Blue-white veil over part of the lesion
 - White scar-like depigmentation
 - Blue pepper-like granules
 - Irregular linear or dotted vessels, or polymorphous vascular pattern especially with milky-red areas
 - On face: grey dots, pseudonetwork, rhomboidal structures, asymmetrical pigmented follicles, annular-granular structures
 - On palms/soles: parallel ridge, irregular



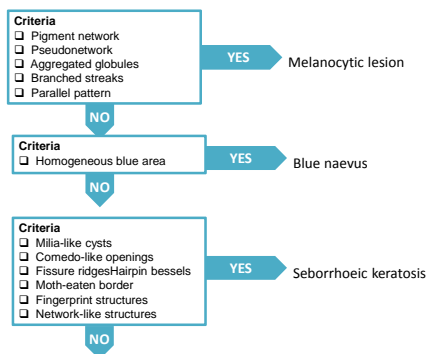
"I'm stumped.
We'll have to wait for
the autopsy."

Approach to diagnosing pigmented lesions

- Two-step procedure for differential diagnosis of pigmented skin lesions:
 - Step 1:
Differentiate between melanocytic and non-melanocytic lesions
 - Step 2:
Differentiate between benign melanocytic lesions and melanoma

Stolz W, et al. In: Argenziano G, et al., eds. First Congress of the International Dermoscopy Society (IDS). 2006 Apr 27–29; Naples. *Dermatology*. 2006;212:265–320.

Step 1 Melanocytic vs. non-melanocytic lesions

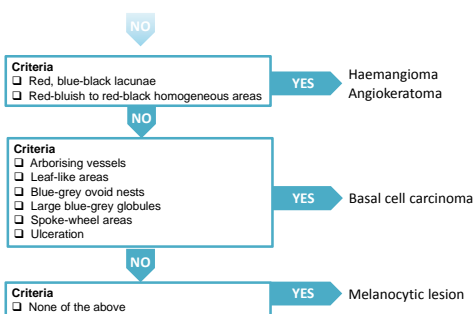


Soyer HP, et al. *Color Atlas of Melanocytic Lesions of the Skin*. Germany: Springer-Verlag; 2007.

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Step 1 Melanocytic vs. non-melanocytic lesions



Soyer HP, et al. *Color Atlas of Melanocytic Lesions of the Skin*. Germany: Springer-Verlag; 2007.

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Diagnostic algorithms Second step

- **Pattern analysis** Pehamberger et al. J Inv Dermatol 1993
- **ABCD rule** Stolz et al. Eur J Dermatol 1994
- **Menzies method** Menzies et al. Arch Dermatol 1996
- **7 point check list** Argenziano et al. Arch Dermatol 1998
- **Modified ABC rule** JAAD 2001
- **3 point checklist** Argenziano 2003
- **CASH** JAAD 2007

Step 2 Benign vs. malignant melanocytic lesions

• 3-point checklist^{1,2}

- ☐ Asymmetry
- ☐ Atypical network
- ☐ Blue-white structures

- If lesion fulfils
≥2 criteria = suspicious
lesion; biopsy

• 7-point checklist³

Major criteria	Points
Atypical pigment network	2
Blue-white veil	2
Atypical vascular pattern	2
Minor criteria	
Irregular streaks	1
Irregular pigmentation	1
Irregular dots/globules	1
Regression structures	1

Score < 3 = Benign
Score ≥ 3 = Malignant melanoma

1. Campos-do-Carmo G, Ramos-e-Silva M. Int J Dermatol. 2008;47:712-19. 2. DermNet NZ. Three-point checklist. 2010. <http://www.dermnetnz.org/doctors/dermoscopy-course/3-point-checklist.html>.
3. Argenziano G, et al. Arch Dermatol. 1998;134:1563-70.

3 point checklist

3 point checklist

- Sensitivity 96.3 %

3 point checklist

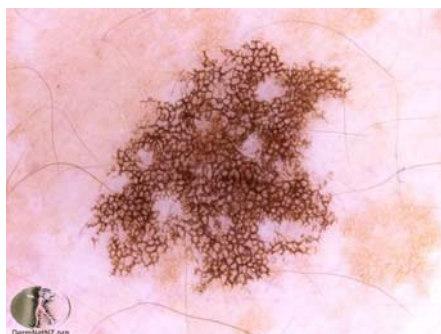
- Sensitivity 96.3 %
- Specificity LOW

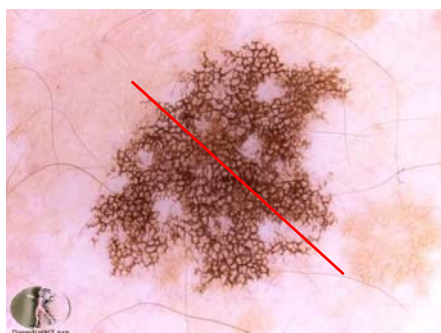
3 point checklist

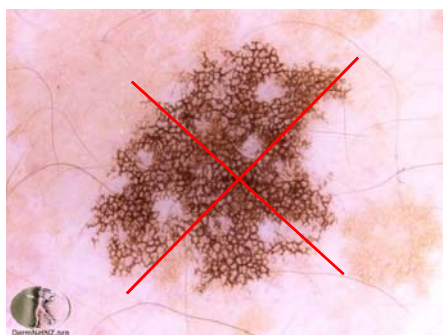
- 1. Asymmetry

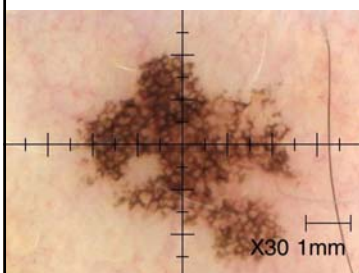
3 point checklist

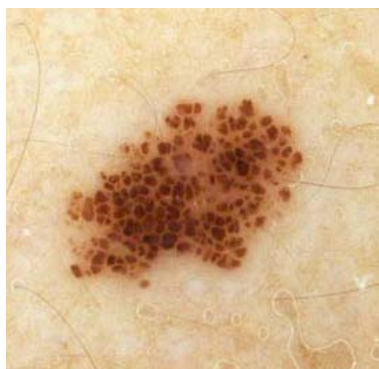
- 1. Asymmetry (Asymmetry of colour and structure in one or two perpendicular axes. NOT shape)

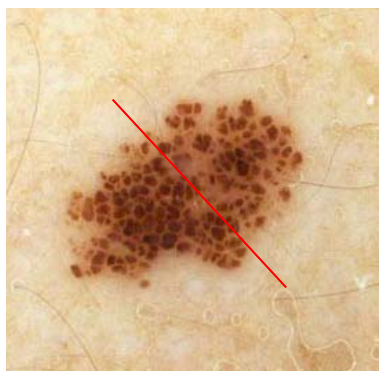
















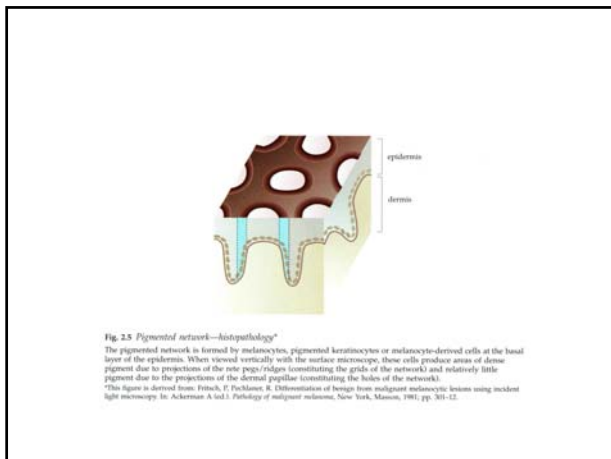


3 point checklist

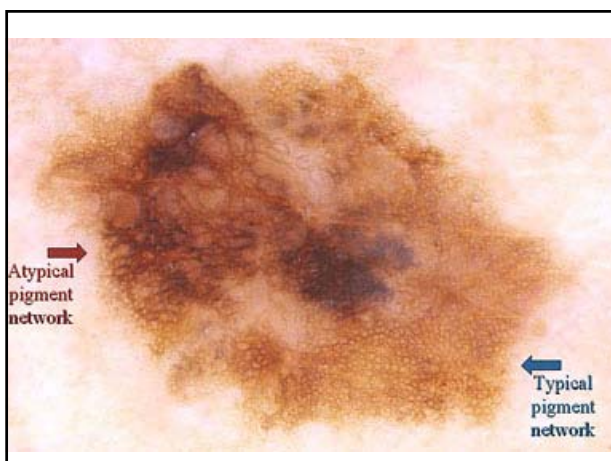
- 1. Asymmetry (Asymmetry of colour and structure in one or two perpendicular axes. NOT shape)
- 2. Atypical network

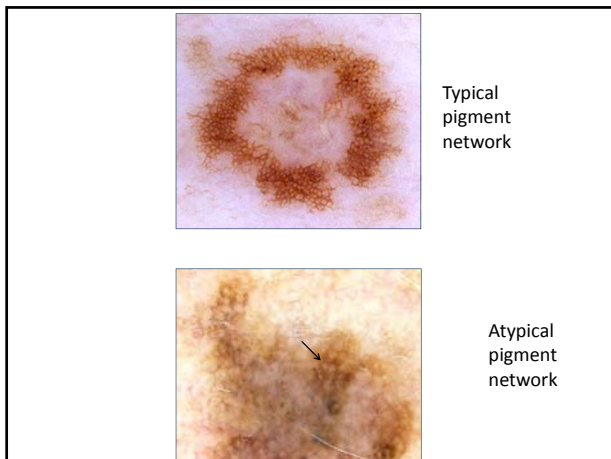
3 point checklist

- 1. Asymmetry (Asymmetry of colour and structure in one or two perpendicular axes)
- 2. Atypical network (Pigment network with irregular holes and thick lines)









3 point checklist

- 1. Asymmetry (Asymmetry of colour and structure in one or two perpendicular axes)
- 2. Atypical network (Pigment network with irregular holes and thick lines)
- 3. Blue-white structures

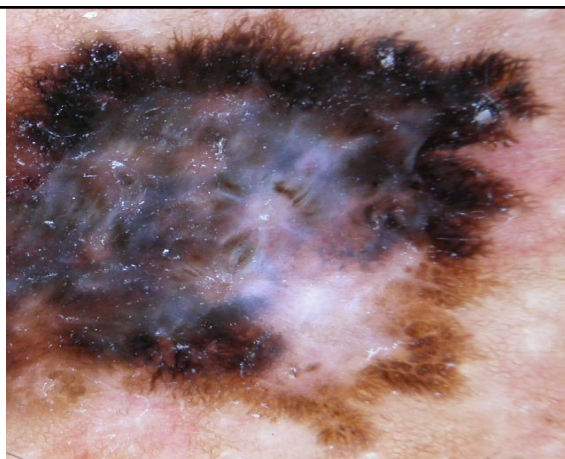
3 point checklist

- 1. Asymmetry (Asymmetry of colour and structure in one or two perpendicular axes)
- 2. Atypical network (Pigment network with irregular holes and thick lines)
- 3. Blue-white structures (Any type of blue and/or white colour. Unless it occupies entire lesion)

Blue-white structures

- Pigmented melanophages or melanocytes of the dermis – blue
- Thickened stratum corneum – white
- Single most significant dermoscopic finding of invasive melanoma.
- Sensitivity of 51% and specificity of 97%
- If occupies entire lesion – NOT blue white structures – as in blue naevus





3 point checklist

- ≥ 2 out of 3 = bx

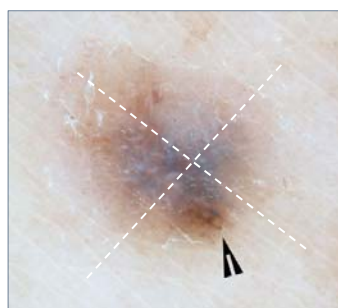
3 point checklist

- ≥ 2 out of 3 = bx
because...

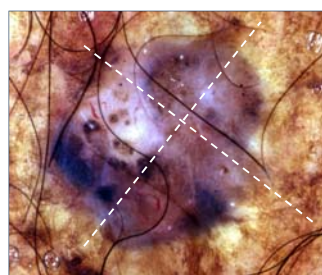


3-point checklist

Using the 3-point checklist,
determine if the following lesions
require biopsy



- ☒ Asymmetry
- ☒ Atypical network
- ☒ Blue-white structures

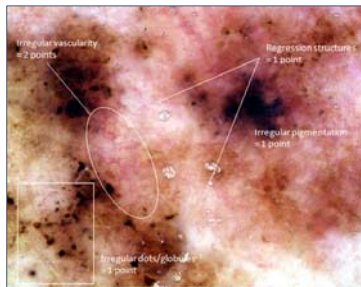


- ☒ Asymmetry
- ☐ Atypical broad pigment network
- ☒ Blue-white structures

7-point checklist

Using the 7-point checklist,
determine if the following lesions
require biopsy

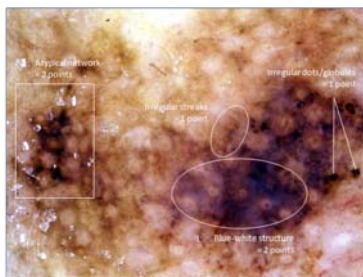
Case 1



7-point checklist

Major criteria	Points
Atypical pigment network	2
Blue-white veil	2
Atypical vascular pattern	2
Minor criteria	
Irregular streaks	1
Irregular pigmentation	1
Irregular dots/globules	1
Regression structures	1

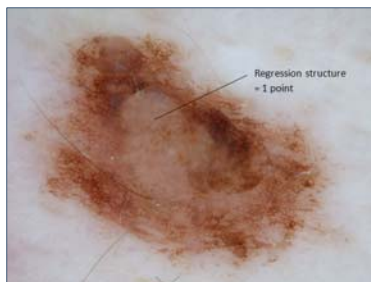
Case



7-point checklist

Major criteria	Points
Atypical pigment network	2
Blue-white veil	2
Atypical vascular pattern	2
Minor criteria	
Irregular streaks	1
Irregular pigmentation	1
Irregular dots/globules	1
Regression structures	1

Case 3

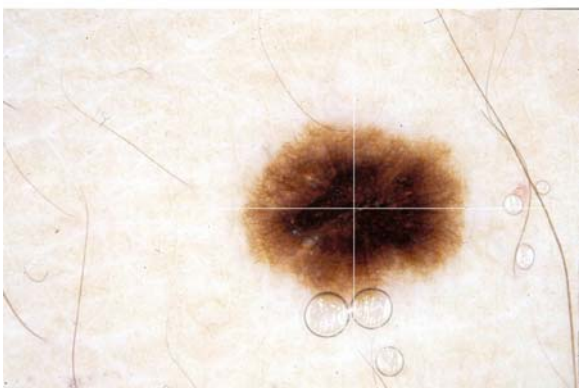


7-point checklist

Major criteria	Points
Atypical pigment network	2
Blue-white veil	2
Atypical vascular pattern	2
Minor criteria	
Irregular streaks	1
Irregular pigmentation	1
Irregular dots/globules	1
Regression structures	1

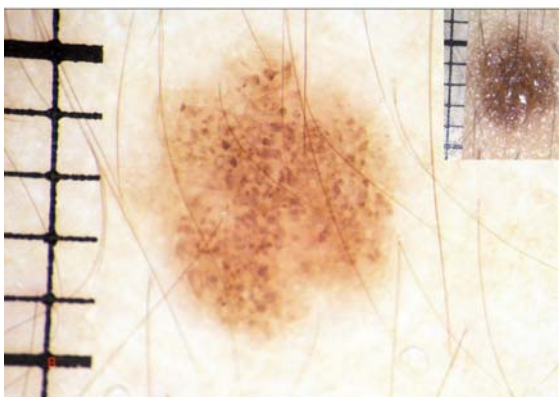
Melanocytic nevus

Example of melanocytic nevus, hypermelanotic type. Dermoscopically, this nevus is **symmetric** and exhibits regular network and no blue-white structures; therefore, it is regarded as a non-suspicious lesion.



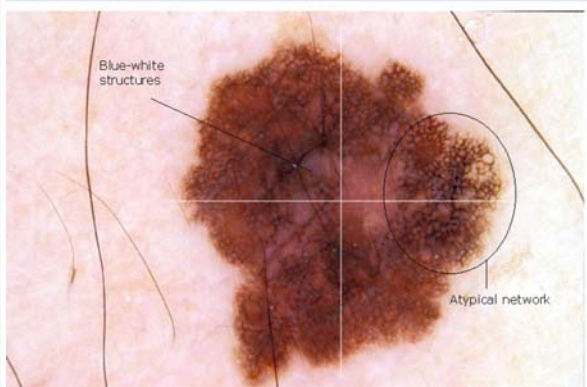
Melanocytic nevus

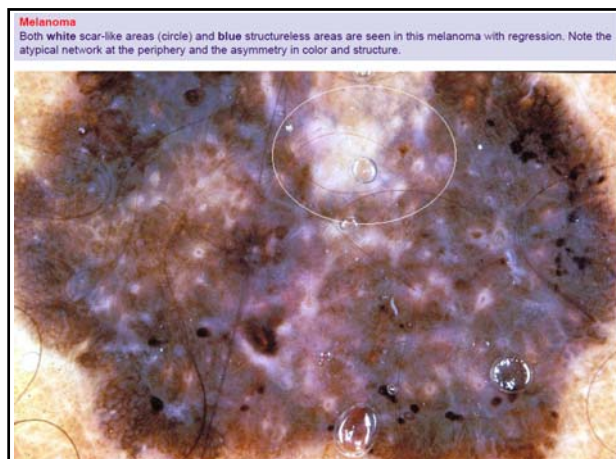
Although slightly asymmetric in shape, this lesion does not exhibit **asymmetry** in the distribution of color and structure. Therefore, it should be regarded as benign due to the lack of the 3-point criteria.

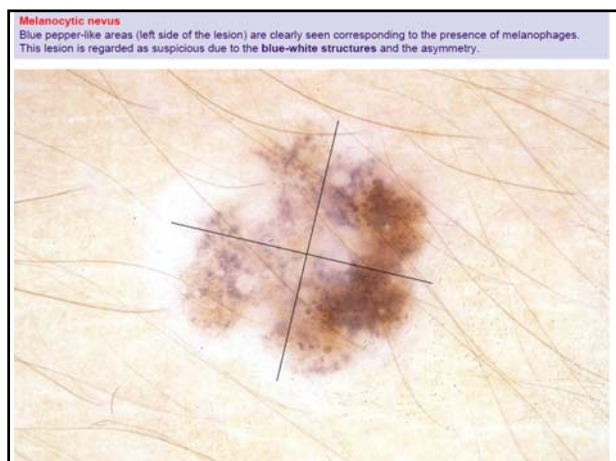


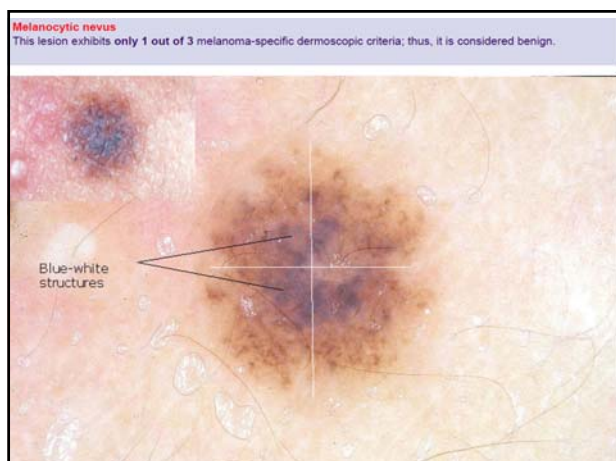
Melanoma

Early invasive melanoma exhibiting all melanoma-specific dermoscopic criteria of the 3-point checklist. Remarkably, **atypical network** is particularly visible on the dermoscopic image.







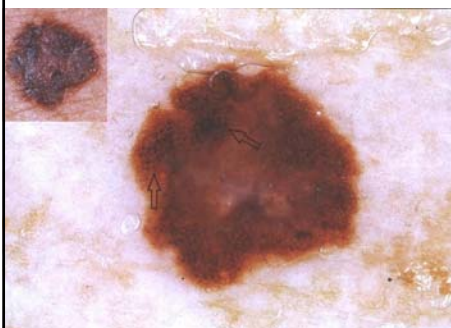


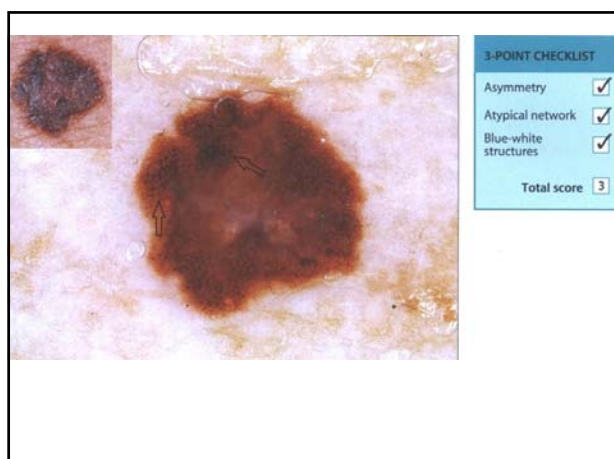
Cases

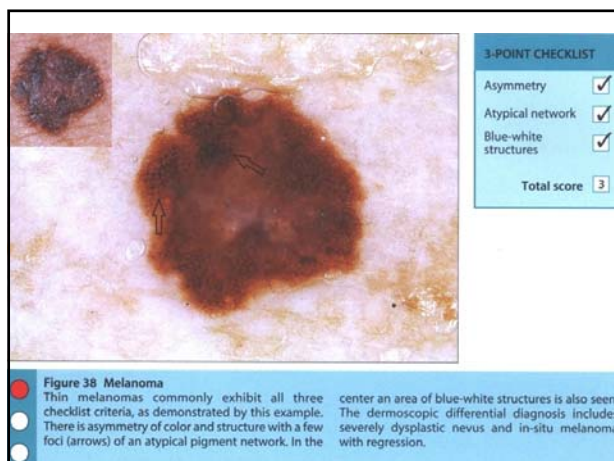
- “Dermoscopy: The essentials”

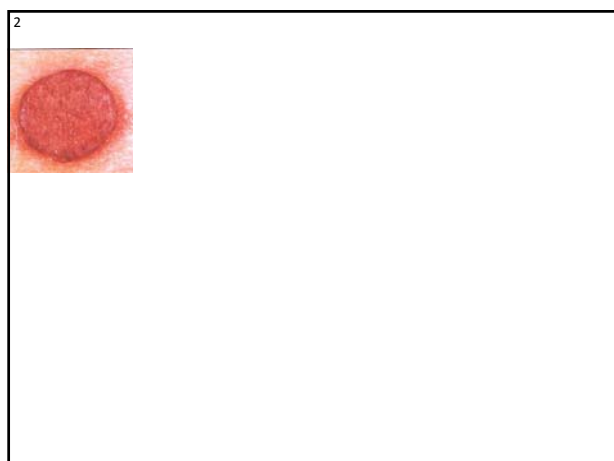
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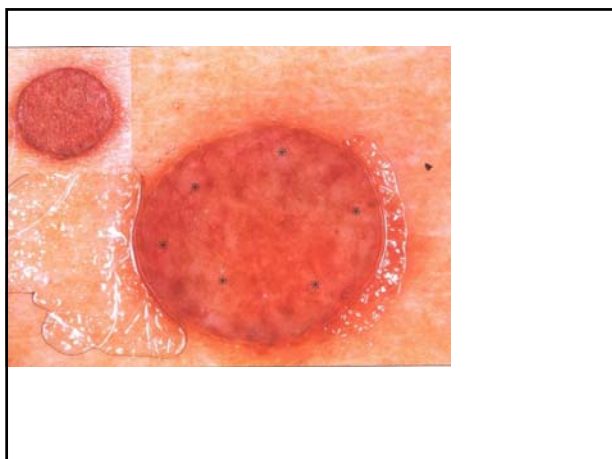


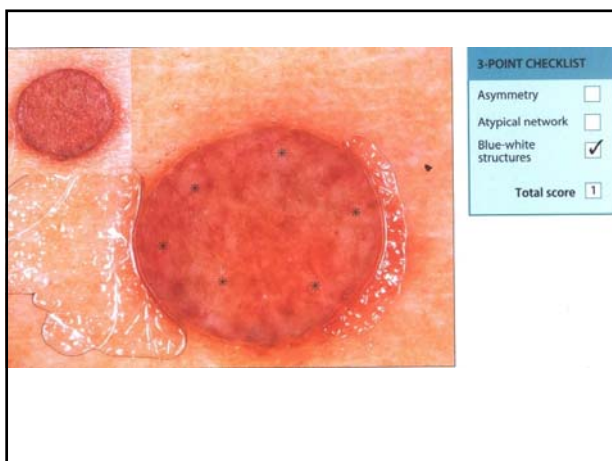


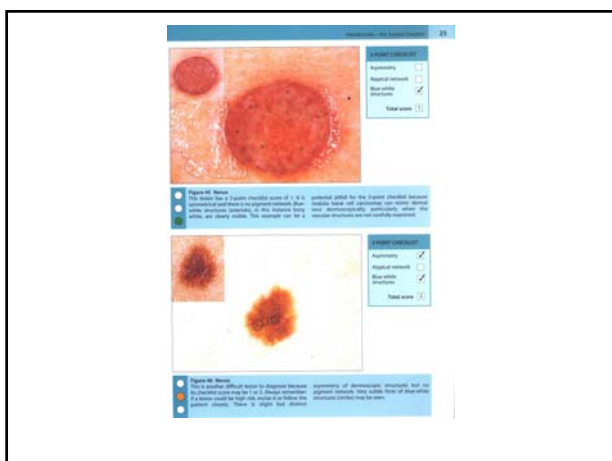


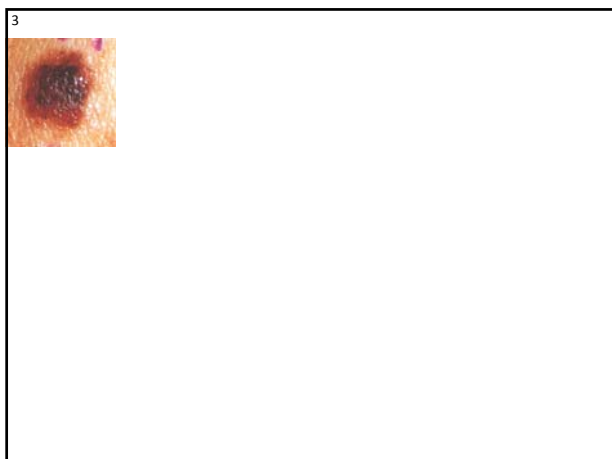


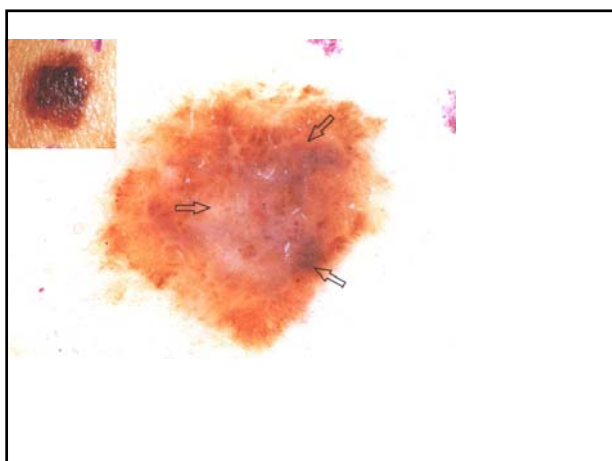


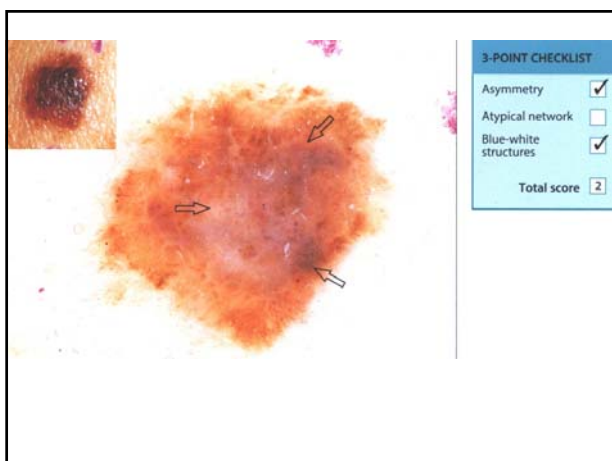












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Figure 27: Dermoscopy

All three dermoscopy criteria are clearly seen in this lesion. There is a significant asymmetry of color and structure with a well-developed pigment network around the lesion and blue-white structure within.

Figure 28: Dermoscopy

Asymmetry of color and structure is evident in this lesion. However, the pigment network is not seen.

Legend

Asymmetry ☒

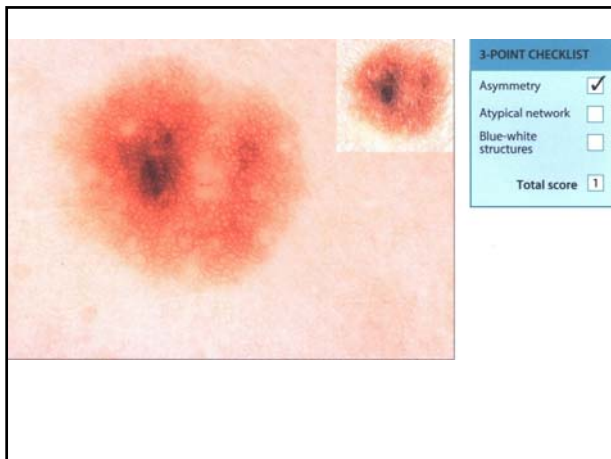
Network ☒

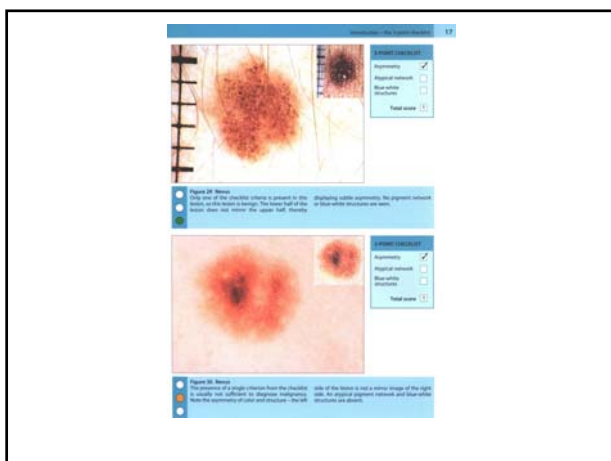
Blue-white ☒

Structure ☒

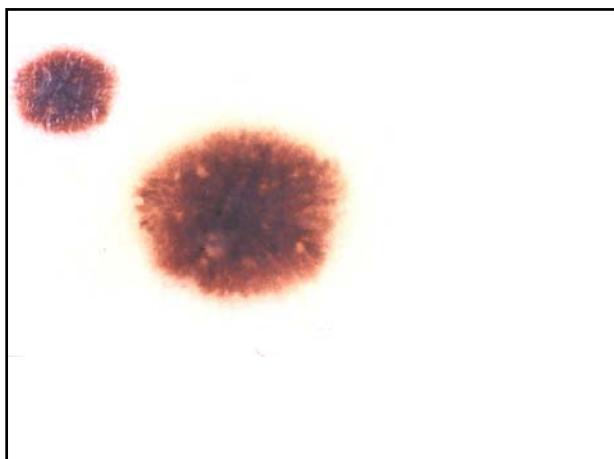
Total score: 3

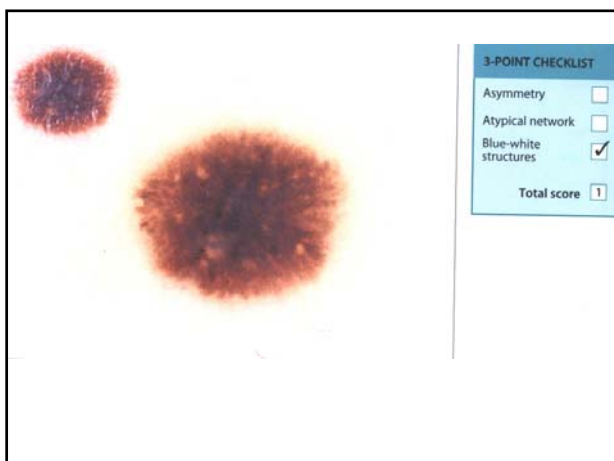
4

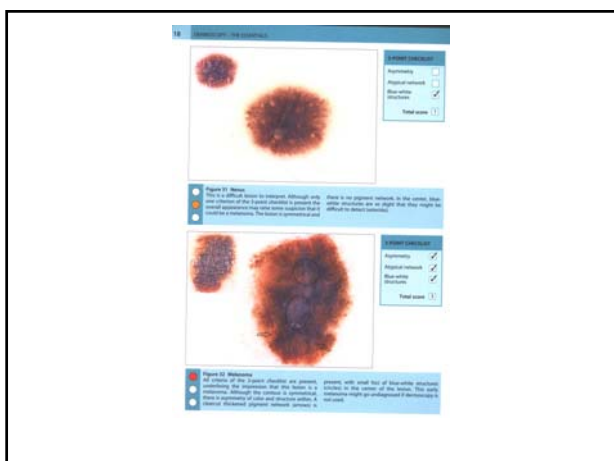


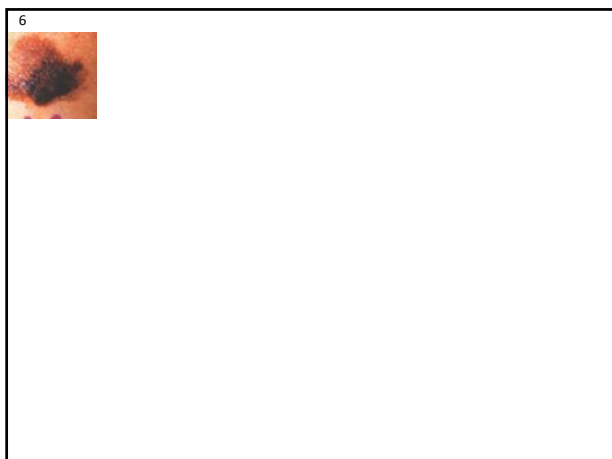


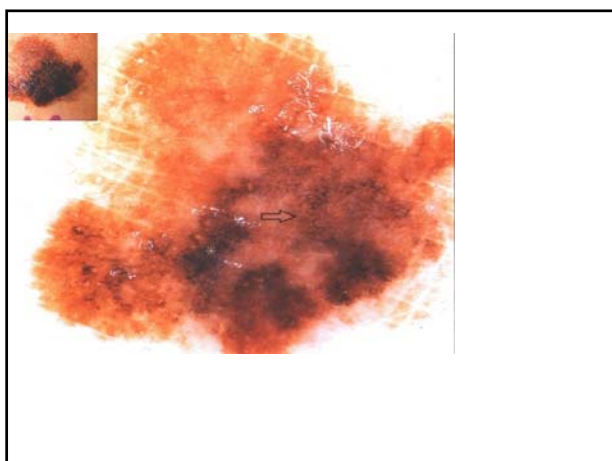


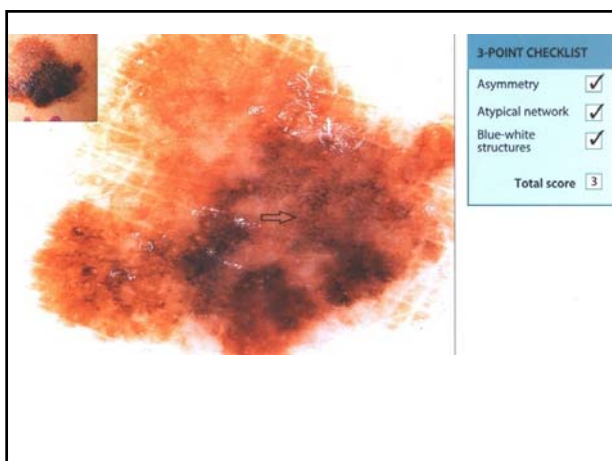


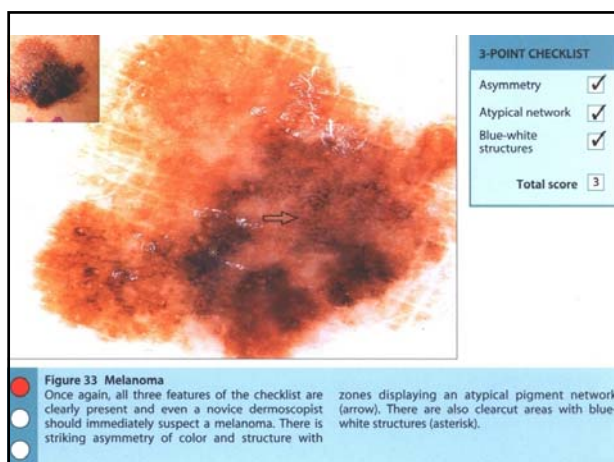




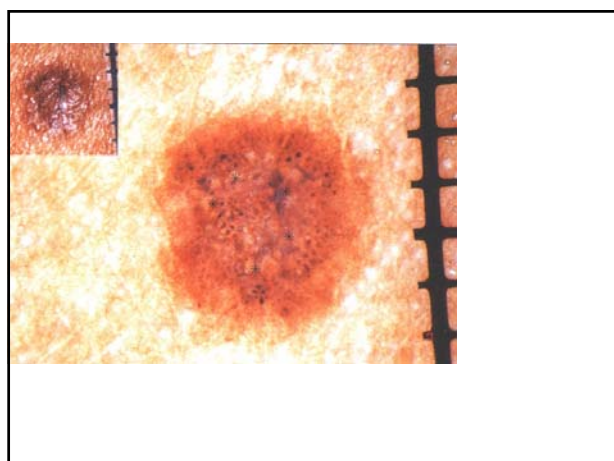


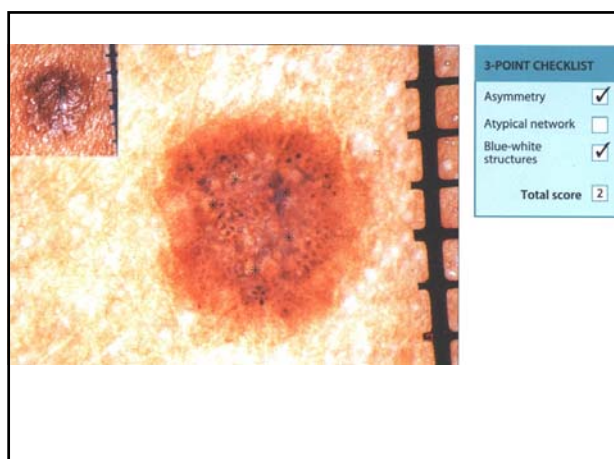


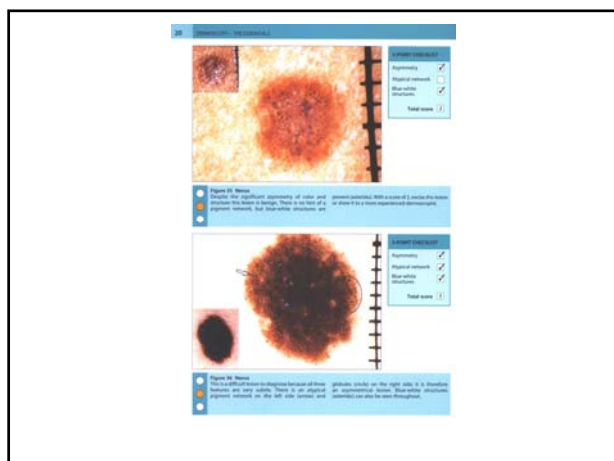


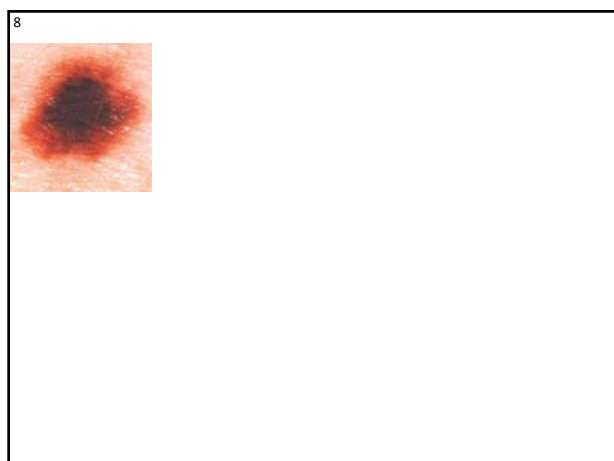


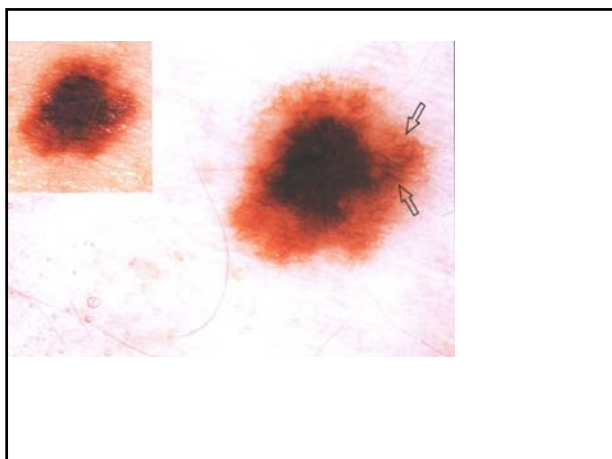


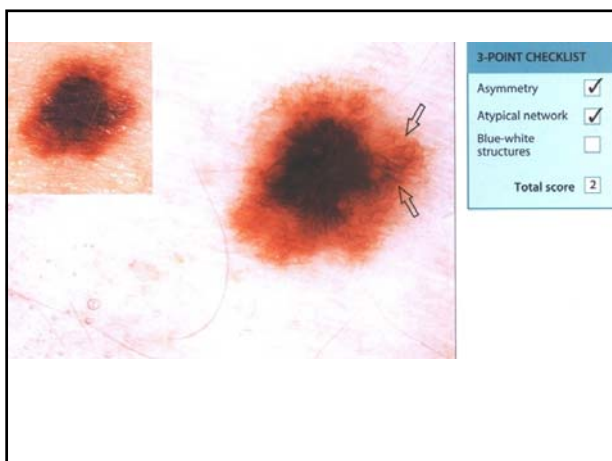


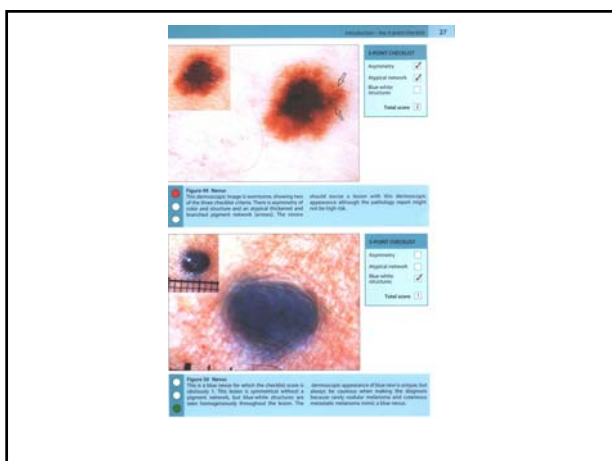








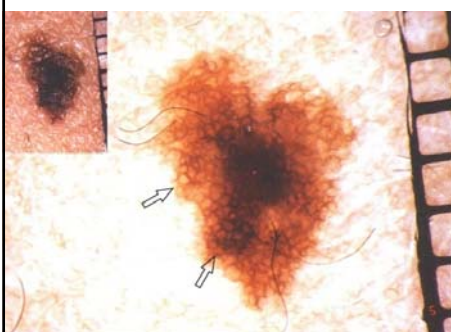


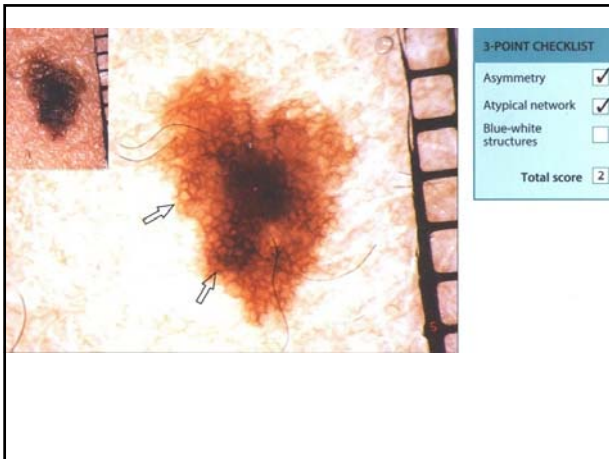


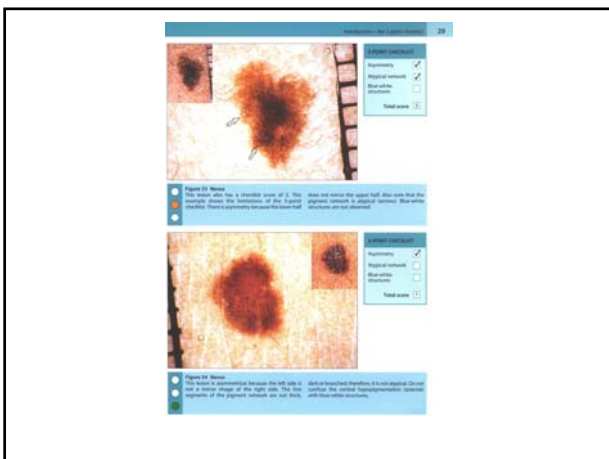


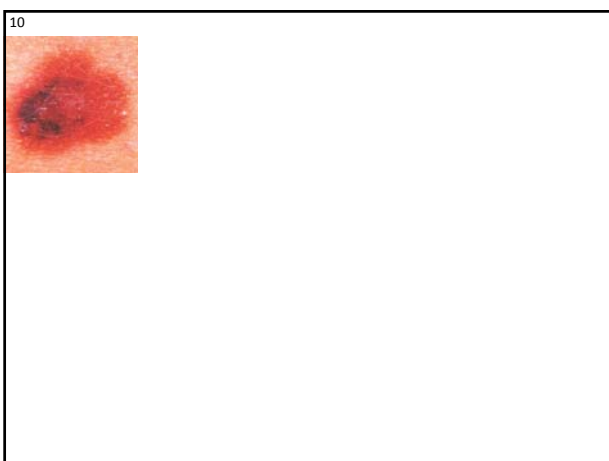
9











Other uses of dermoscopy in general practice



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Summary

- Use dermatoscope in correct manner
- Step 1 - ?Pigmented lesion
- Step 2 – Use algorithm
- Correlate clinically!

