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Connecting Primary Care to the Future

Dermoscopy Basics & Benign Skin Growths

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- I am obligated to disclose any products which are off-label, unlabeled, experimental, and/or under investigation (not FDA approved) and any limitations on the information that I present, such as data that are preliminary or that represent ongoing research, interim analyses, and/or unsupported opinion.
- I have no disclosures.

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Learning Objectives

1

Learn about dermoscopy and its role in primary care triage of skin lesions

2

Apply a simplified dermoscopy algorithm (TADA) aimed at differentiating benign skin growths from skin cancer

3

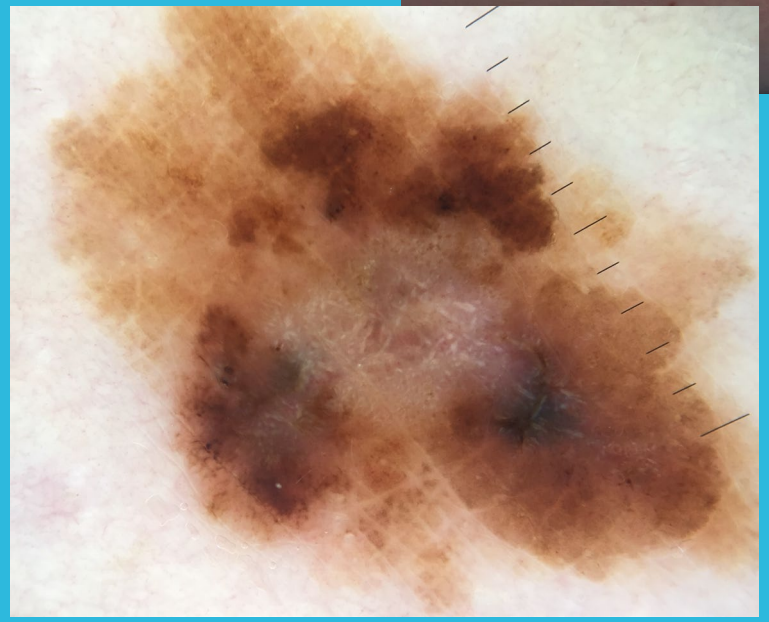
Increase confidence in deciding if a skin growth needs to be biopsied or is benign (dermatofibroma, angioma, seborrheic keratosis) and can be monitored.

What is dermoscopy?

- Non-invasive method of skin examination that allows better visualization of structures under the skin surface
- Uses handheld dermatoscope
- Up to 10x magnification
- Light source, often both non-polarized and polarized light options
- Requires some training

Advantages of dermoscopy

- Better visualization vs naked eye or plain magnification
- Reduces # of biopsies to detect melanoma
- Aids in triage and improves early detection of skin cancer
- Reduces biopsies of benign lesions, especially in cosmetically sensitive or tricky areas



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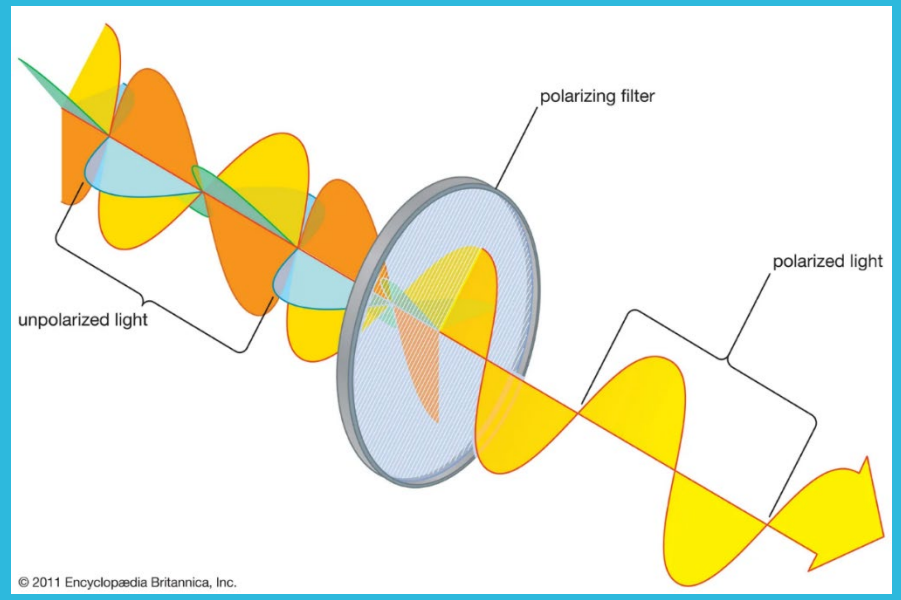
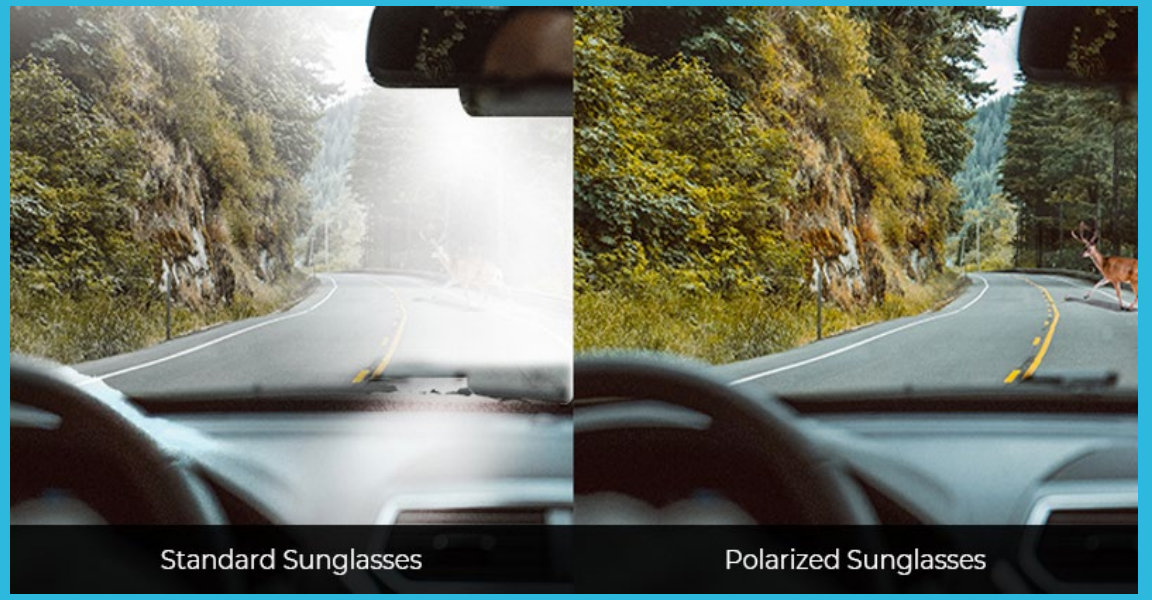
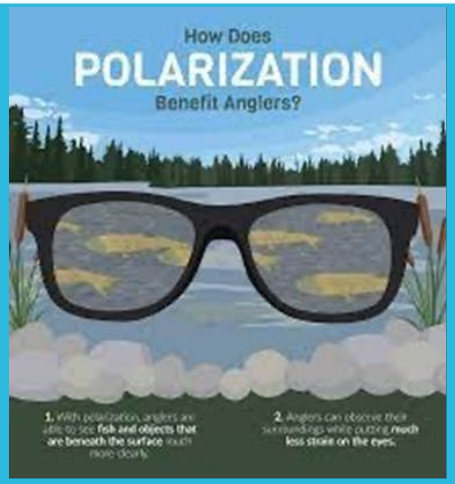
Polarized vs Non-Polarized Light

- **Polarized Light:** reduces glare that comes from reflected light, allows better visualization of deeper structures

- **NP Light:** better visualization of more superficial structures






How Does
POLARIZATION
Benefit Anglers?
1. With polarization, anglers are able to see fish and objects that are beneath the surface much more clearly.
2. Anglers can observe their surroundings while putting much less strain on the eyes.


Without polarized sunglasses
With polarized sunglasses

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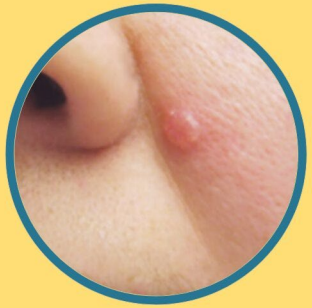
Skin Cancer: How Big is the Problem?

SKIN CANCER AWARENESS MONTH

In the U.S. alone, an estimated **3.6 million BCC cases are diagnosed each year.**



Skin Cancer Foundation SkinCancer.org

Did you know, an estimated

1.8 MILLION

cases of **SCC are diagnosed each year,** which translates to **about 205 cases diagnosed every hour.**

Skin Cancer Foundation SkinCancer.org

MELANOMA FACTS

An estimated **212,200** cases of melanoma will be diagnosed in the U.S. in 2025.

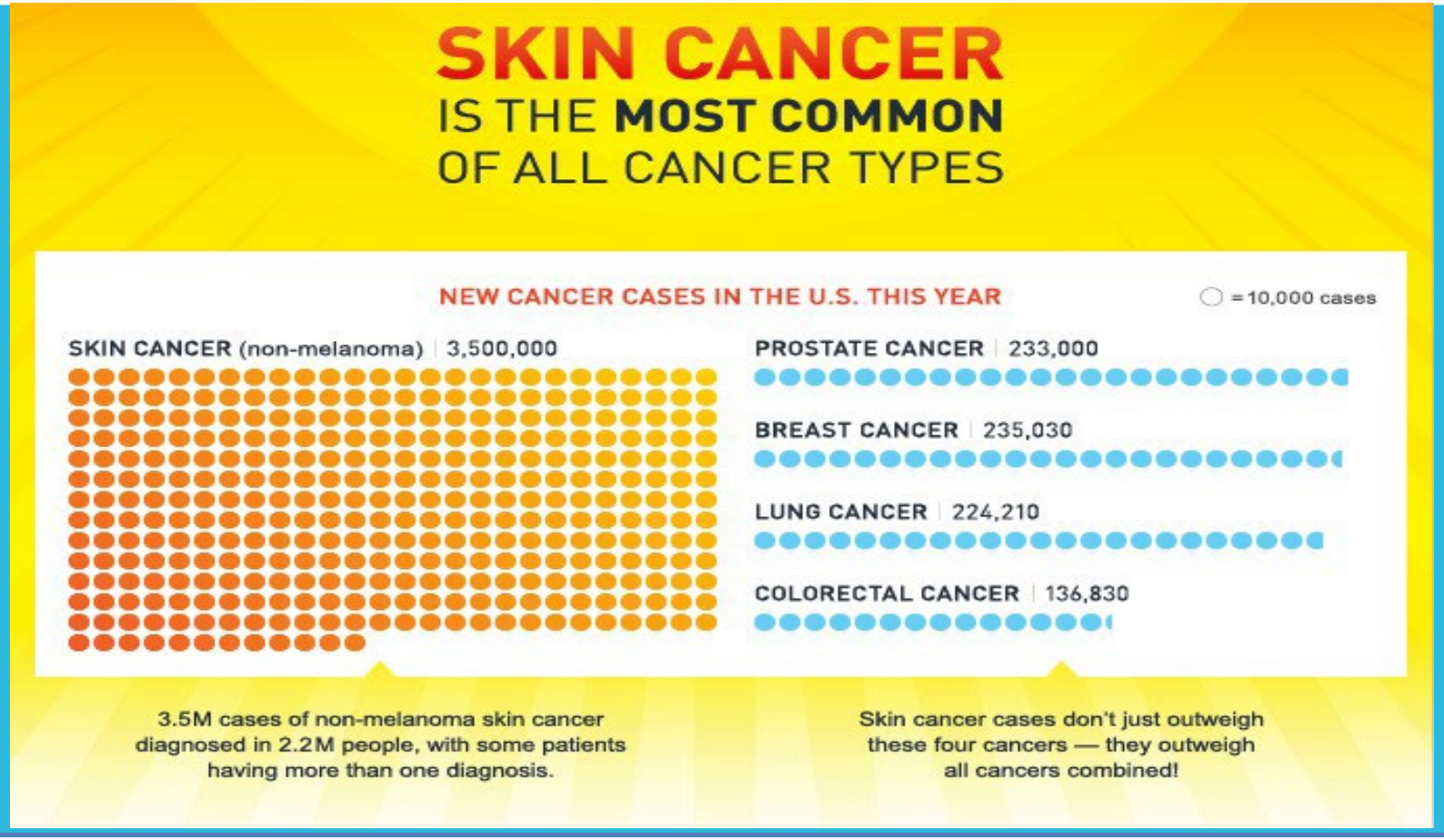
104,960 cases

will be invasive, penetrating the epidermis into the skin's second layer (the dermis).

60,550 will be men
44,410 will be women

Skin Cancer Foundation SkinCancer.org

ACS & CDC Cancer Statistics and SEER Database https://seer.cancer.gov/statfacts/html/melan.html



- Skin cancer affects 1 in 5 Americans
- Nearly 200,000 new cases of melanoma were diagnosed in the U.S. in 2023
- By 20250 – due to climate change these numbers are expected to rise by 10%

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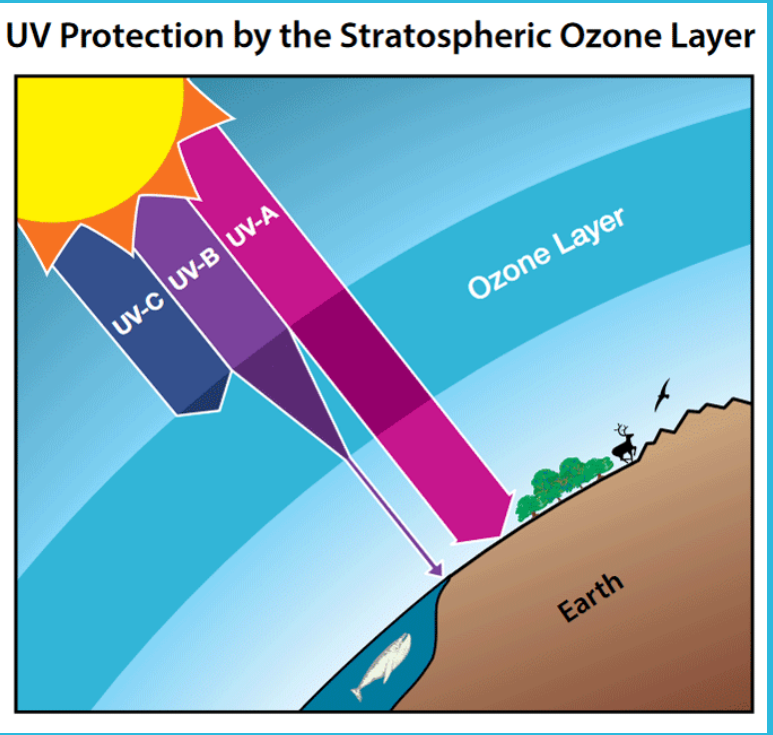
Ozone Depletion and Climate Change Effects on the Skin

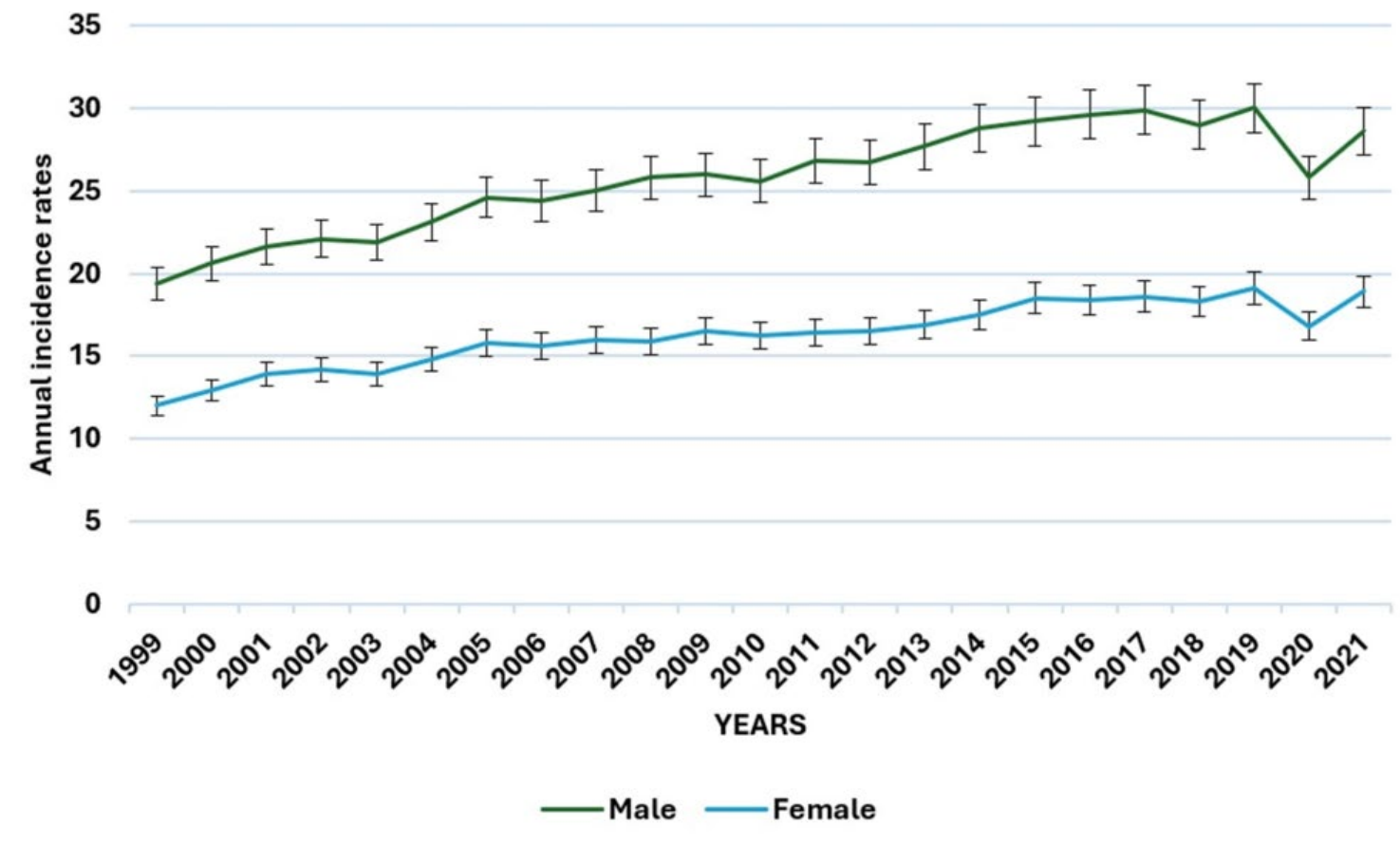
- Ozone depletion leads to increased incidence of skin cancer via increased UVB exposure
- Estimated 33,000 additional skin cancers per year in US due to ozone depletion
- Increased temperature alone can increase UV damage from same UV dose
- Increase of 2 degrees C may increase skin cancers by 10% per year by 2050
- Increased temperatures lead to more time outside and more burns



Salawitch RJ, Fahey DW, Hegglin MI et al. Twenty Questions and Answers About the Ozone Layer: 2018 Update, Scientific Assessment of Ozone Depletion: 2018, World Meteorological Organization, Geneva, Switzerland, 2019.

Kaffenberger BH, Shetlar D, Norton SA, Rosenbach M. The effect of climate change on skin disease in North America. J Am Acad Dermatol. 2017;76(1):140–147.

US Melanoma Incidence Rising (age-adjusted)



Okobi O E, Abreo E, Sams N P, et al. (October 02, 2024) Trends in Melanoma Incidence, Prevalence, Stage at Diagnosis, and Survival: An Analysis of the United States Cancer Statistics (USCS) Database. Cureus 16(10): e70697. doi:10.7759/cureus.70697

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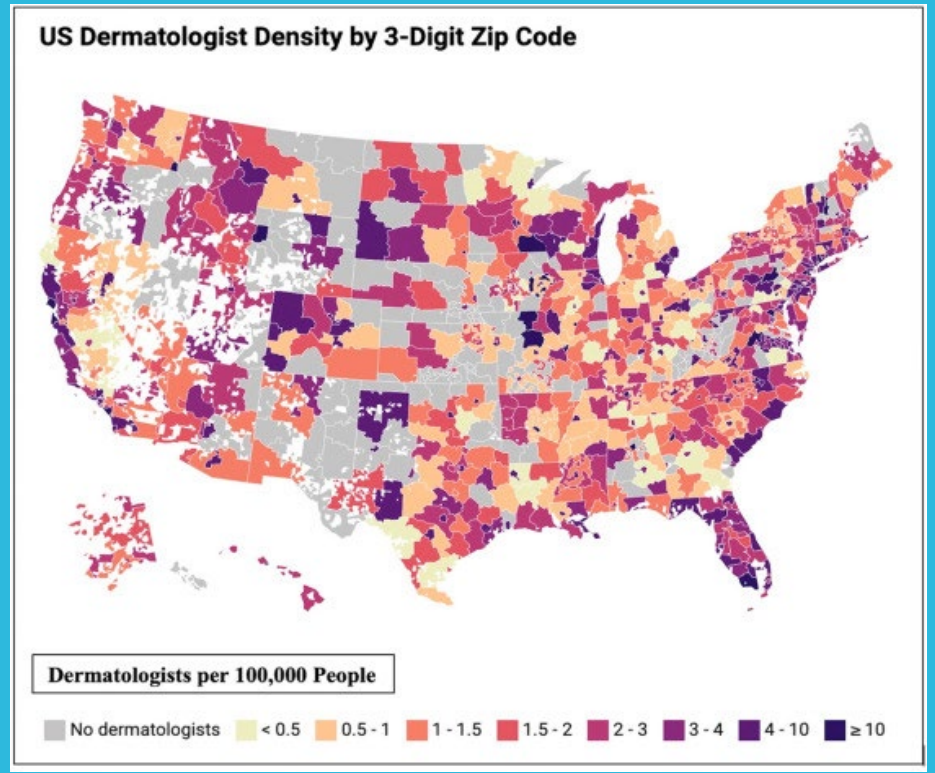
Impact of Access on Melanoma Care

- Shortage of dermatologists
- Uneven distribution, worsening
- Lower density population areas increasingly underserved
- Estimated need is 4/100,000
- Increased melanoma mortality in counties without a dermatologist
- 1-2 dermatologists (vs 0) per county decreases melanoma mortality by >50%
- Greater distance to academic center correlates with poorer outcomes (depth, mets)



Shah M et al. 2024. Analysis of trends in US dermatologist density and geographic distribution. JAAD 91(2) P338-341.
Aneja S et al. 2012. Associated of increased dermatologist density with lower melanoma mortality. Arch Derm 148(2) 174-178.
Snyder BM et al. 2017. Greater distance to an academic medical center is associated with poorer melanoma prognostic factors: The University of Colorado Experience. Derm Online J 23(11): 8.

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The Challenge for Primary Care

- Up to 25% of primary care visits are for skin complaints, many for a concerning growth
- Most concerning growths are evaluated by primary care, not dermatology
- PCPs are asked to triage growths, but some feel they need more training in dermatology and skin cancer detection
- Accurate triage is especially important in rural states and in urban underserved communities
- Increased burden on primary care due to dermatologist shortage and rising skin cancer rates

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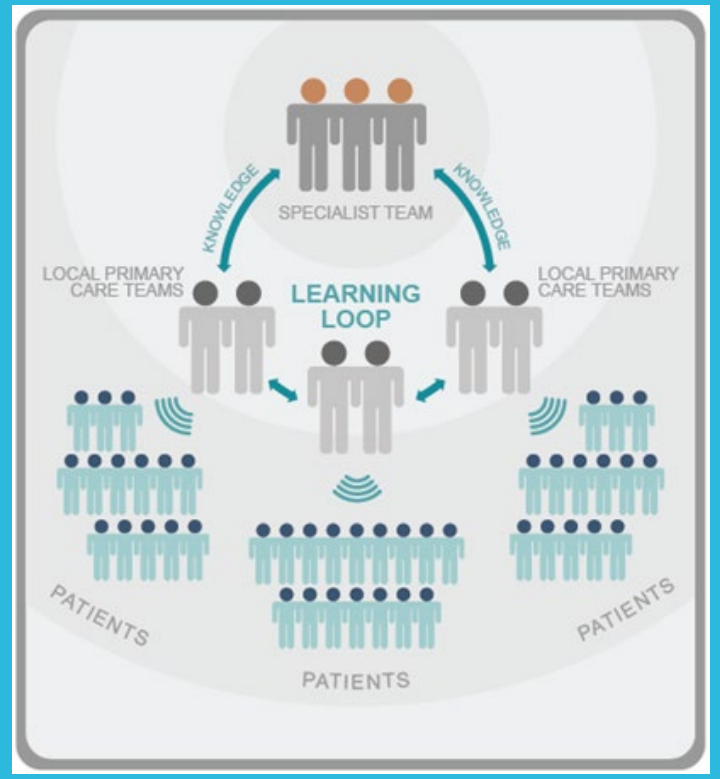
Improving care when access is limited

- Address the training gap in dermatology & dermoscopy to increase dermoscopy use
- Dermatologists partner with PCPs
- Learning Loops: Transfer knowledge not patients



> Arch Dermatol Res. 2021 Apr 28. doi: 10.1007/s00403-021-02224-z. Online ahead of print.

A systematic review and synthesis of qualitative and quantitative studies evaluating provider, patient, and health care system–related barriers to diagnostic skin cancer examinations

Maleka Najmi [1], Ashley E Brown [2], Sarah R Harrington [3], David Farris [4], Sarah Sepulveda [5], Kelly C Nelson [6]

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Skin cancer is curable when detected early

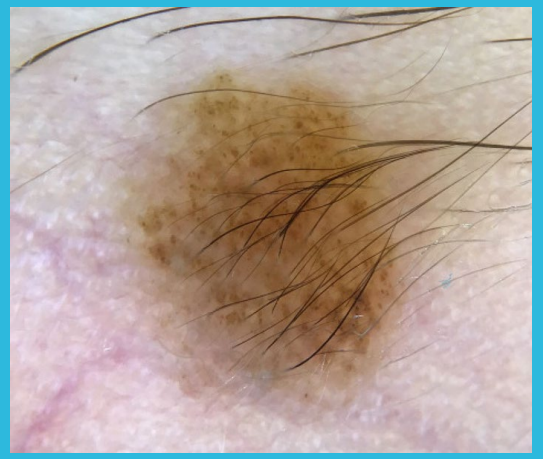
5-year survival for melanoma in situ is 99%

Advanced basal cell carcinoma
Requiring amputation

Stage III Acral Melanoma – 5 yr survival ≈ 50%

How Dermoscopy Can Help

- Increase early detection of skin cancer vs naked eye examination
- More accurate triage of skin growths
- Reduce number of unnecessary biopsies of benign lesions
- Reduce number of biopsies needed to find skin cancers
- May help reduce biopsies in sensitive areas
- BUT: Requires some training



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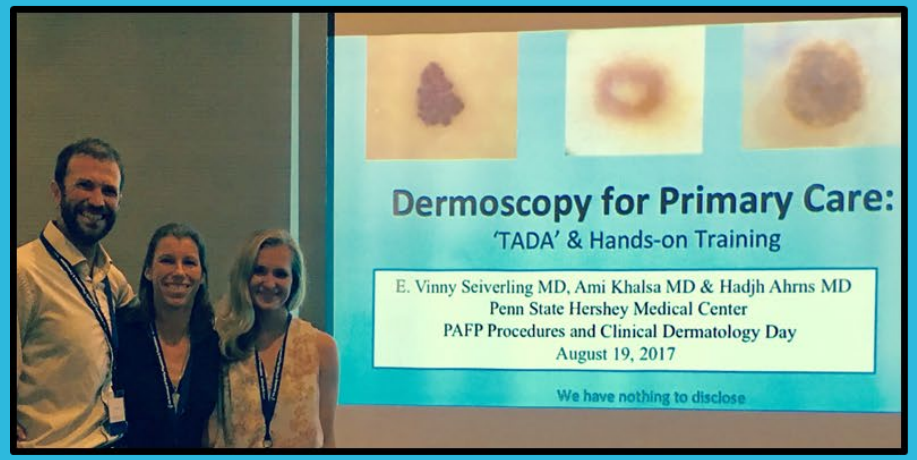
Dermoscopy is for Everyone! (not just dermatologists)

Expert consensus recommendations on dermoscopy proficiency standards for physician assistants: results of a modified Delphi survey

Young, Peter A. MPAS, PA-C[b,*]; Middleton, Hayden T. DMSc, PA-C[c]; Griffith, Cynthia F. MPAS, PA-C[d]; Froiland, Christi MEd, MPAS, PA-C[f]; Keeter, Nicole MSHS, PA-C[g]; Sanders, Kim B. MPAS, PA-C[h]; DiRuggiero, Douglas DMSc, MHS, PA-C[i]; Bae, Gordon H. MD[j]; Pettey, Adam A. MD[k]; Mostaghimi, Arash MD, MPA, MPH[l]; Swanson, David L. MD[m]; Marghoob, Ashfaq A. MD[n]; Nelson, Kelly C. MD[o]; McCleskey, Patrick E. MD[p]; Seiverling, Elizabeth V. MD[q]

Author information

Journal of Dermatology for Physician Assistants 19(1):p 14-19, Winter 2025. | **DOI:** 10.1097/jdpa.0000000000000047



A Core Curriculum for Dermatology Nurse-Practitioners Using Delphi Technique

Bobonich, Margaret A.; Cooper, Kevin D.

Author Information

Journal of the Dermatology Nurses' Association 4(2):p 108-120, March/April 2012. | **DOI:** 10.1097/JDN.0b013e31824ab94c

Journal List › PRiMER › v.5; 2021 › PMC8041216

PRiMER peer-reviewed reports in medical education research published by the STFM

PRiMER. 2021; 5: 6. PMCID: PMC8041216
Published online 2021 Feb 8. doi: 10.22454/PRiMER.2021.304379 PMID: 33860161

Teaching Skin Cancer Detection to Medical Students Using a Dermoscopic Algorithm

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AMERICAN ACADEMY OF FAMILY PHYSICIANS

AAFP Reprint No. 271

Recommended Curriculum Guidelines for Family Medicine Residents

Conditions of the Skin

This document is endorsed by the American Academy of Family Physic

Skills

In the appropriate setting, the resident should demonstrate the ability to independently perform:

1. History and physical examination appropriate for skin conditions
2. Skin cancer screening examination
3. Biopsy of skin lesions
   a. Punch biopsy
   b. Shave biopsy
   c. Excisional biopsy
4. Scraping and microscopic examination (KOH)
5. Use of dermoscopy to complement physical examination
6. Injection
   a. Local anesthesia
   b. Steroids

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What do you really need to know?

Research

Jan 2021

JAMA Dermatology | Original Investigation

Dermoscopy Proficiency Expectations for US Dermatology Resident Physicians

Results of a Modified Delphi Survey of Pigmented Lesion Experts

Lauren J. Fried, BS; Andrea Tan, MD; Elizabeth G. Berry, MD; Ralph P. Braun, MD; Clara Curiel-Lewandrowski, MD; Julia Curtis, MD; Laura K. Ferris, MD, PhD; Rebecca I. Hartman, MD, MPH; Natalia Jaimes, MD; John C. Kawaoka, MD; Caroline C. Kim, MD; Aimilios Lallas, MD, MSc, PhD; Sancy A. Leachman, MD, PhD; Alan Levin, MD; Patricia Lucey, MD; Michael A. Marchetti, MD; Ashfaq A. Marghoob, MD; Debbie Miller, MD; Kelly C. Nelson, MD; Edward Prodanovic, MD; Elizabeth V. Seiverling, MD; Susan M. Swetter, MD; Stephanie A. Savory, MD; Richard P. Usatine, MD; Maria L. Wei, MD, PhD; David Polsky, MD, PhD; Jennifer A. Stein, MD, PhD; Tracey N. Liebman, MD

ORIGINAL RESEARCH

J. Am Board Fam Med. Jan 2023

Expert Consensus Statement on Proficiency Standards for Dermoscopy Education in Primary Care

Tiffaney Tran, BS, Peggy R. Cyr, MD, MS, Alex Verdieck, MD, Miranda D. Lu, MD, Hadjh T. Ahrns, MD, Elizabeth G. Berry, MD, William Bowen, MD, Ralph P. Braun, MD, Joshua M. Cusick-Lewis, MD, Hung Q. Doan, MD, PhD, Valerie L. Donohue, MD, Deborah R. Erlich, MD, MMedEd, Laura K. Ferris, MD, PhD, Evelyne Harkemanne, MD, Rebecca I. Hartman, MD, MPH, James Holt, MD, Natalia Jaimes, MD, Timothy A. Joslin, MD, Zhyldyz Kabaeva, MD, Tracey N. Liebman, MD, Joanna Ludzik, MD, PhD, Ashfaq A. Marghoob, MD, Isac Simpson, DO, Jennifer A. Stein, MD, PhD, Daniel L. Stulberg, MD, Isabelle Tromme, MD, PhD, Matthew J. Turnquist, MD, Richard P. Usatine, MD, Alison M. Walker, MD, Bryan L. Walker, MD, Robert F. West, MD, MMed, Megan L. Wilson, MD, Alexander Witkowski, MD, PhD, Dominic J. Wu, MD, Elizabeth V. Seiverling, MD, and Kelly C. Nelson, MD

Expert consensus recommendations on dermoscopy proficiency standards for physician assistants: results of a modified Delphi survey

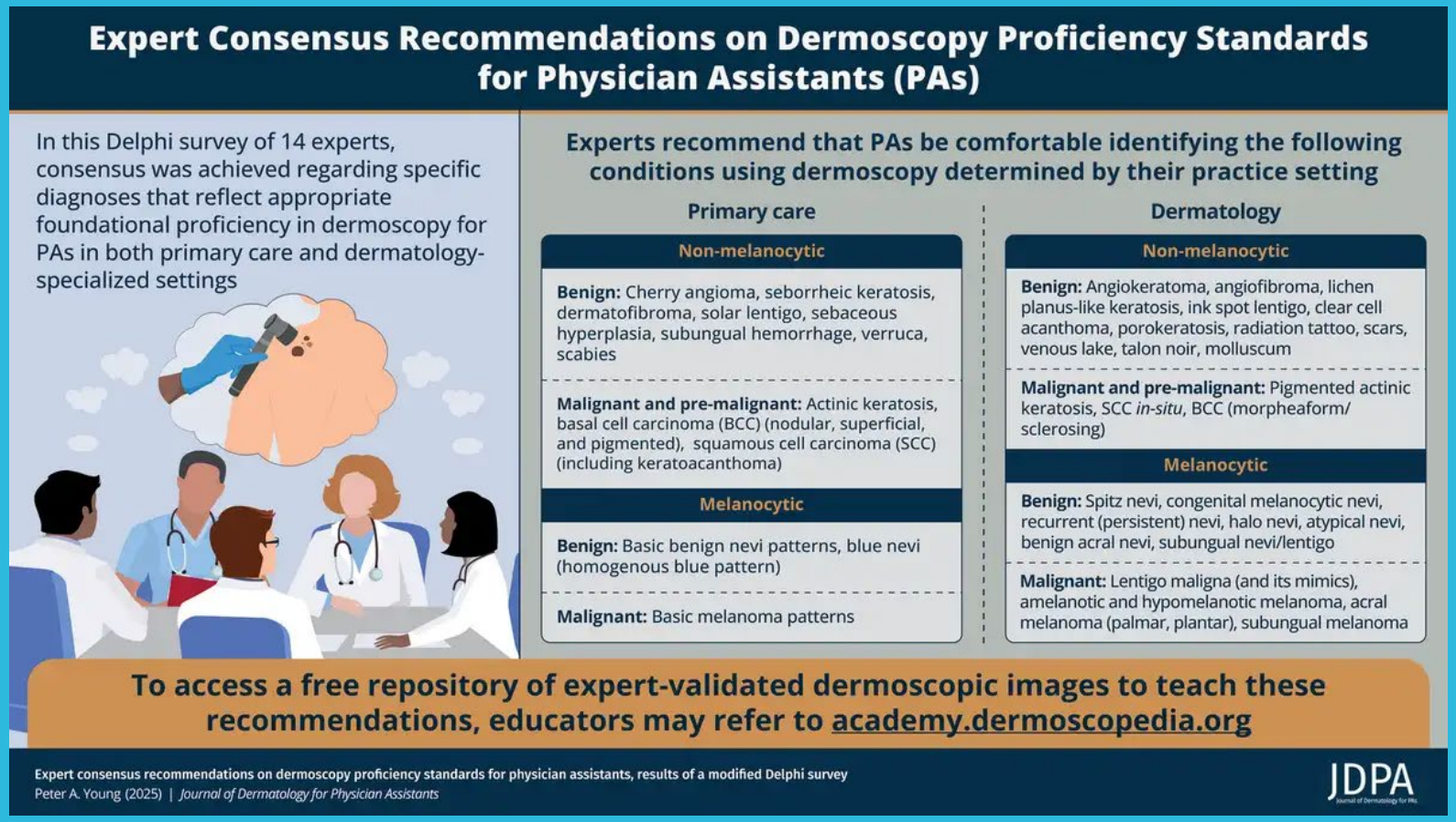
Young, Peter A. MPAS, PA-C[b*]; Middleton, Hayden T. DMSc, PA-C[c]; Griffith, Cynthia F. MPAS, PA-C[d]; Froiland, Christi MEd, MPAS, PA-C[f]; Keeter, Nicole MSHS, PA-C[g]; Sanders, Kim B. MPAS, PA-C[h]; DiRuggiero, Douglas DMSc, MHS, PA-C[i]; Bae, Gordon H. MD[j]; Pettey, Adam A. MD[k]; Mostaghimi, Arash MD, MPA, MPH[l]; Swanson, David L. MD[m]; Marghoob, Ashfaq A. MD[n]; Nelson, Kelly C. MD[o]; McCleskey, Patrick E. MD[p]; Seiverling, Elizabeth V. MD[q]

Author information

Journal of Dermatology for Physician Assistants 19(1):p 14-19, Winter 2025. | *DOI:* 10.1097/jdpa.0000000000000047

What is most important for PAs and NPs to know in dermoscopy?

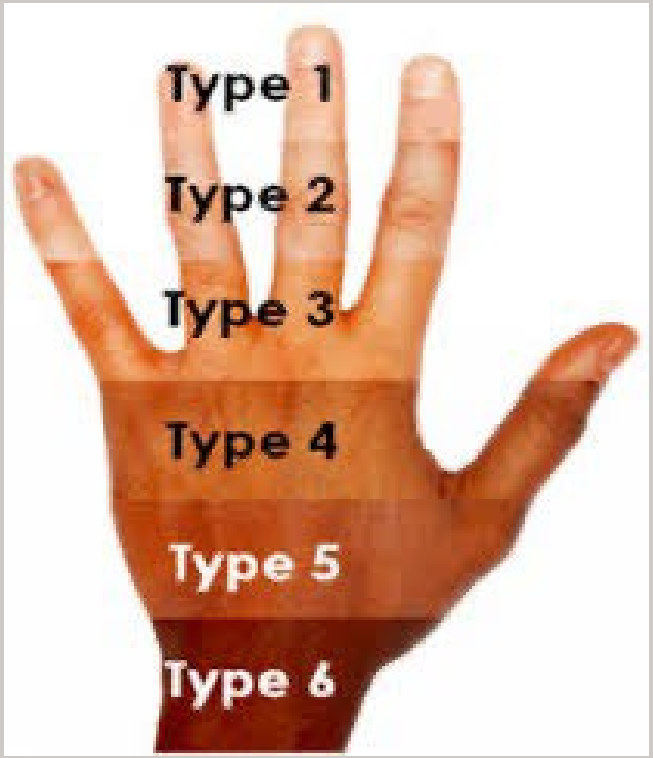
*Setting dependent



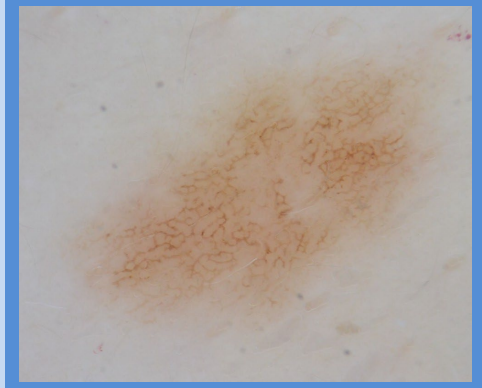
Start with Exam: Context is Important

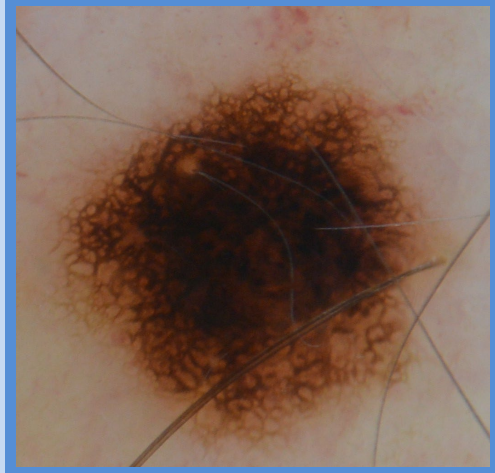
- ✓ Age
- ✓ Skin type
- ✓ Distribution
- ✓ Morphologic Description
- ✓ Tactile cues
- ✓ Clinical impression

Skin phototype influences dermoscopic features



Fitzpatrick Skin Type/Phototype





Importance of Morphologic Description

- Guides the differential diagnosis for skin conditions
- Helps decide how best to biopsy a growth or a rash & what treatment to pursue

Morphologic Terms for Primary Lesions

- **Macule/Patch:** flat, color change only
- **Papule/Plaque:** raised, palpable
- **Nodule/Tumor:** raised lesion deeper in skin
- **Vesicle/Bulla:** serous fluid-filled space in epidermis
- **Pustule/Furuncle/Abscess:** pus-filled space
- **Cyst:** sac-like nodule with lining, filled with fluid or debris
- **Wheal:** edematous papule

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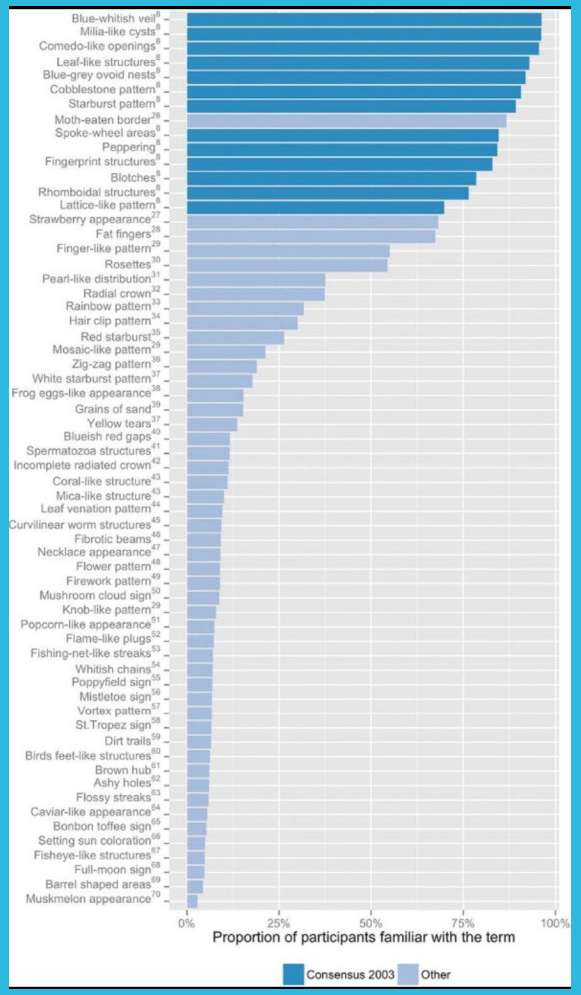
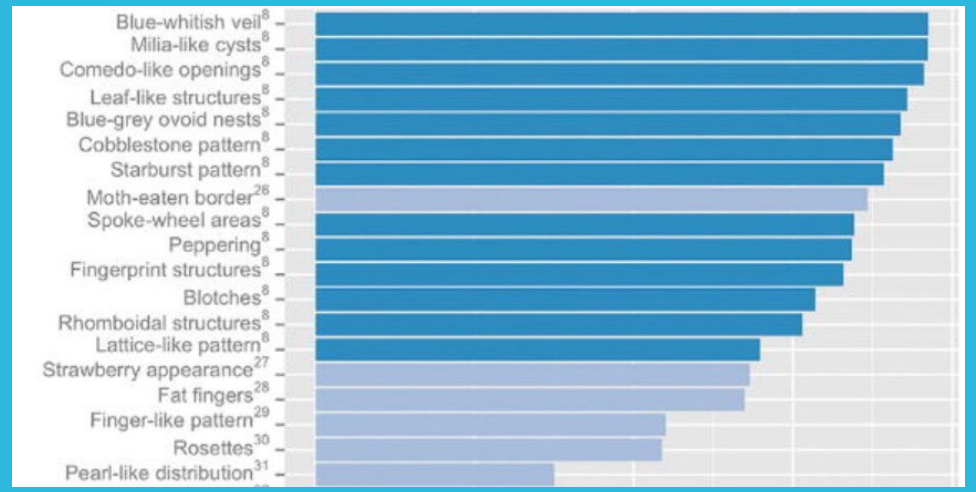
But Dermoscopy Has Its Own Vocabulary…

- Need to learn a new language to describe dermoscopic structures
- Terms proliferated so quickly as the field grew that even the experts had to come to a consensus





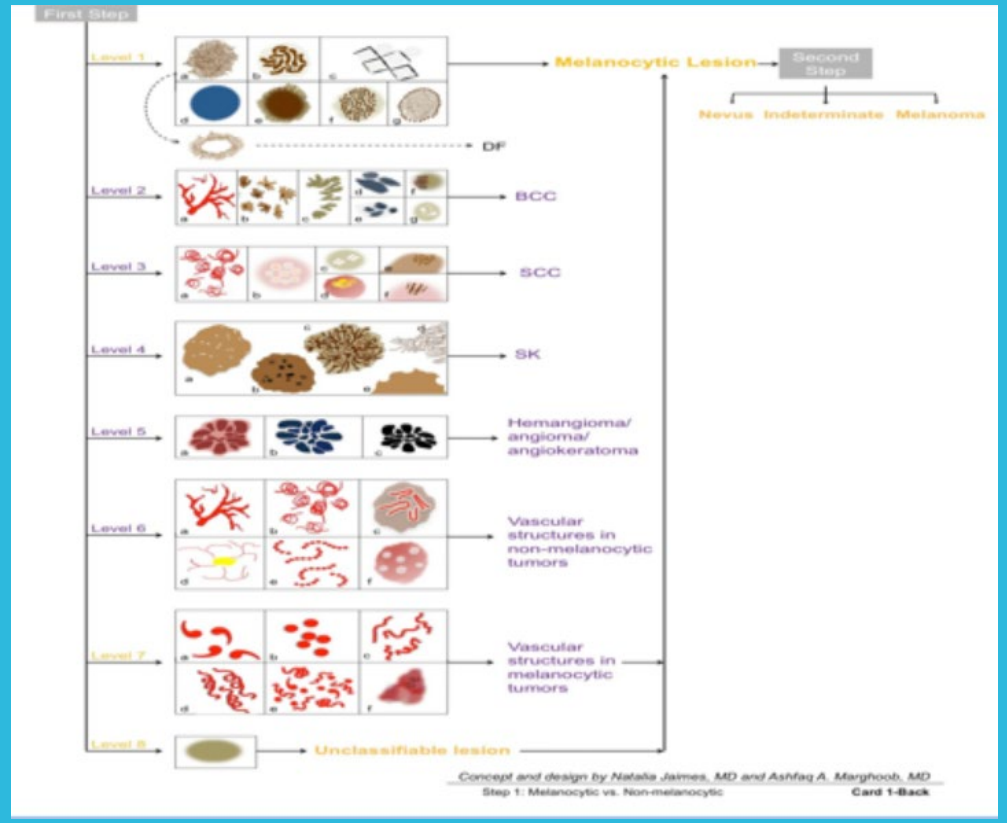
Published in final edited form as:
J Am Acad Dermatol. 2016 June ; 74(6): 1093–1106. doi:10.1016/j.jaad.2015.12.038.

Standardization of terminology in dermoscopy/dermatoscopy: Results of the third consensus conference of the International Society of Dermoscopy

Harald Kittler, MD[a], Ashfaq A. Marghoob, MD[b], Giuseppe Argenziano, MD[c], Cristina Carrera, MD[d], Clara Curiel-Lewandrowski, MD[e], Rainer Hofmann-Wellenhof, MD[f], Josep Malvehy, MD[d], Scott Menzies, MBBS[g], Susana Puig, MD[d], Harold Rabinovitz, MD[h], Wilhelm Stolz, MD[i], Toshiaki Saida, MD[j], H. Peter Soyer, MD[k], Eliot Siegel, MD[l], William V. Stoecker, MD[m], Alon Scope, MD[b,n], Masaru Tanaka, MD[o], Luc Thomas, MD[p], Philipp Tschandl, MD[a], Iris Zalaudek, MD[f], and Allan Halpern, MD[b]

Dermoscopic algorithms can be complicated…

- Multiple steps
- Requires significant training and knowledge of dermoscopic structures to use
- **Additional criteria on:**
  1. Facial skin
  2. Glabrous skin
     a) Volar surfaces
     b) Nail unit
     c) Mucosal surfaces & glans/labia



Many algorithms have tried to simplify dermoscopy… but have shortcomings

Types of Shortcomings

- Fail to identify BCC & SCC, which are most common skin cancers
- Apply only to pigmented lesions, missing SCC, nodular BCC and amelanotic melanomas
- Only apply to non-pigmented lesions
- Miss symmetric skin cancers
- Too complex

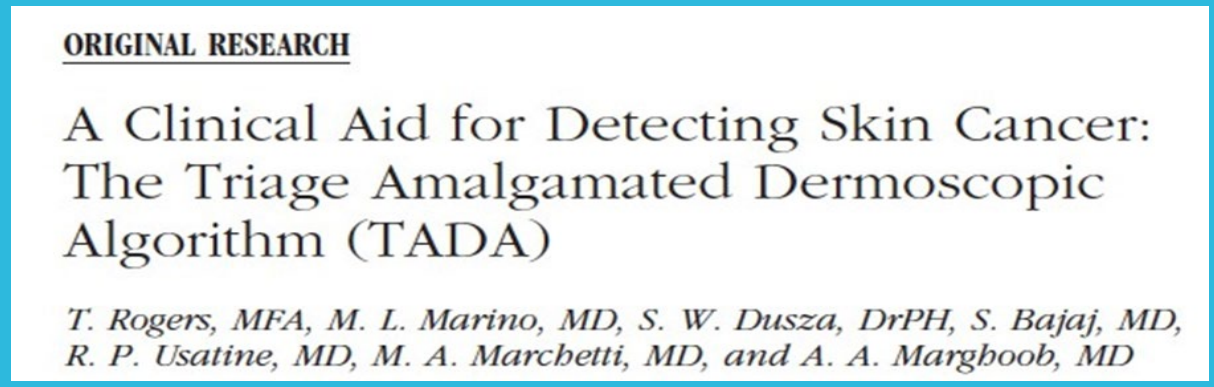
Examples

- 3-Point Checklist (Asymmetry, Atypical Pigment Network, Blue-White Structures)
- AC Rule (Asymmetry, Color Variation)
- BB Rule (Blue-Black Color)
- Chaos & Clues
- Prediction Without Pigment
- Modified 2-Step Algorithm

ENTER…Triage Amalgamated Dermoscopic Algorithm

TADA!

- Simplified algorithm
- Overcomes shortcomings of other algorithms
- Designed for skin cancer triage settings
- Guides management decision: monitor or biopsy?
- Tested with NPs, PAs, MD/DOs in primary care (also medical students, dermatologists)
- Good sensitivity & specificity



ORIGINAL RESEARCH

A Clinical Aid for Detecting Skin Cancer: The Triage Amalgamated Dermoscopic Algorithm (TADA)

T. Rogers, MFA, M. L. Marino, MD, S. W. Dusza, DrPH, S. Bajaj, MD, R. P. Usatine, MD, M. A. Marchetti, MD, and A. A. Marghoob, MD

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Triage Amalgamated Dermoscopic Algorithm

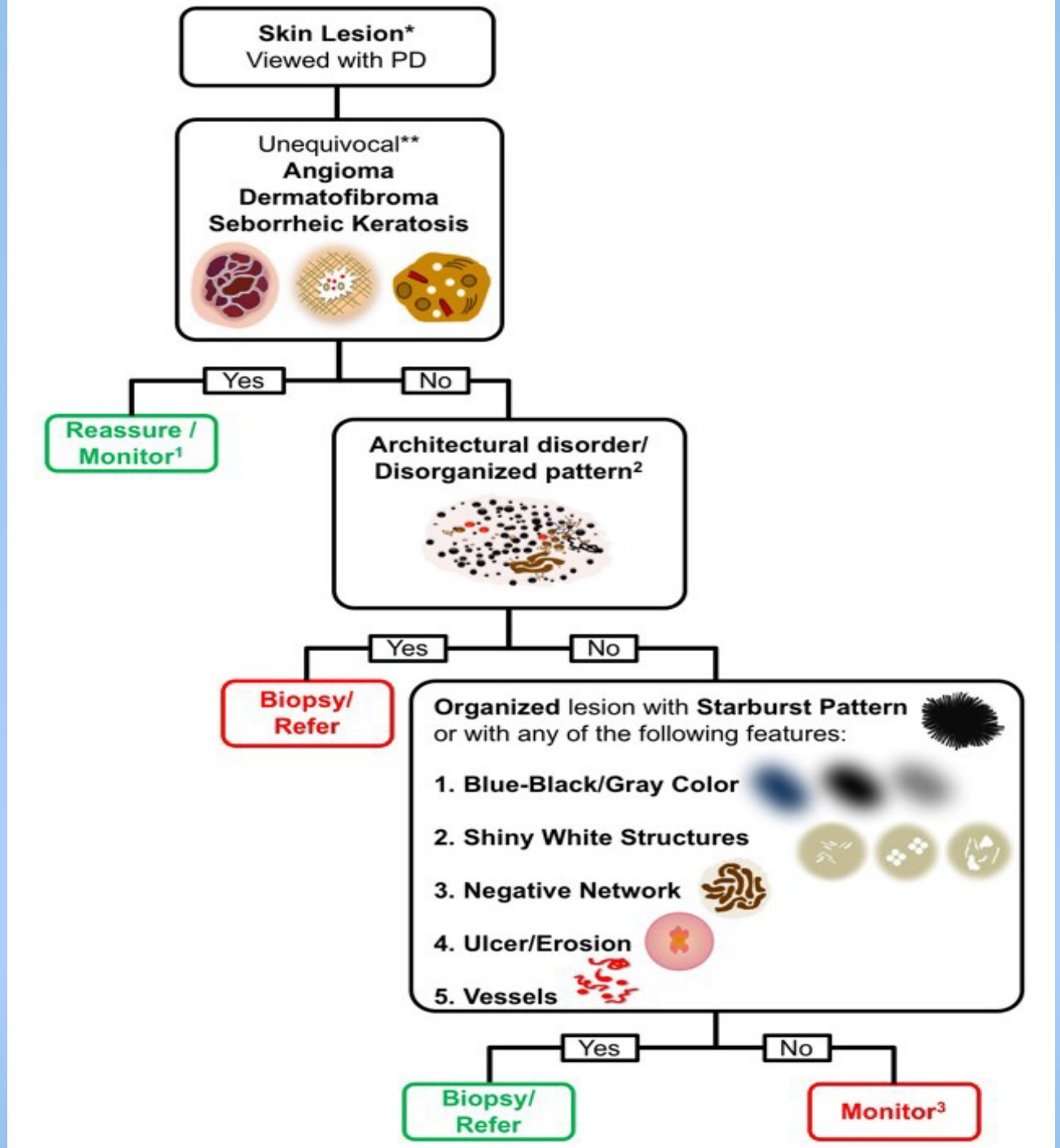
- Effect of a short teaching sessions on benign skin growths and the TADA algorithm (30 minutes total)
- Pre/Post testing with images
- Malignant Image ID (sensitivity)
  - Pre: 62%
  - Post: 88%
- Malignant Image ID (specificity)
  - Similar pre/post: 88%

ORIGINAL RESEARCH

Teaching Benign Skin Lesions as a Strategy to Improve the Triage Amalgamated Dermoscopic Algorithm (TADA)

Elizabeth V. Seiverling, MD, Hadjh T. Ahrns, MD, Amrit Greene, MD, Melissa Butt, MPH, Oriol Yélamos, MD, Stephen W. Dusza, DrPH, and Ashfaq A. Marghoob, MD

Malignant Image Identification
Sensitivity: 0.88
Specificity: 0.88



* Not for palms, soles, mucosal surfaces and nails.

** Best if able to use PD & NPD since SK and DF are easier to diagnose with NPD.

[1] Patients should continue self-monitoring & changes in morphology or symptoms should raise concern.

[2] Colors & structures distributed in an asymmetric/chaotic fashion.

[3] Monitoring can include short-term monitoring, long-term monitoring or self-monitoring for change.

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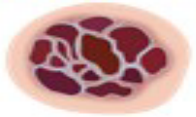
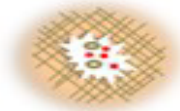
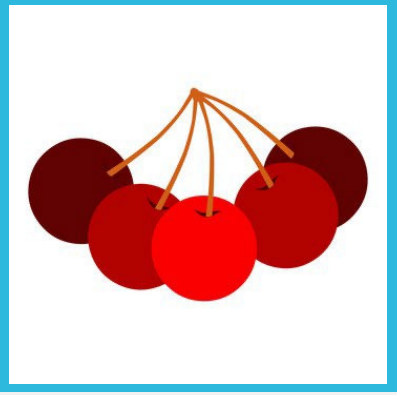
Skin Lesion of Concern

Clinically	Dermoscopically
Red to Purple Dome-Shaped 	Classic Angioma 
Firm Dimpling 	Classic Dermatofibroma 
Keratotic Stuck-On 	Classic Seborrheic Keratosis 

Cherry Angiomas



- Numerous
- Raised
- Red or purple color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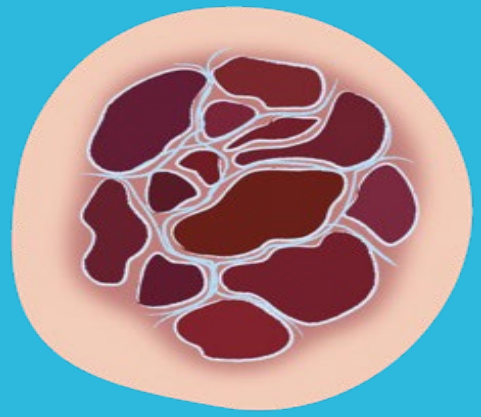
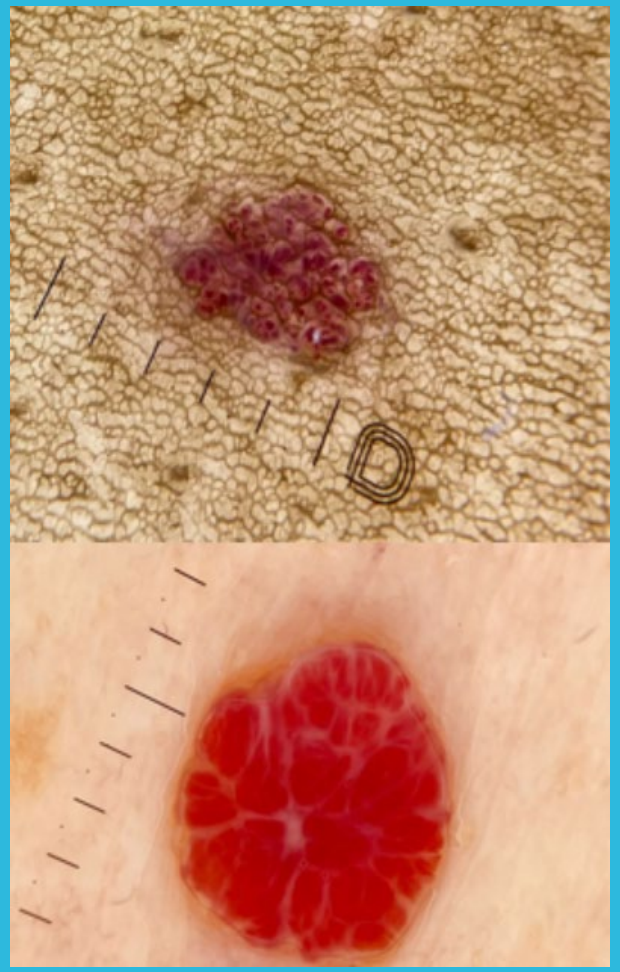
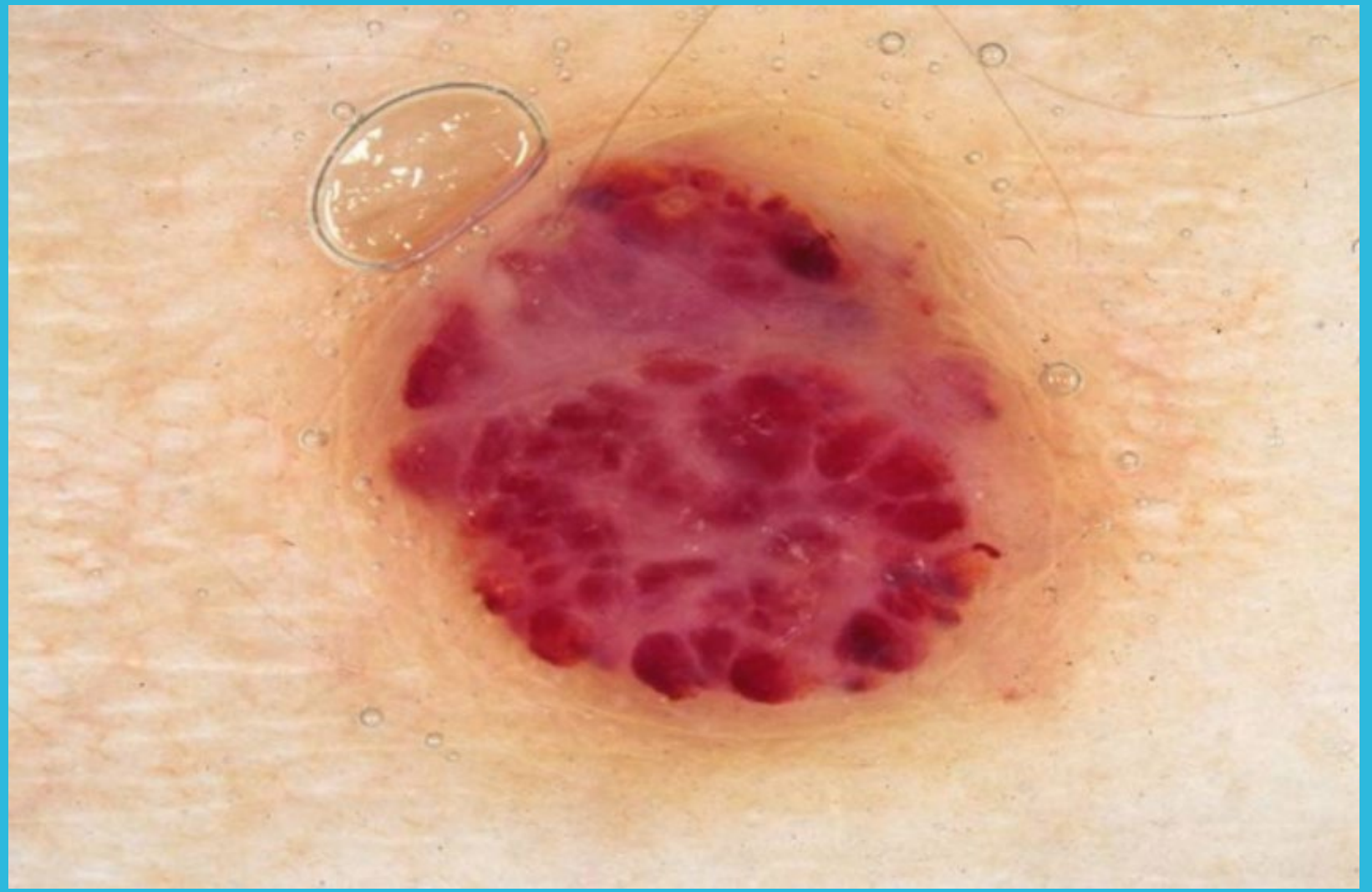
Angioma under Dermoscopy

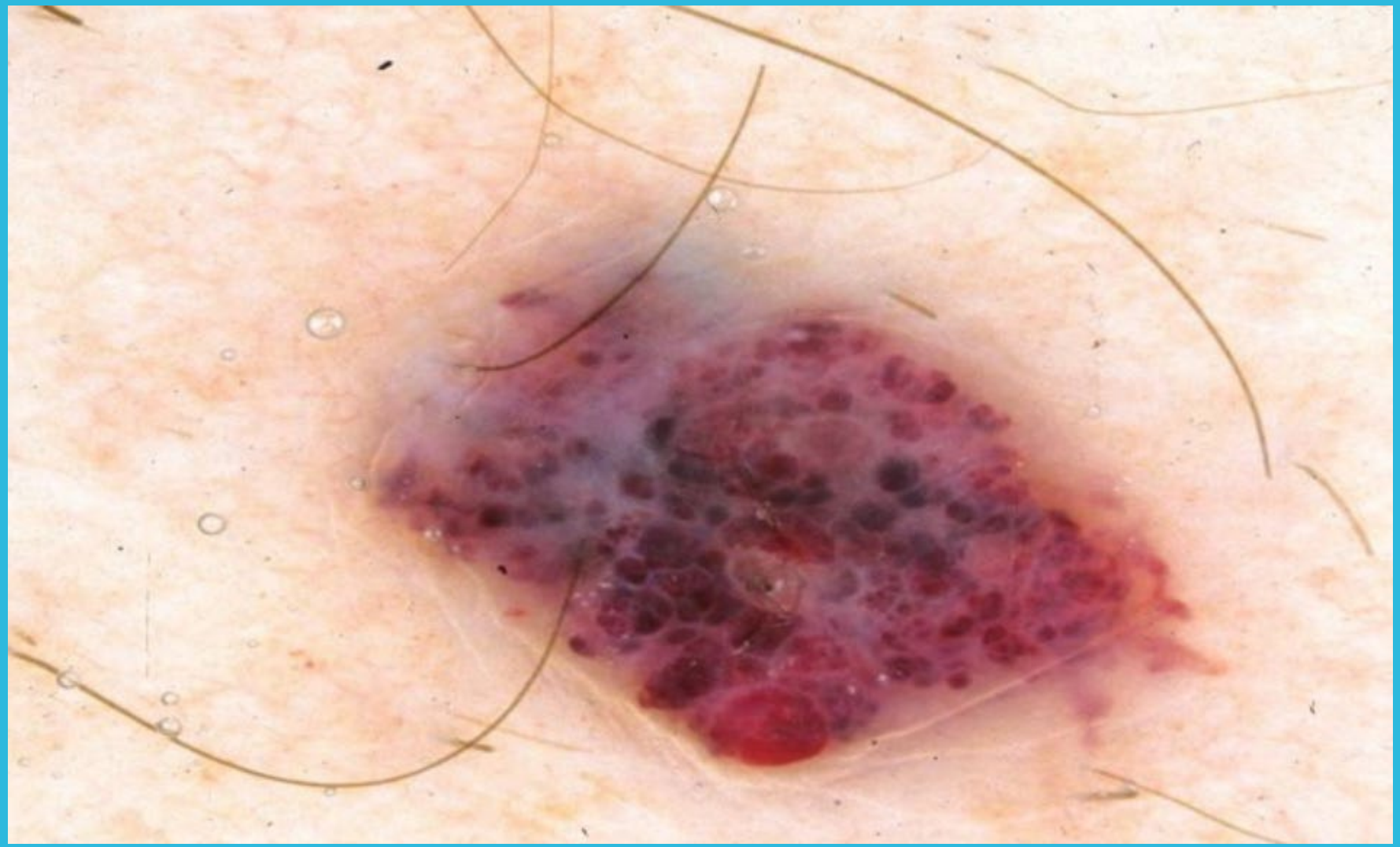
- Lacunae sometimes separated by white septae

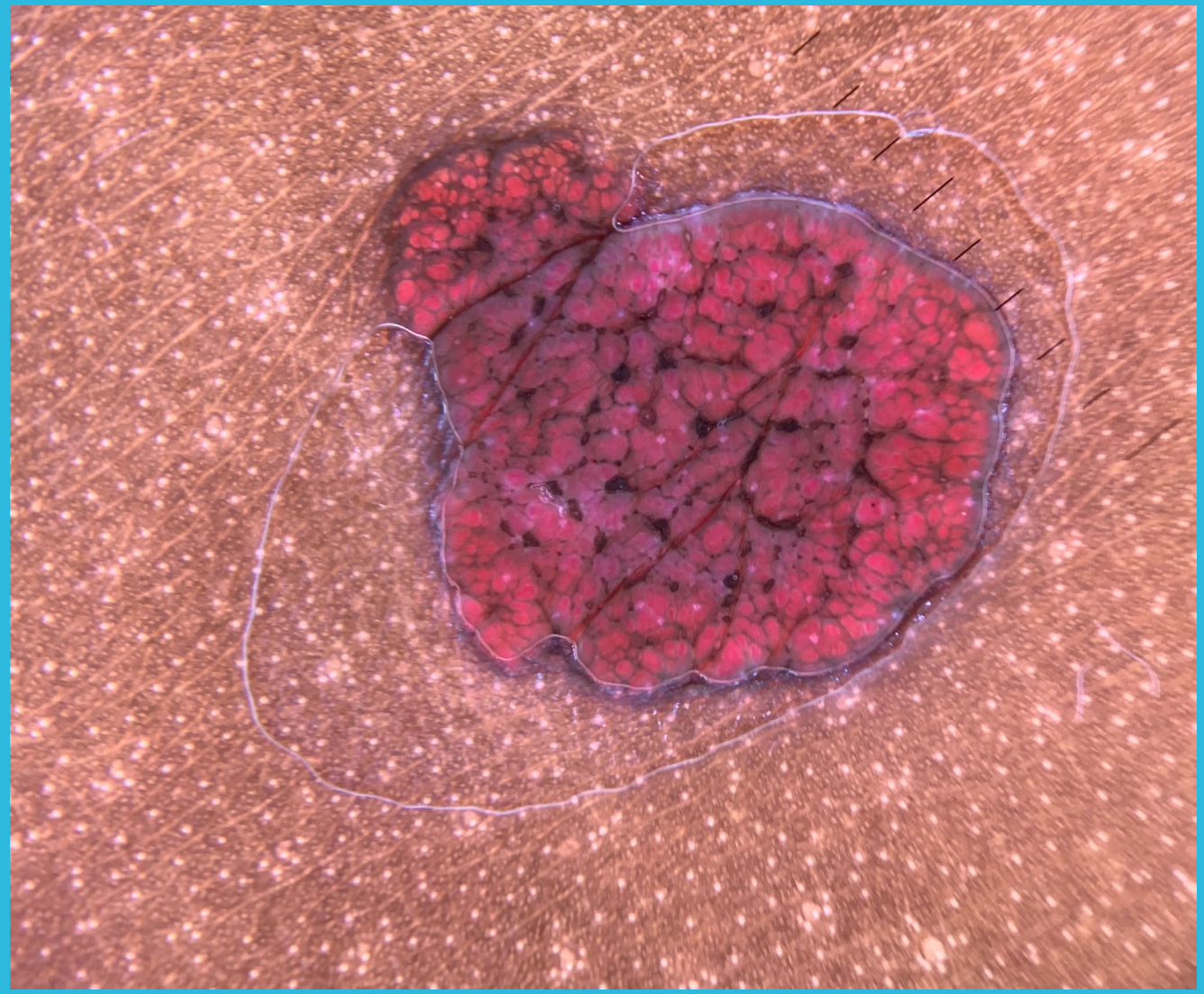
- Colors:
  - Red
  - Maroon
  - Blue
  - Black
  - Purple

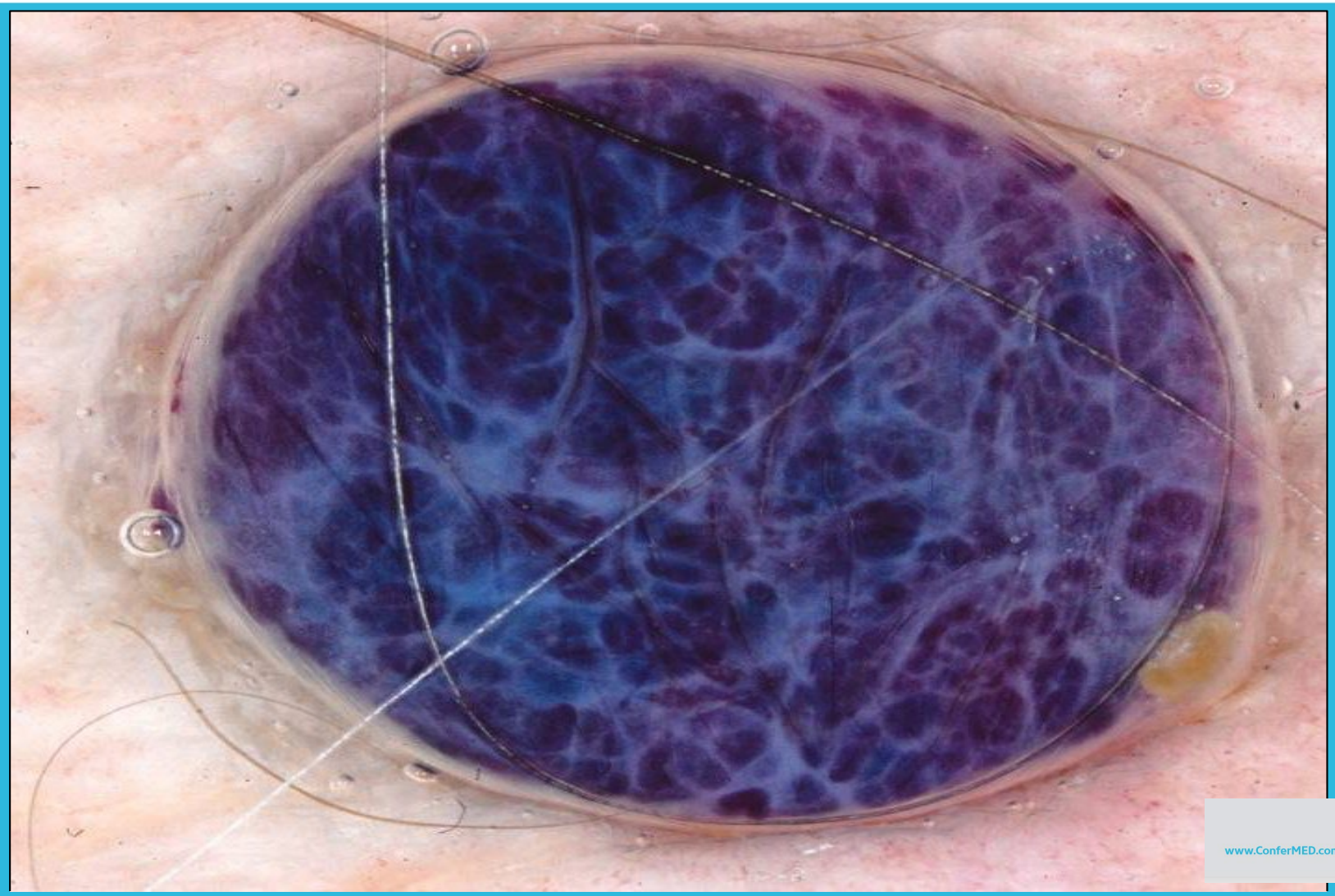












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Skin Lesion of Concern

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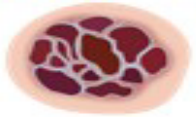
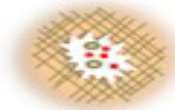
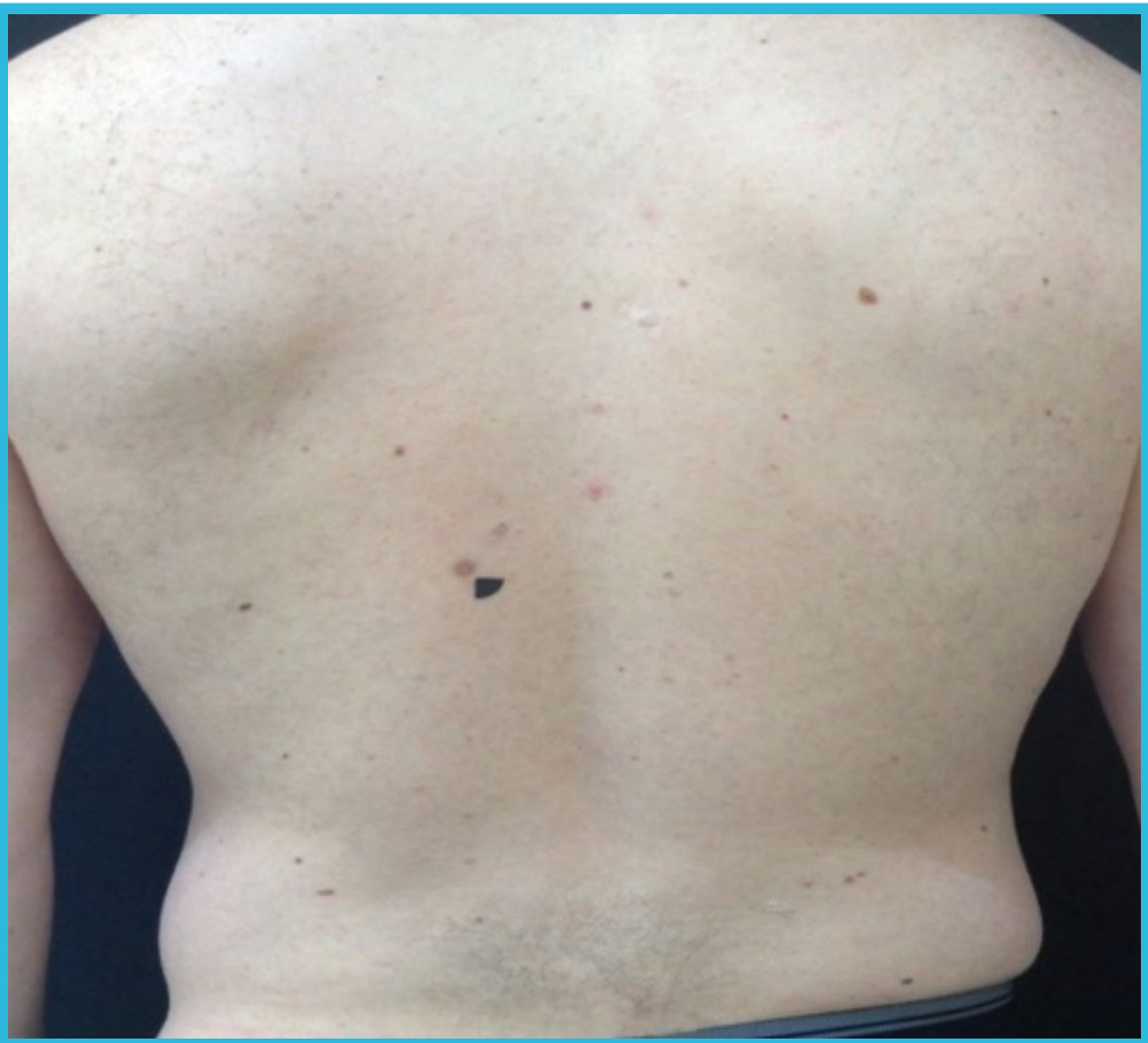
Clinically	Dermoscopically
Red to Purple Dome-Shaped 	Classic Angioma 
Firm Dimpling 	Classic Dermatofibroma 
Keratotic Stuck-On 	Classic Seborrheic Keratosis 

Dermatofibroma Clinical

1. Firm Papule
2. Skin Colored, Pink, Brown
3. Dimples with lateral pressure
4. Commonly found on the legs, especially in women
5. Possible hx trauma, bug bite

Dermatofibroma

- Clinical info is essential – trauma? dimple? skin type?

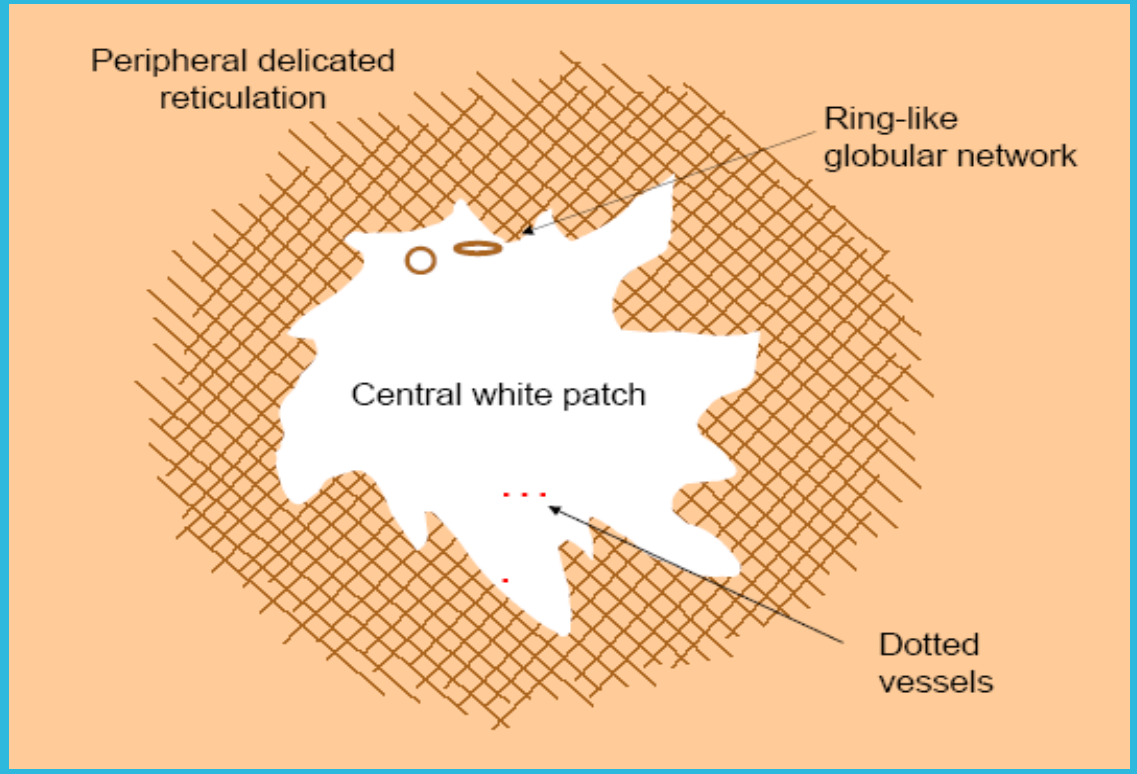


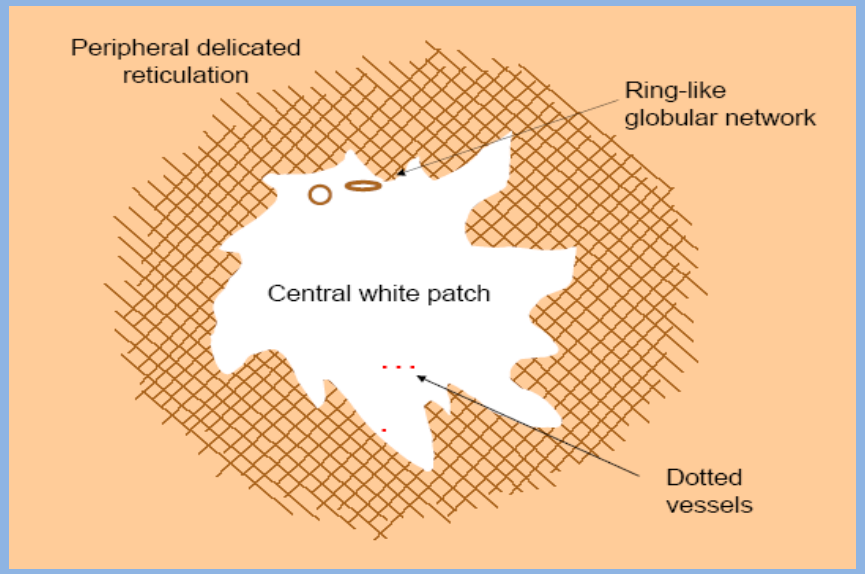
Dimple sign

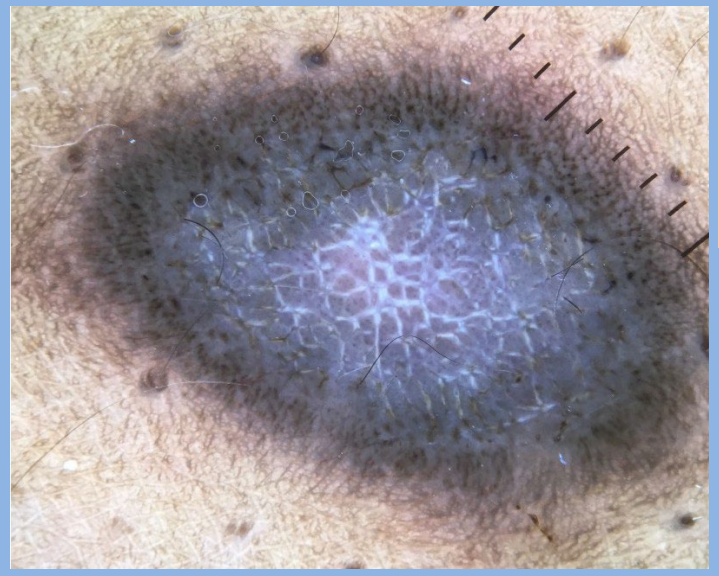
Dermatofibroma under dermoscopy

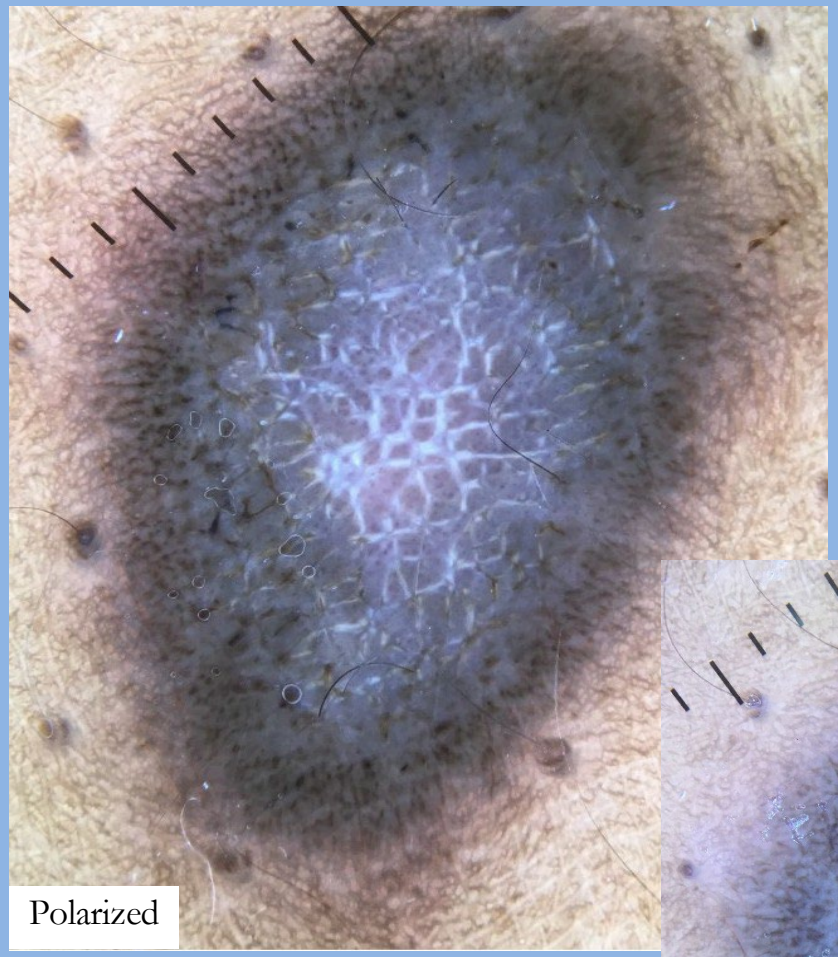
Structures:

- Peripheral fine network
- Central white or pink scar- like area
- Ring-like globules
- Dotted vessels (central or diffuse)

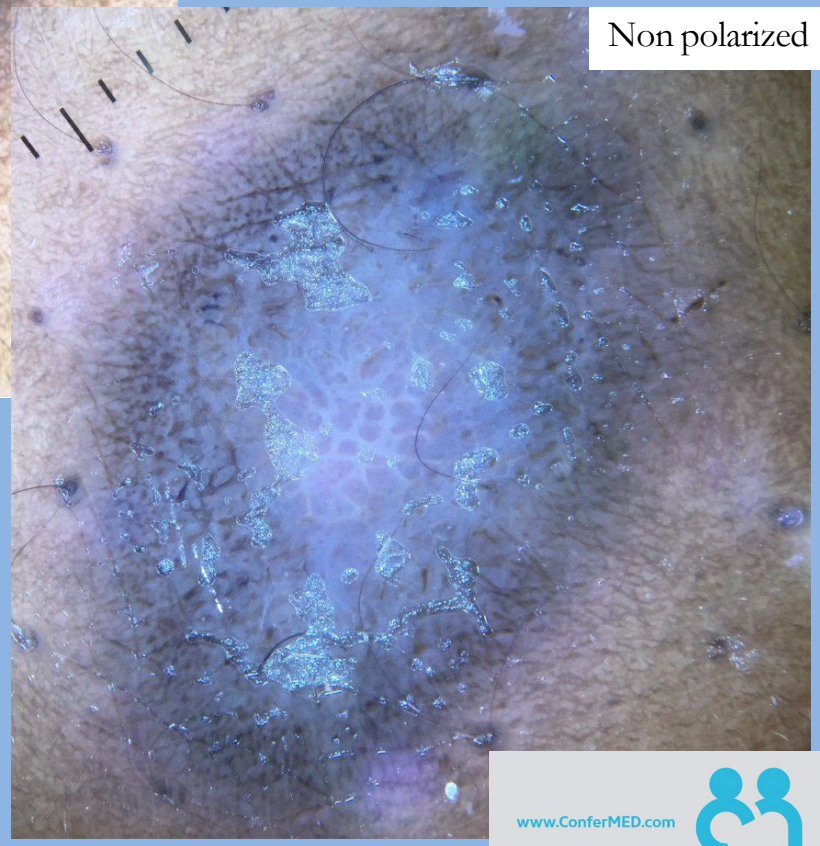




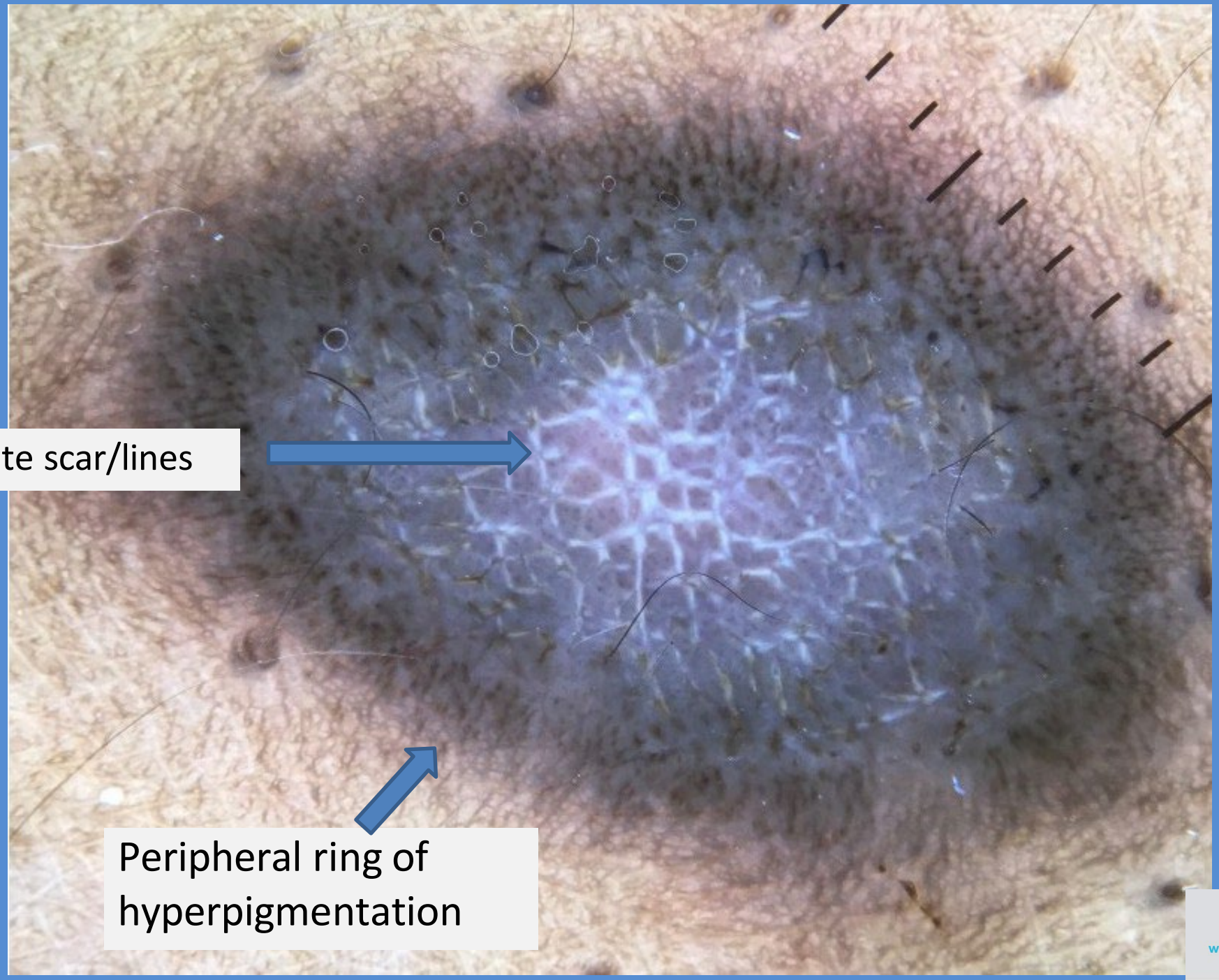




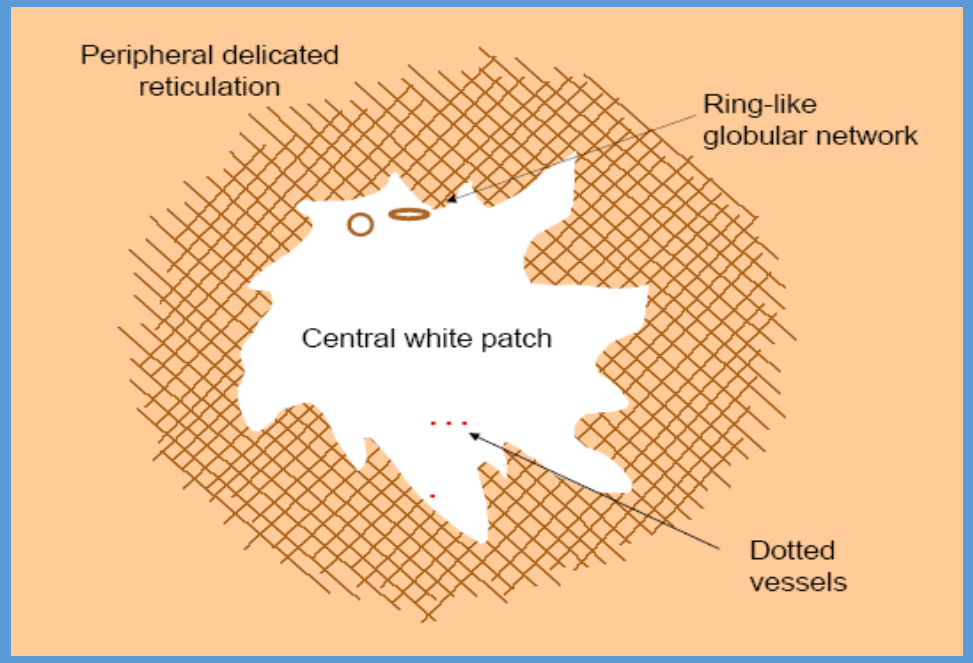
Polarized

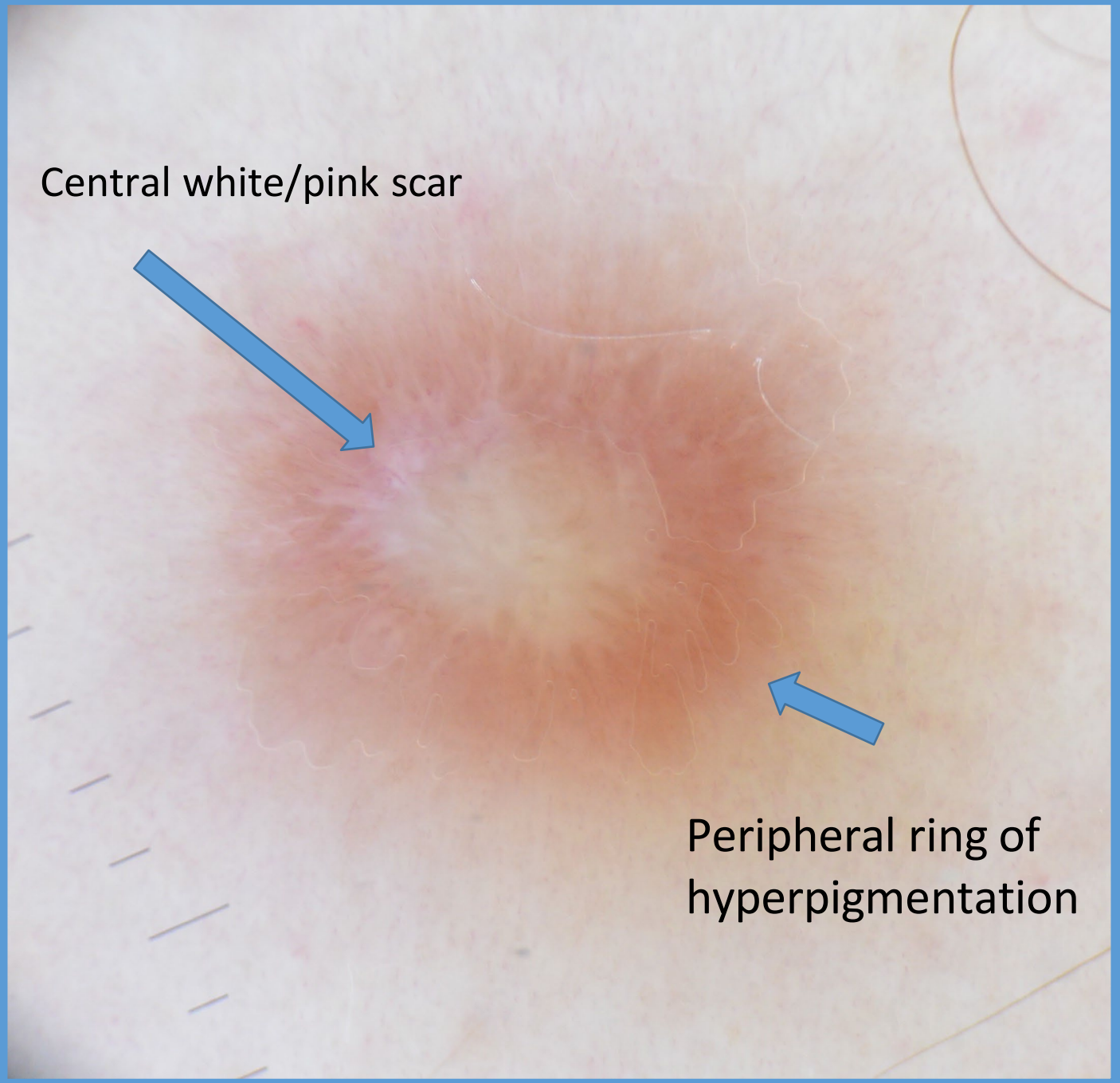


Non polarized

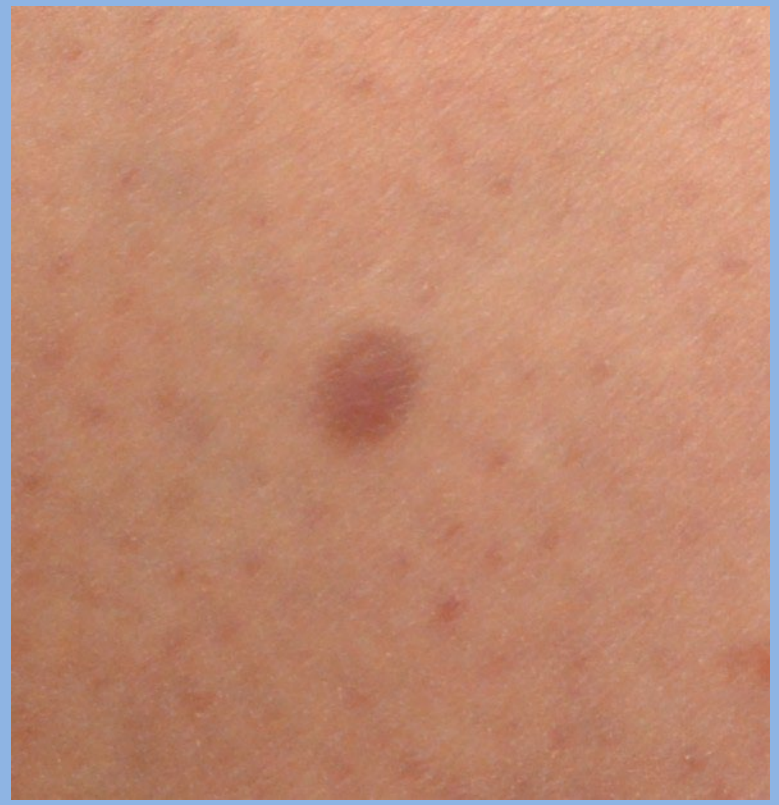


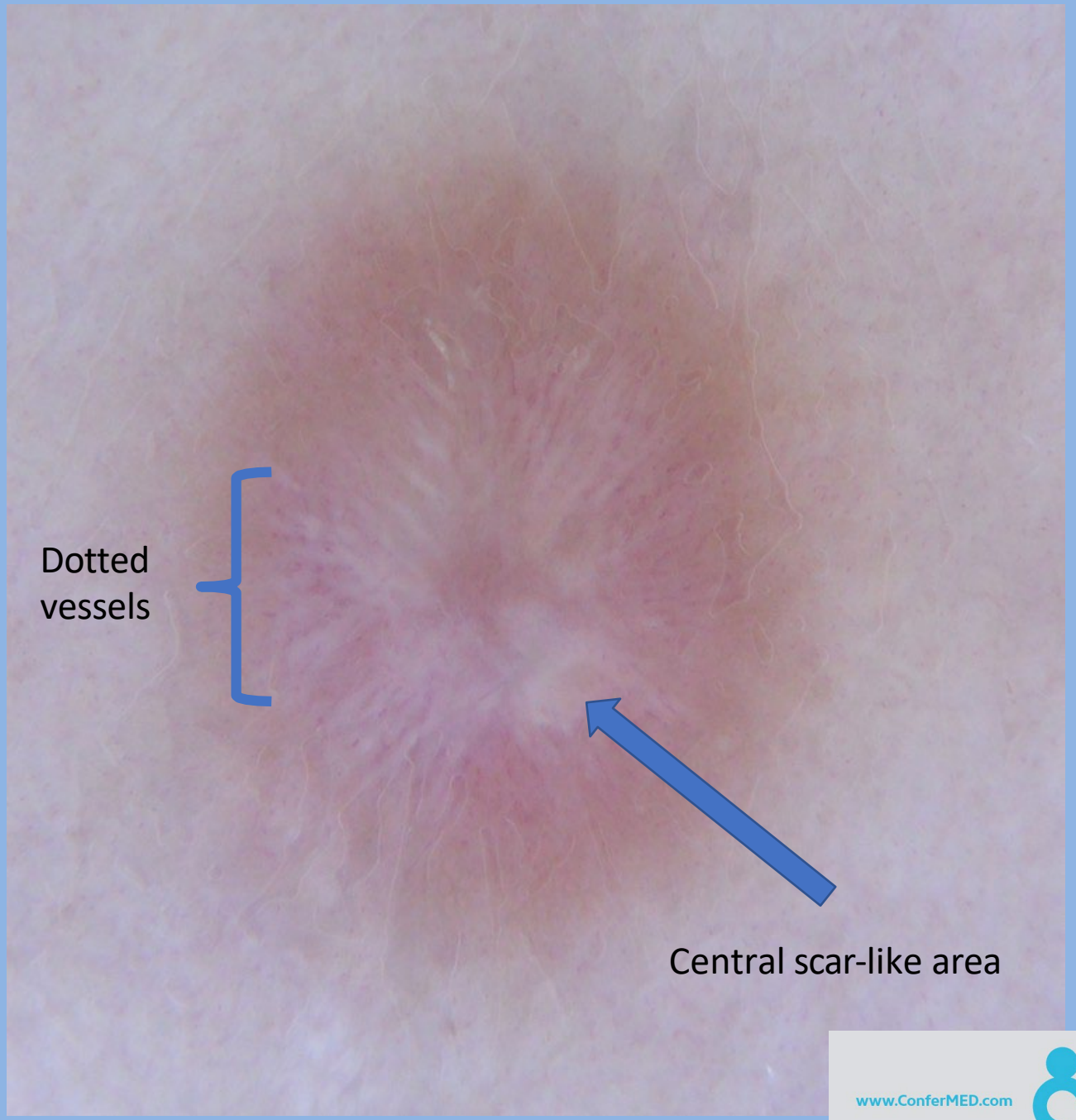
Dermatofibroma

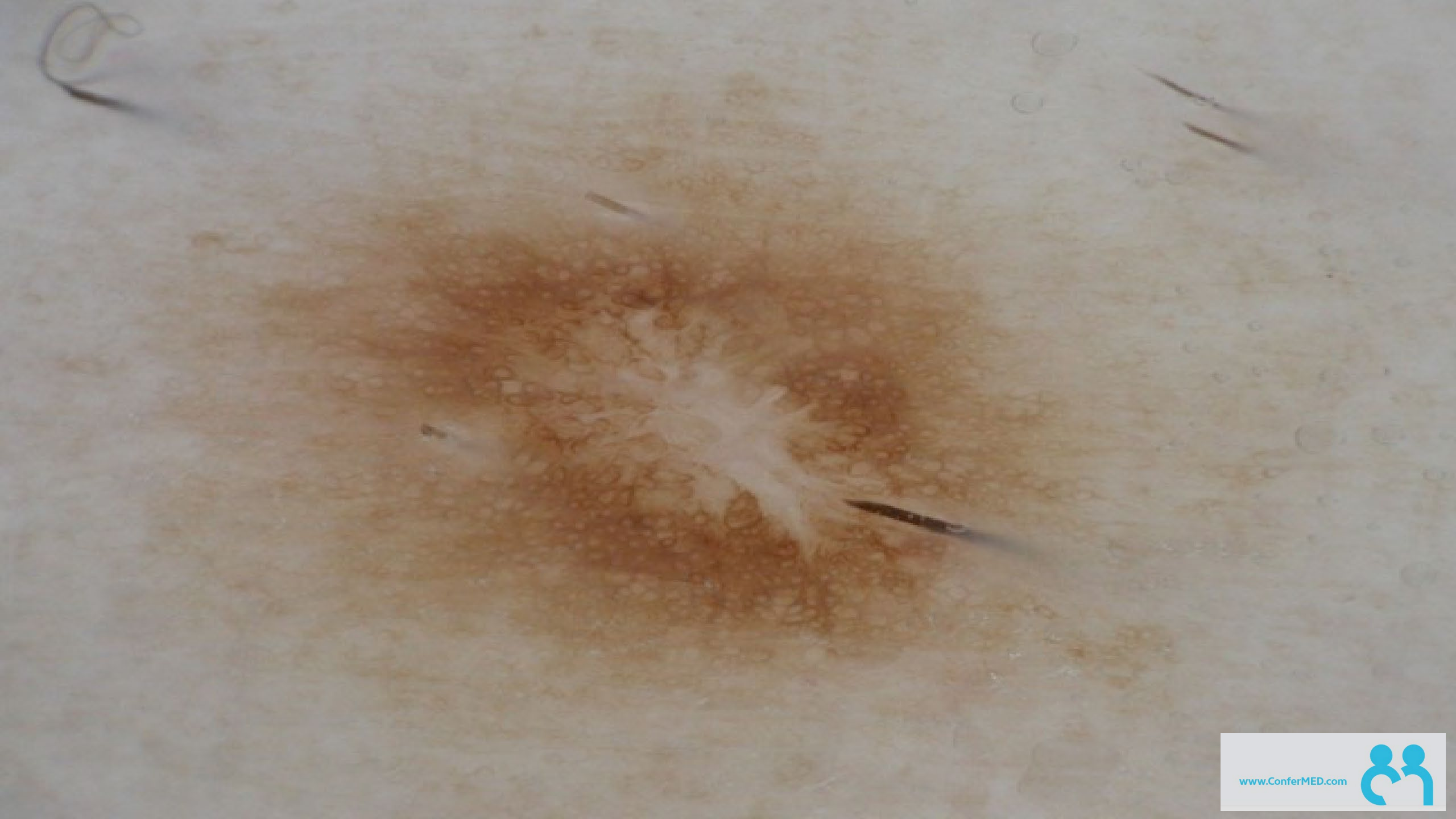


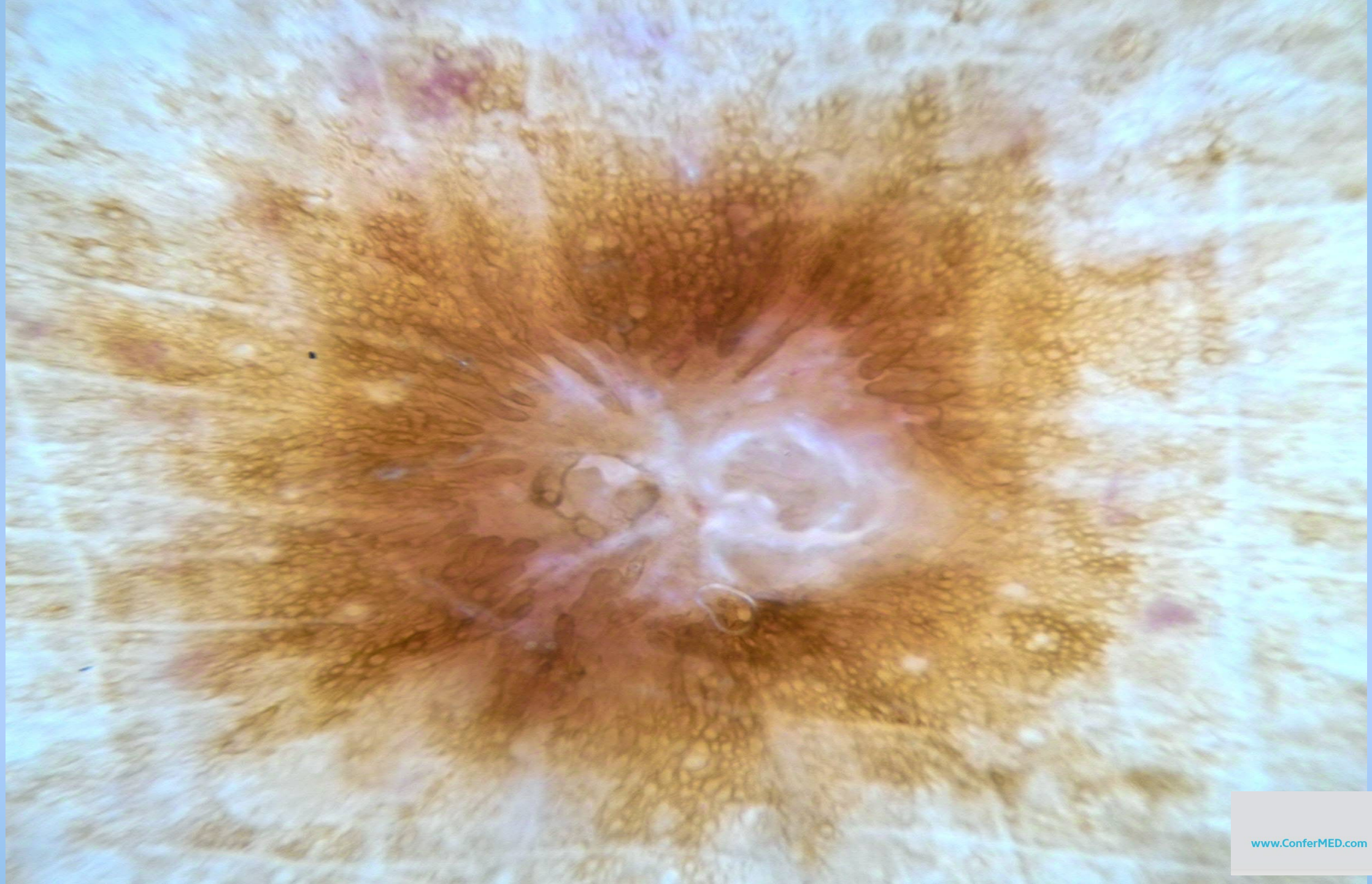


Dermatofibroma









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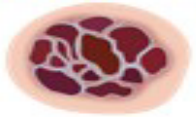
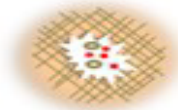
Skin Lesion of Concern

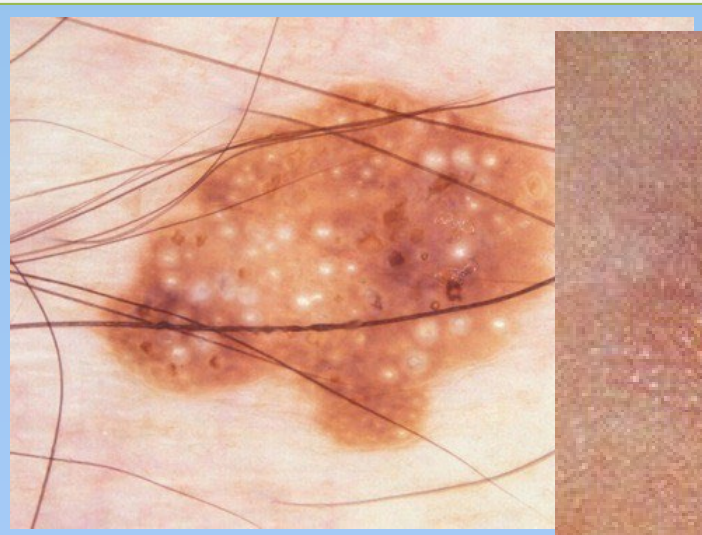
Clinically	Dermoscopically
Red to Purple Dome-Shaped 	Classic Angioma 
Firm Dimpling 	Classic Dermatofibroma 
Keratotic Stuck-On 	Classic Seborrheic Keratosis 

Seborrheic Keratosis Clinical

- Keratotic
- Stuck-on appearance
- Usually many present

Seborrheic Keratosis Dermoscopic

1. Sharply demarcated borders
2. Milia-like cyst
3. Comedo-like opening
4. Fissures & ridges (cerebriform)
5. Fingerprint-like
6. Hairpin vessels
7. Moth-eaten borders



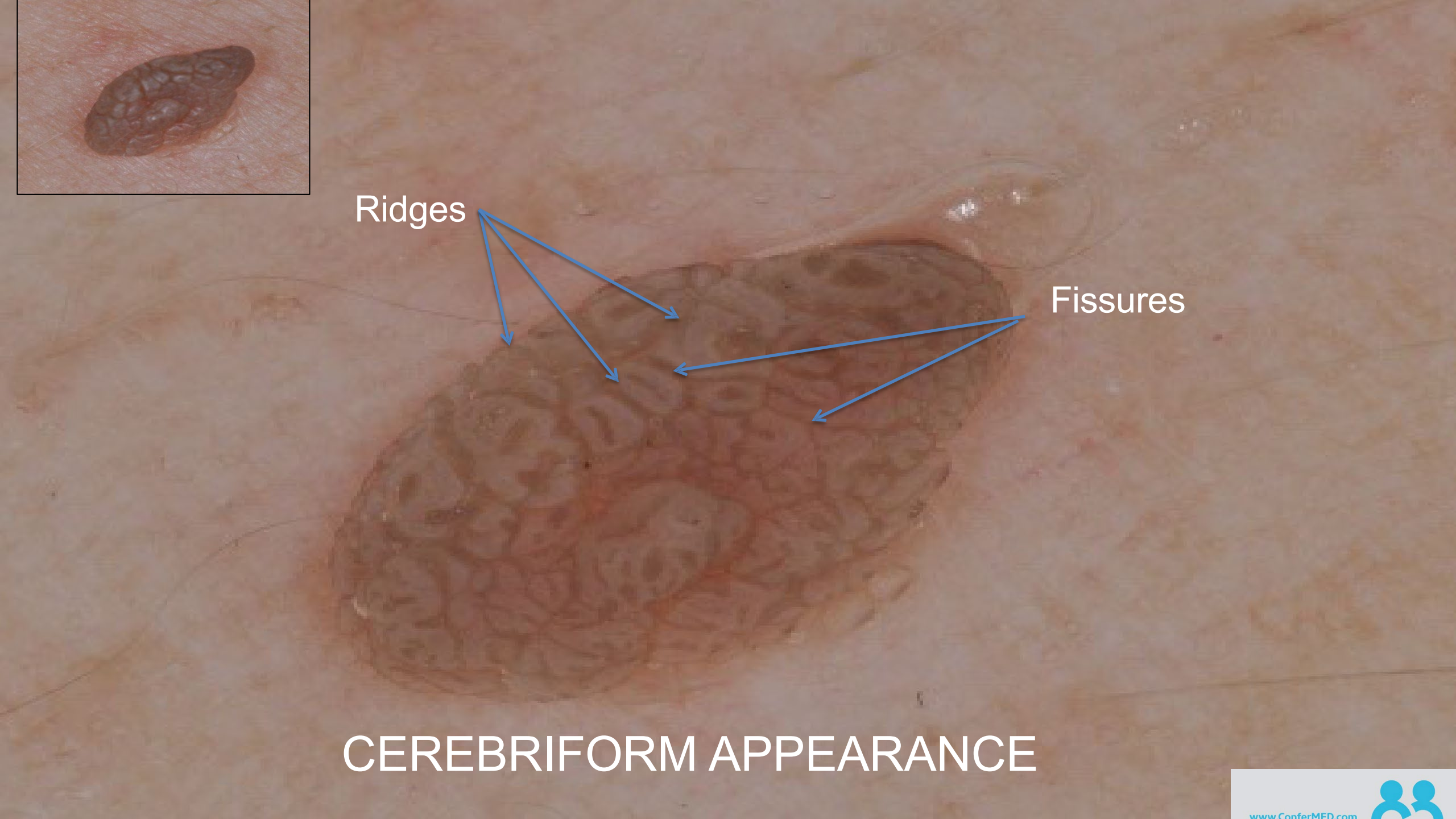
Seborrheic keratoses

Sharply demarcated border

Comedo-like openings

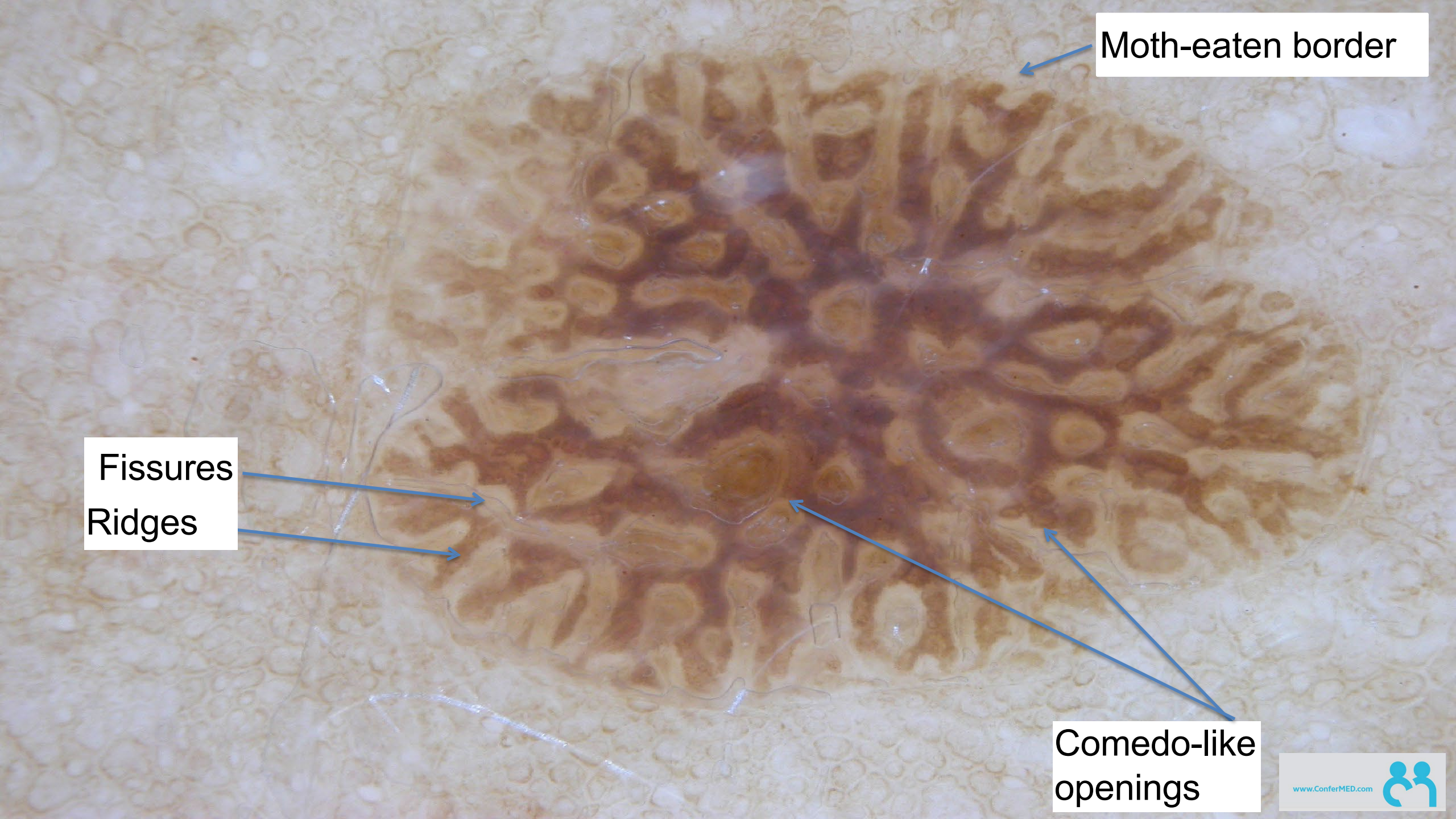
Multiple milia-like cysts

Seborrheic keratoses



CEREBRIFORM APPEARANCE


Well demarcated border
Multiple comedo openings
Milia cysts
www.ConferMED.com


Moth-eaten border
Fissures
Ridges
Comedo-like openings
www.ConferMED.com

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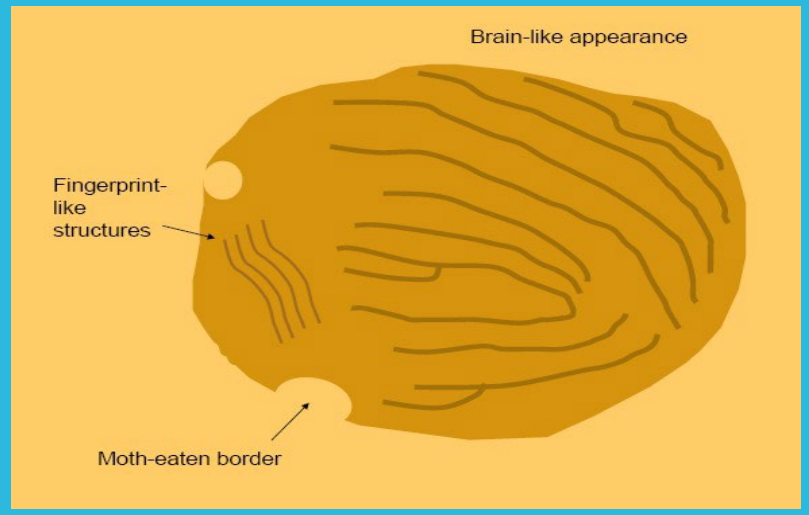
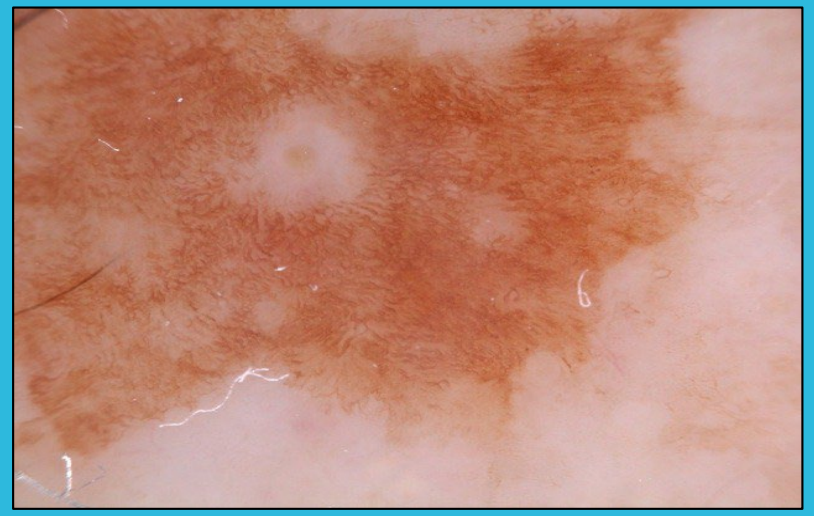
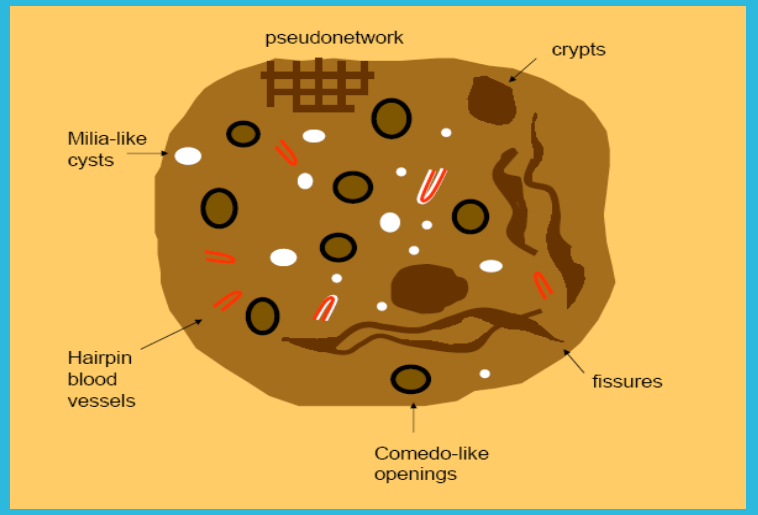
Solar Lentigo

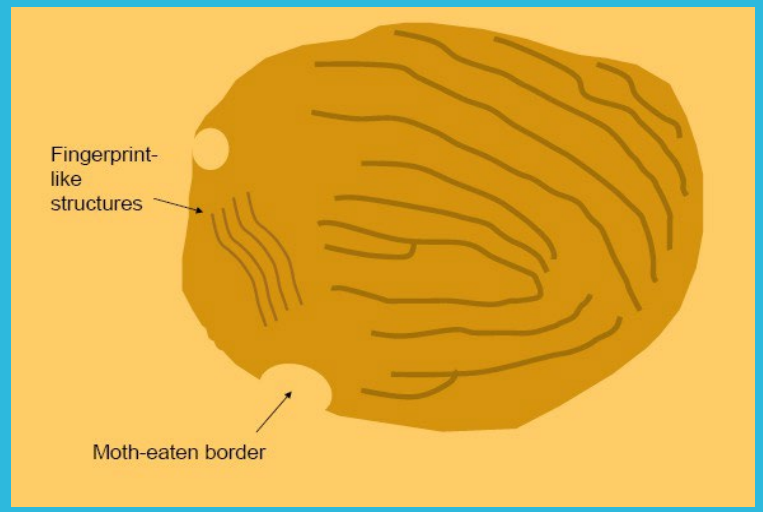


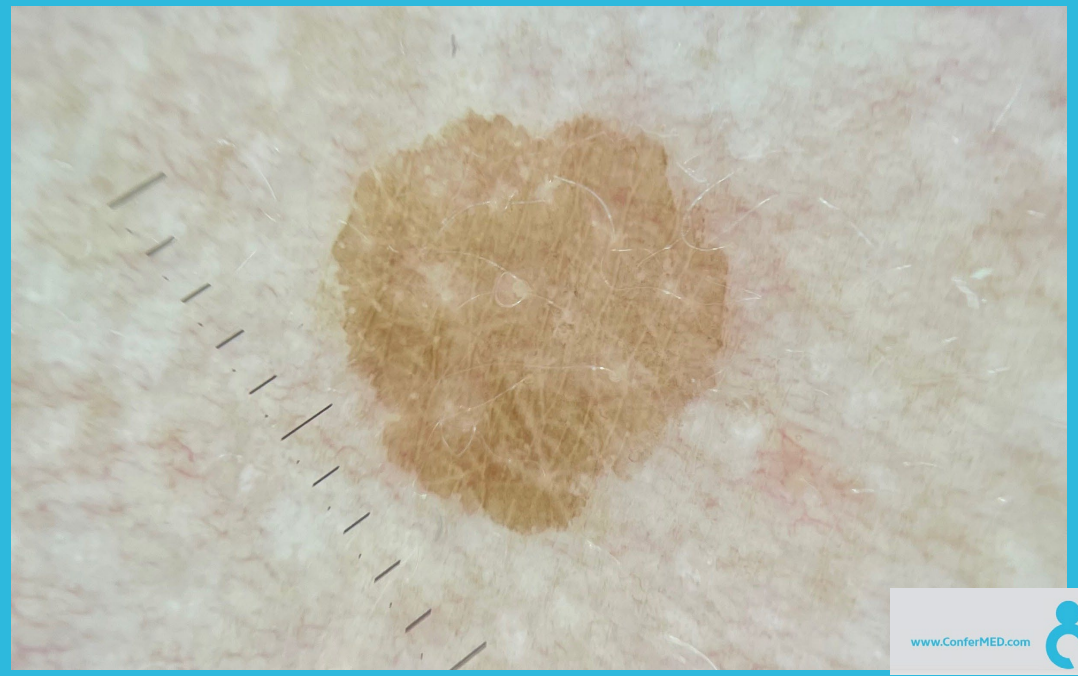


Seborrheic Keratosis

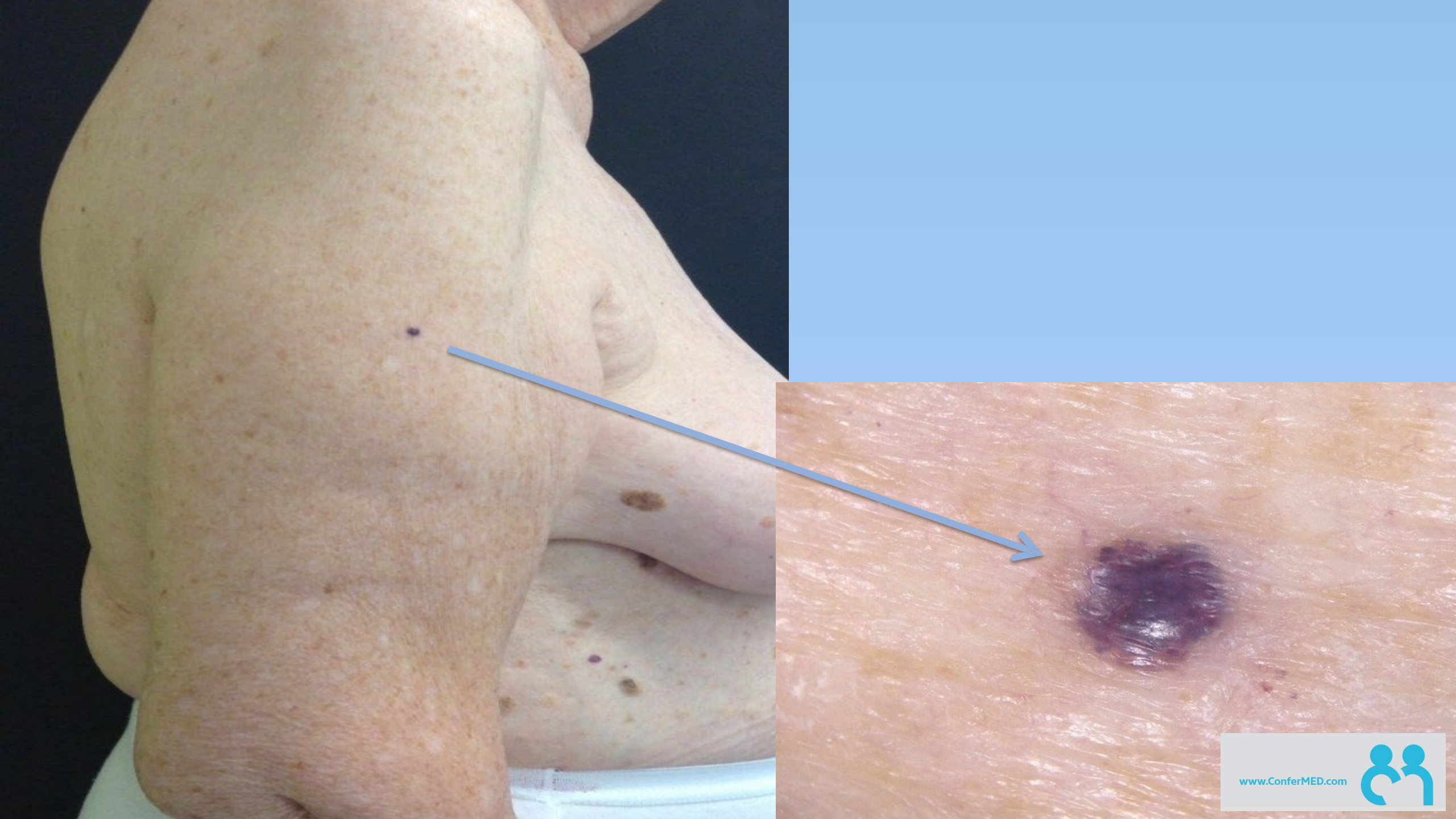


Solar Lentigo





Interactive Cases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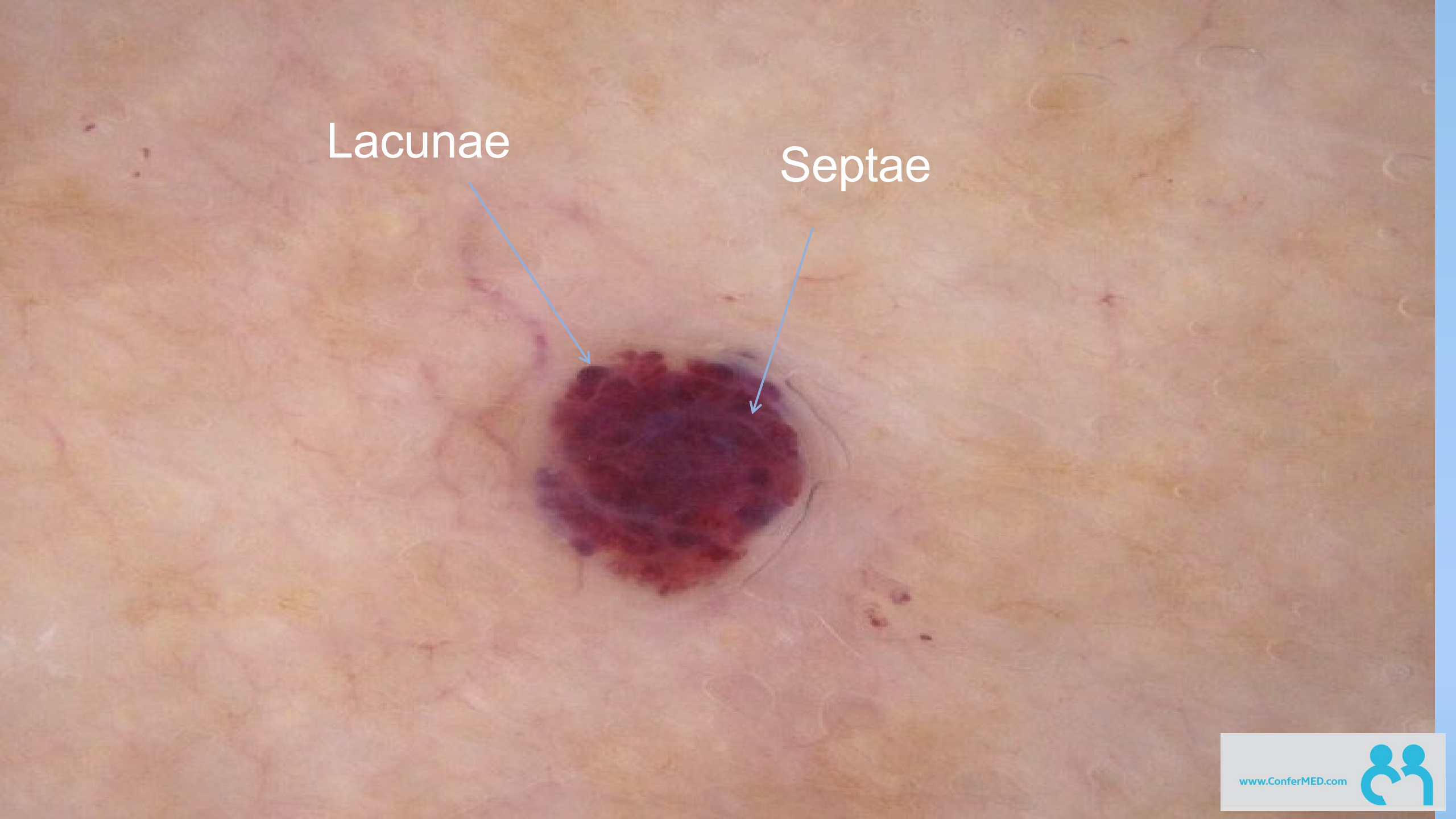
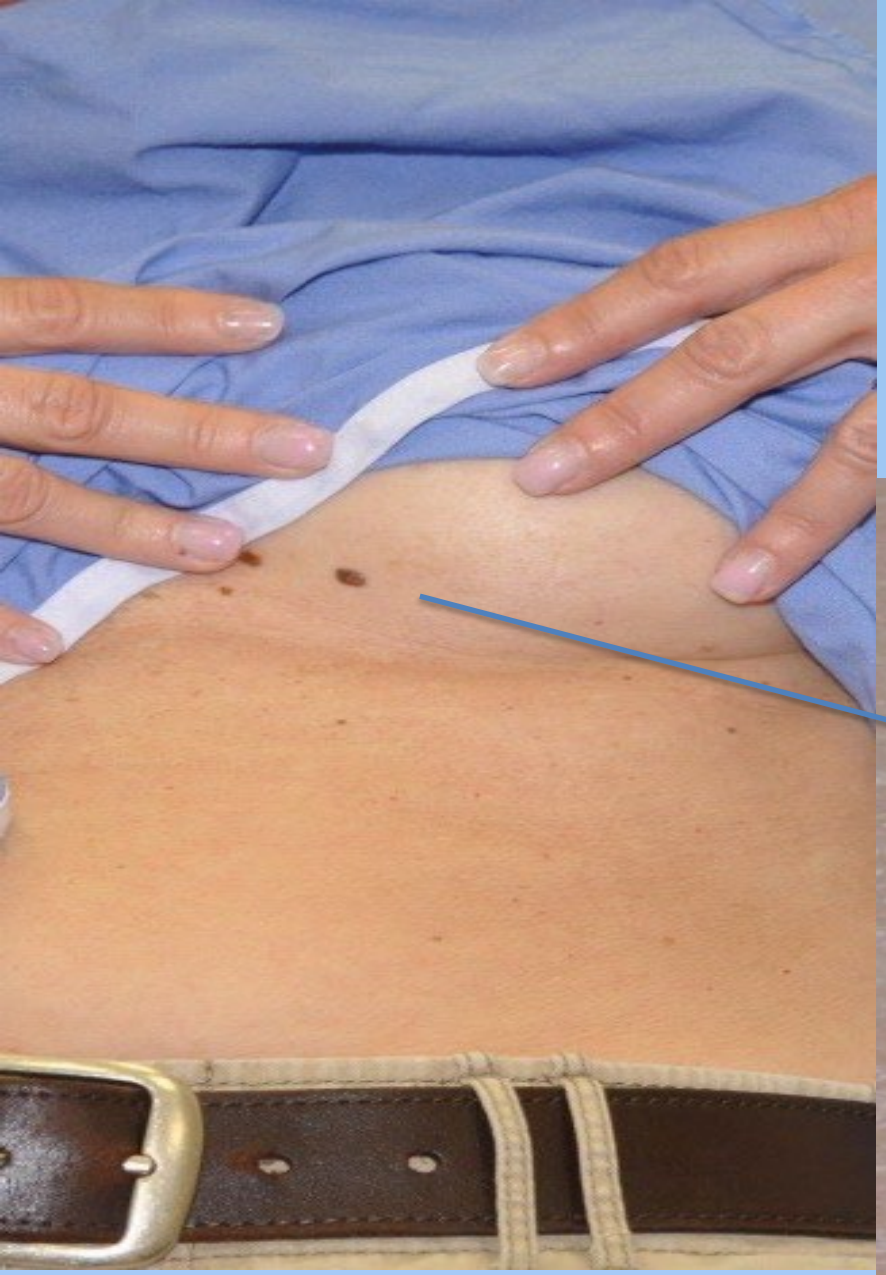
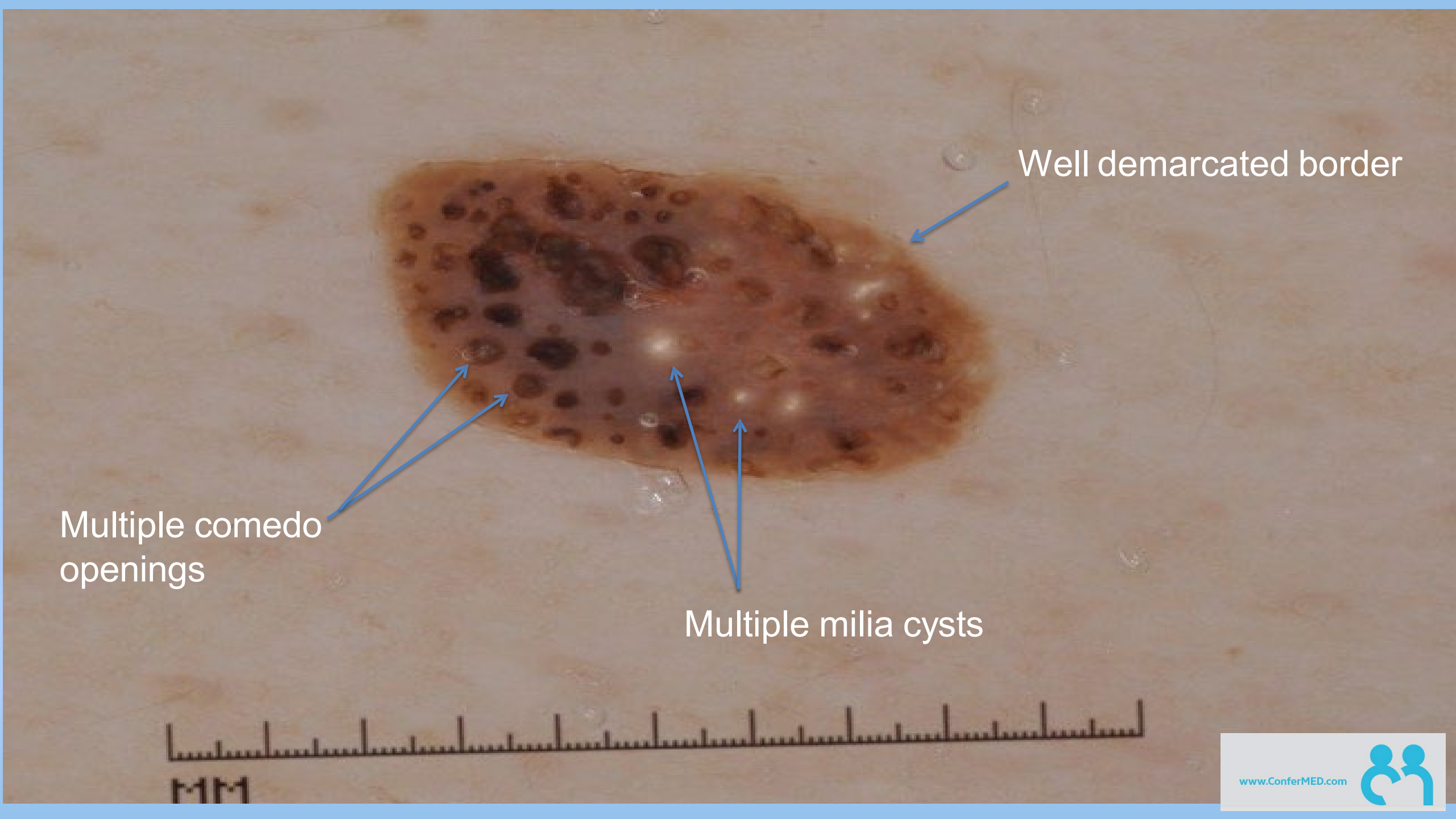
What do you see?



65-year-old woman with a new growth on the chest

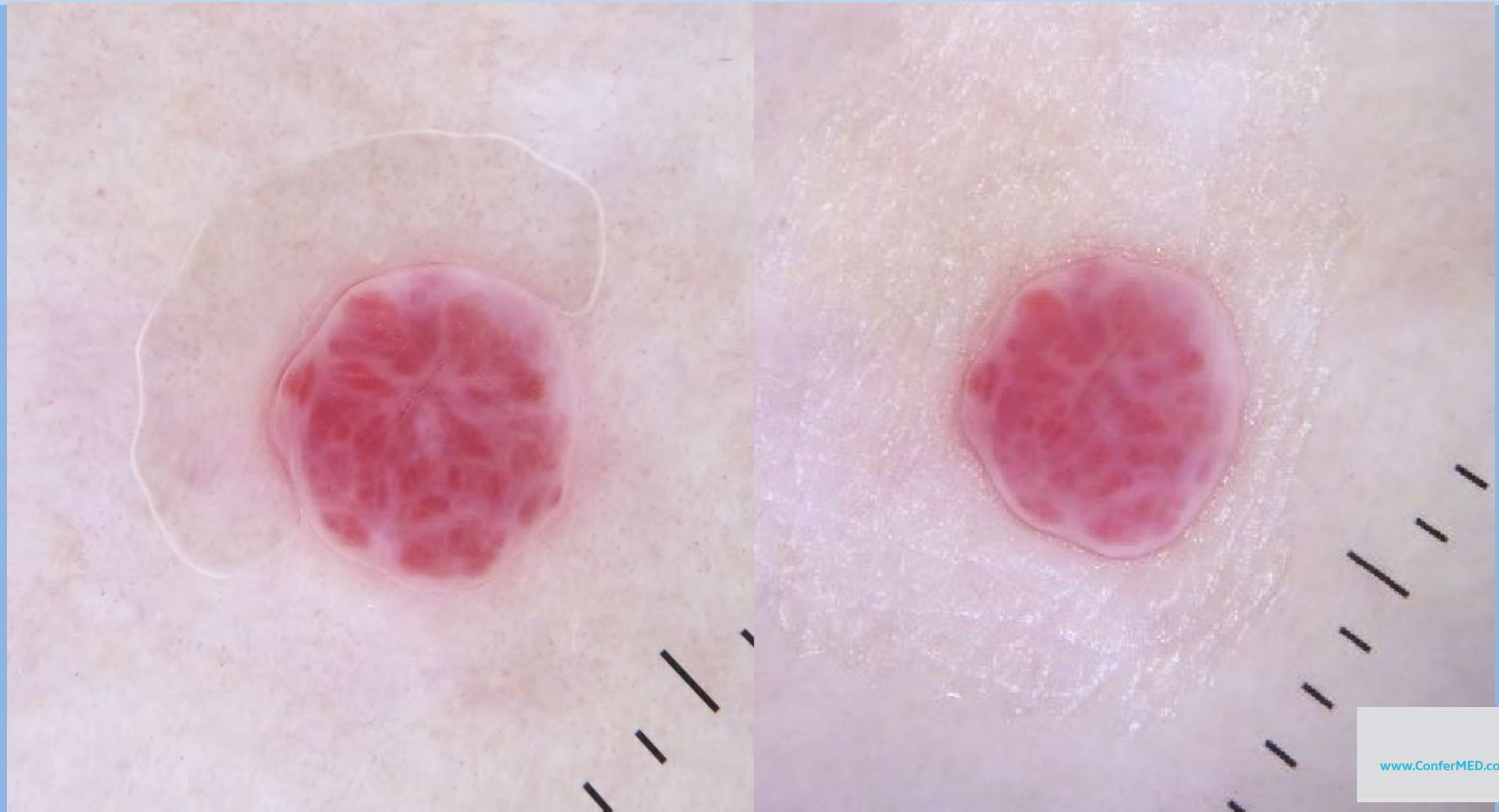


What structures do you see?

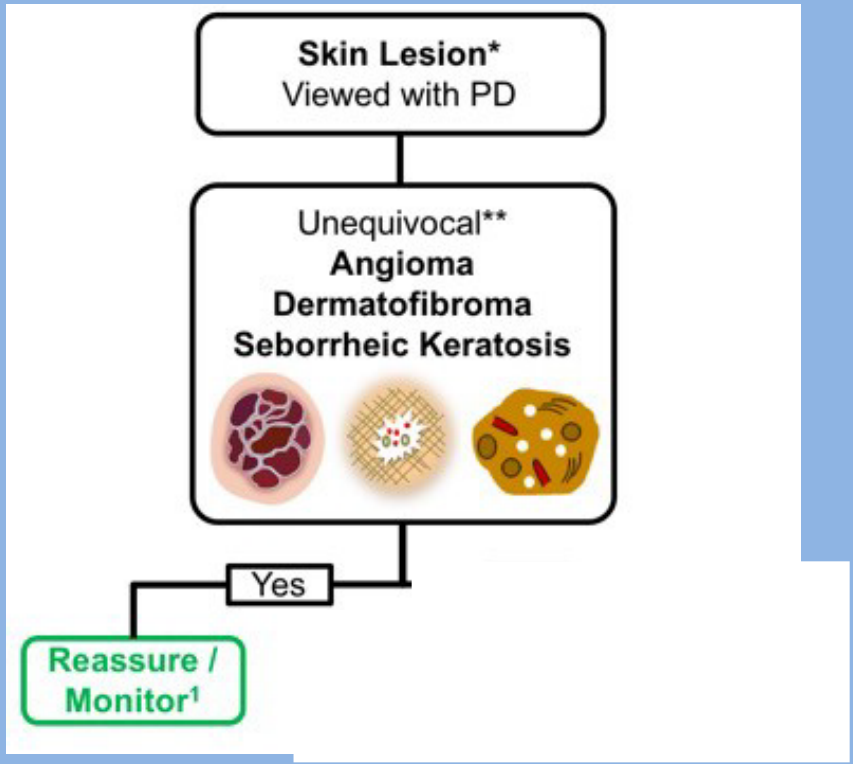


56-year-old phototype II woman with a bleeding papule on the calf

Dermoscopy



Classic features of an angioma, SK, or DF?



Seiverling EV, Ahrns HT, Greene A, Butt M, Yélamos O, Dusza SW, Marghoob AA. Teaching Benign Skin Lesions as a Strategy to Improve the Triage Amalgamated Dermoscopic Algorithm (TADA). J Am Board Fam Med. 2019.

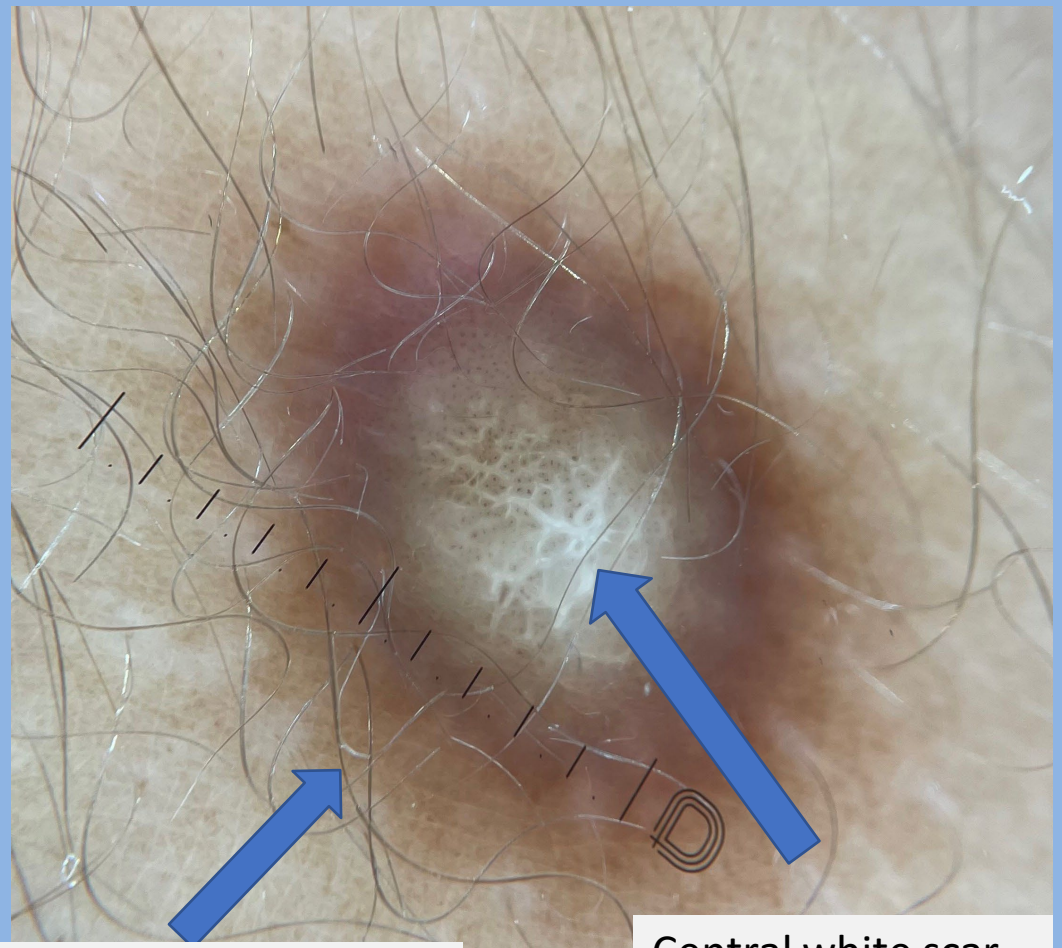
Shave biopsy with cautery available

SPECIMEN: A. R POSTERIOR CALF Client:
FINAL DIAGNOSIS:
Skin, right posterior calf, biopsy: Hemangioma.

15-year-old phototype IV boy with an itchy papule on the arm. Onset after a mosquito bite.

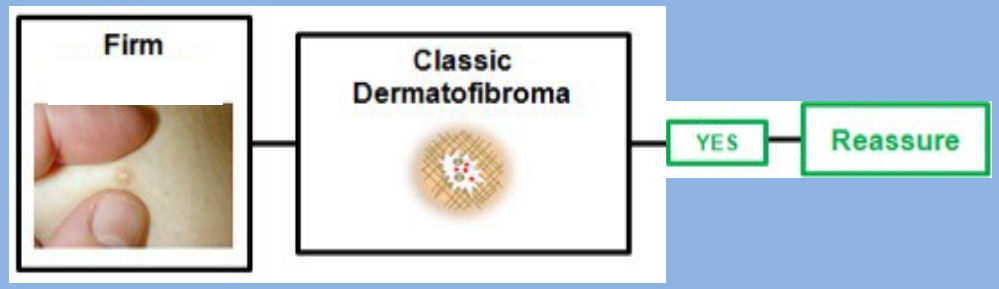
What do you see?

Classic features of an angioma, SK, or DF?



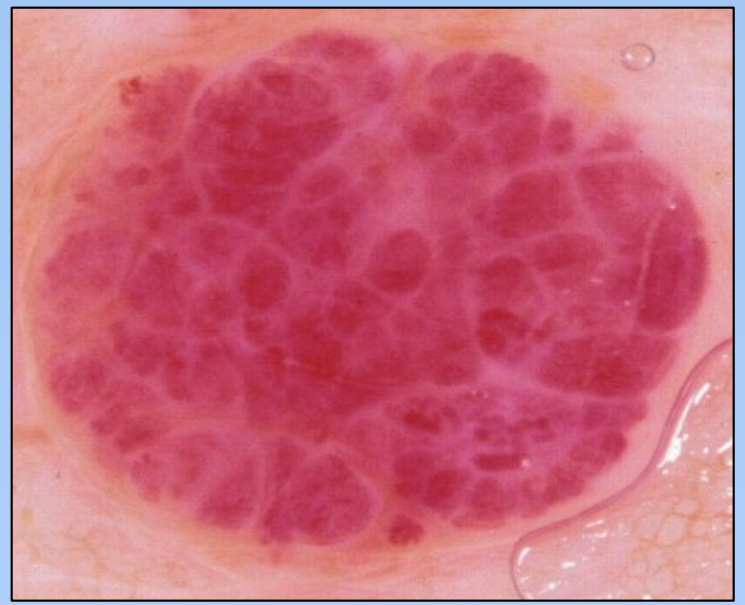
Peripheral hyperpigmentation

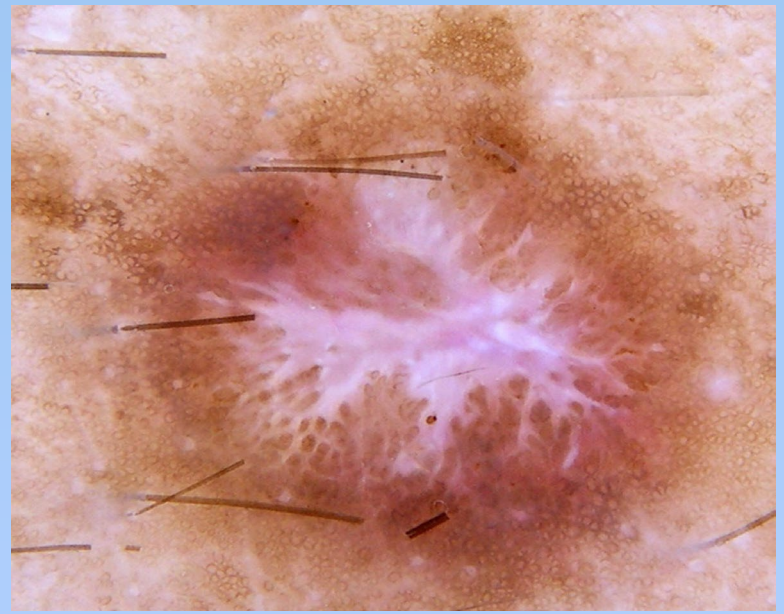
Central white scar

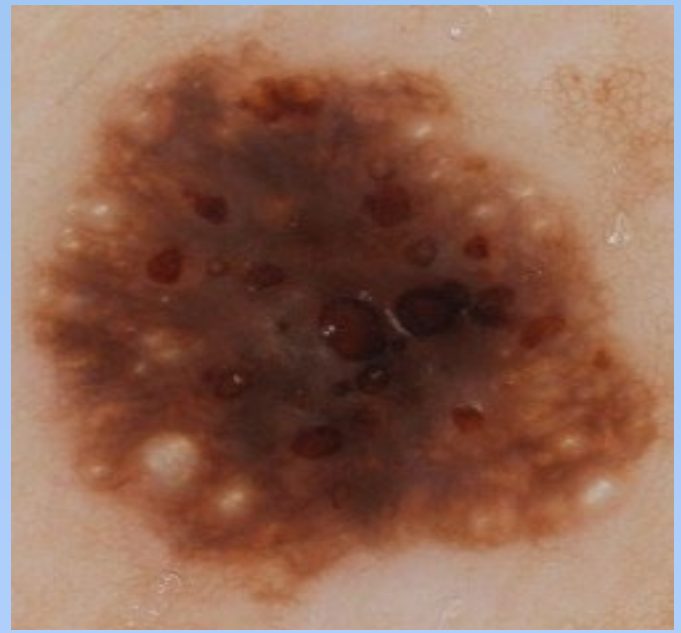


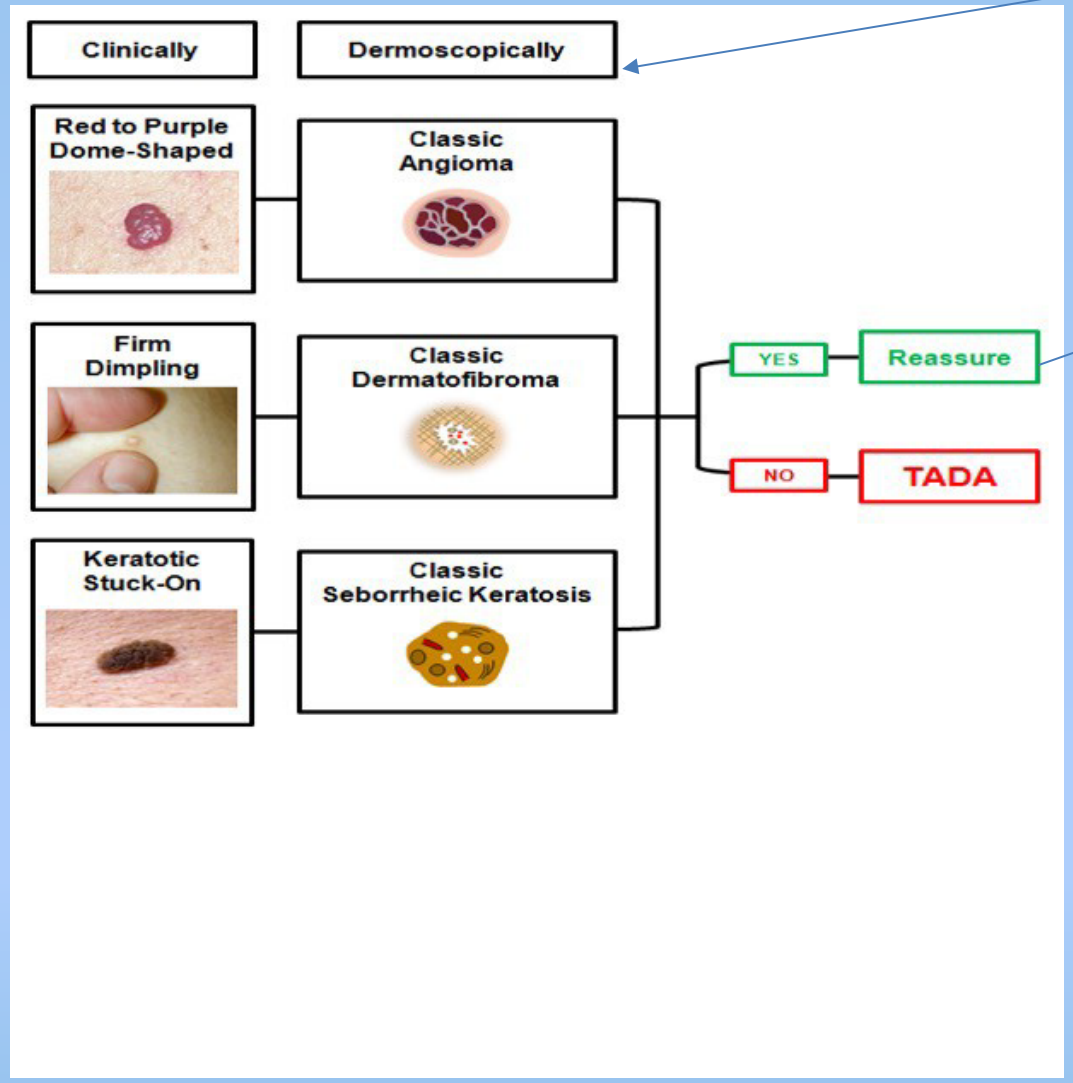
Dermatofibroma

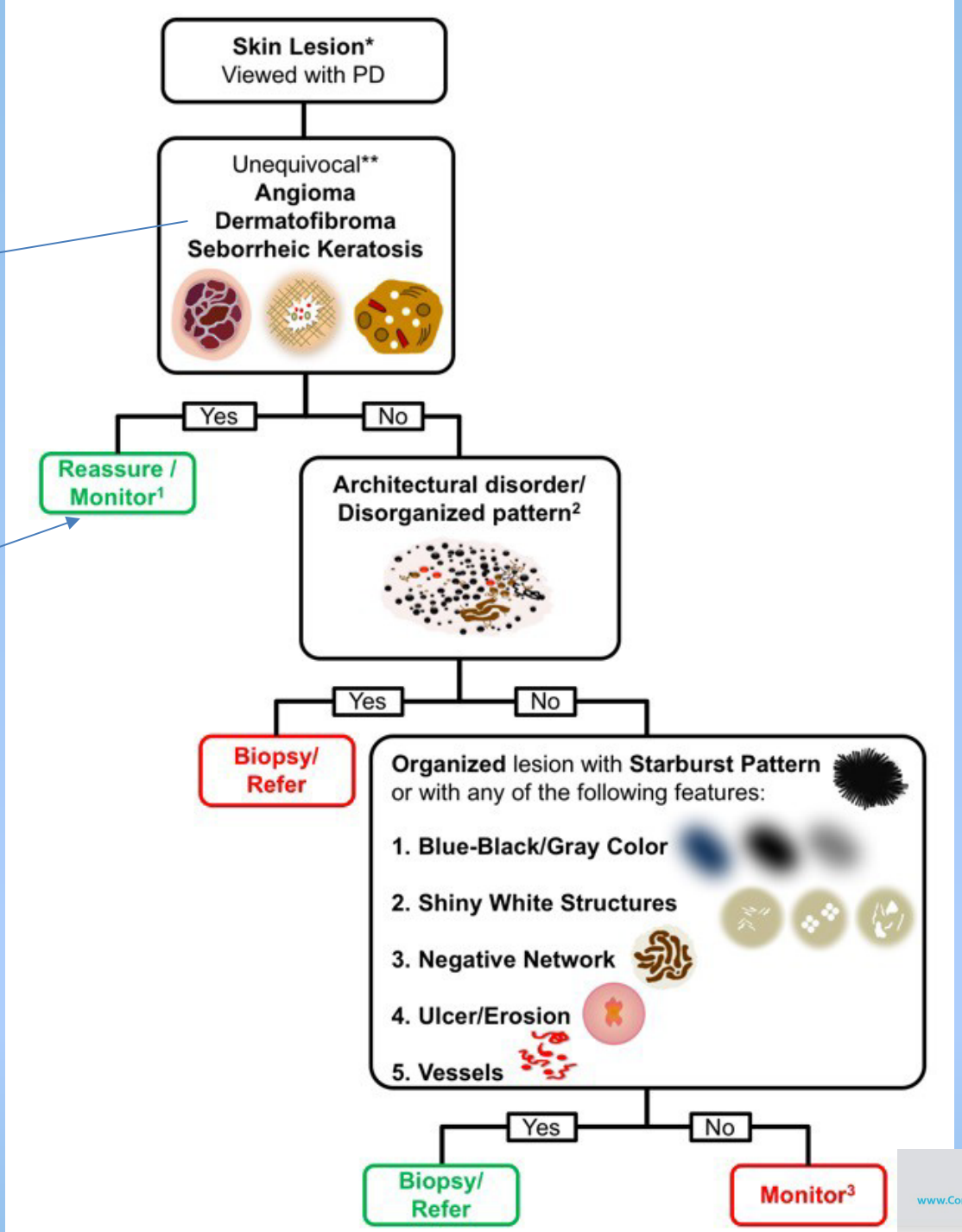
Dermoscopy helps us confirm a growth is benign



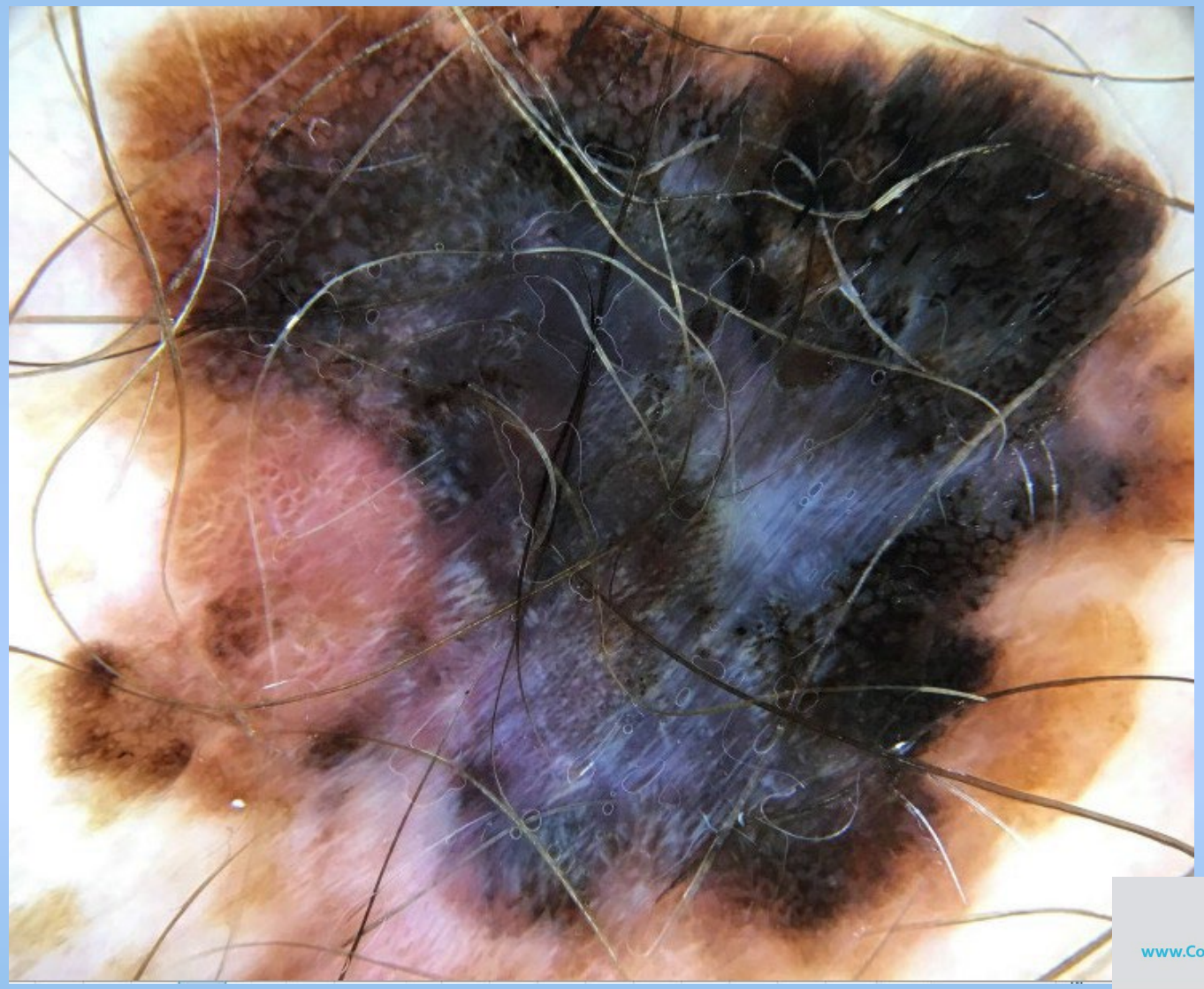


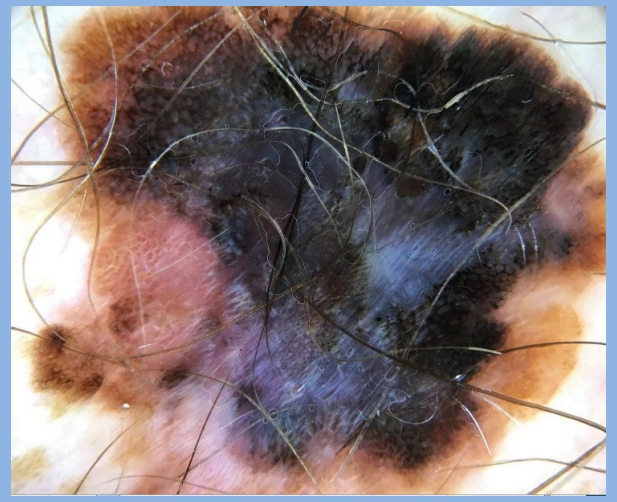


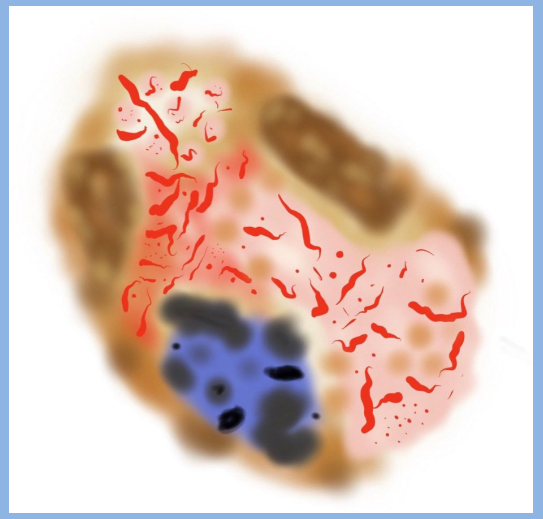


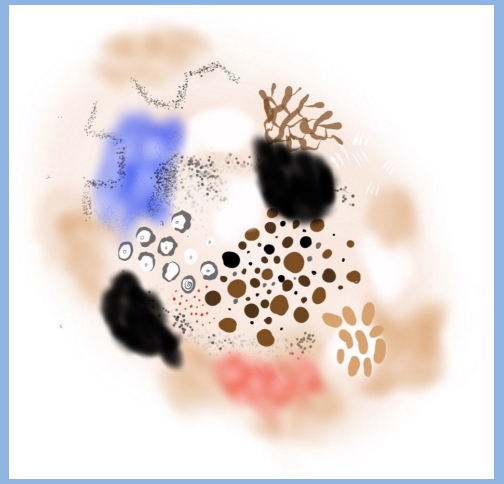


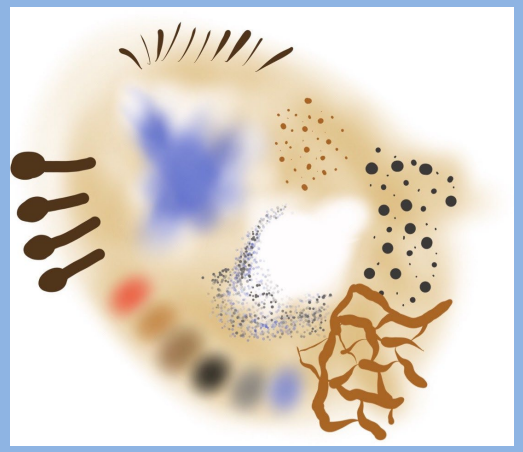
63-year-old man with an enlarging growth on the abdomen -- ?SK?







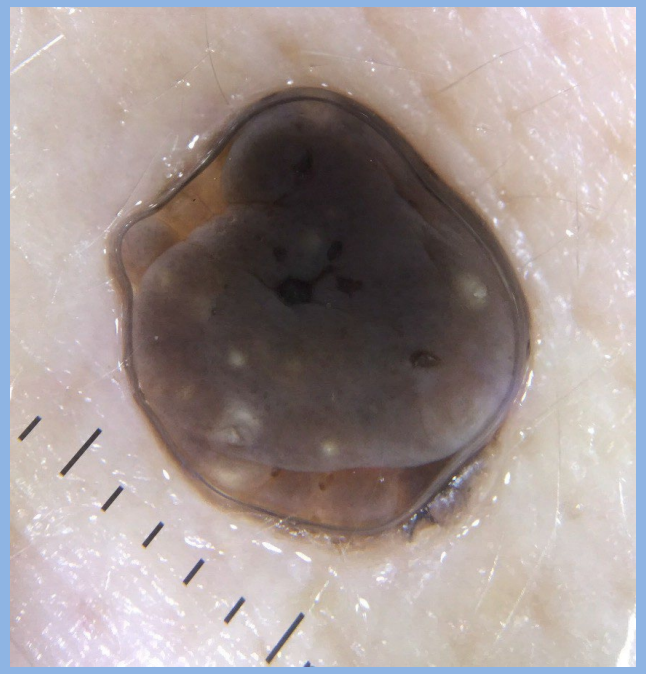


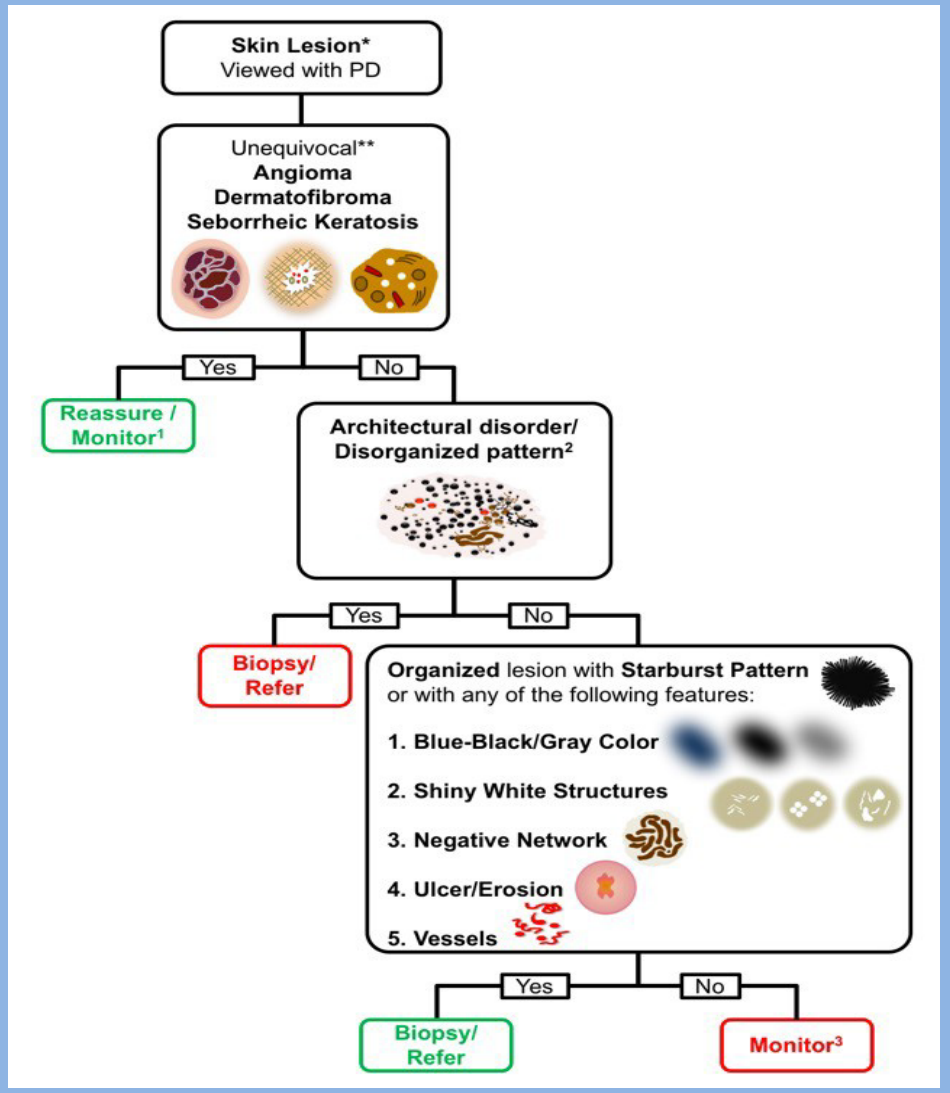


Most Melanomas are Disorganized

Questions?

Triage Amalgamated Dermoscopic Algorithm





Introductory dermoscopy workshop:
https://data.mendeley.com/datasets/jgdt3nxm8d/1

Susong, JR, Marghoob AA, Seiverling EV et al. Evaluation of a virtual dermatology curriculum for dermoscopy by using the triage amalgamated dermoscopic algorithm for novice dermoscopists. JAAD. 2020. Aug. PMID: 32331797

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Connecting Primary Care to the Future

Thank You! Questions?

Next Session: October 23, 2025:
Malignant Skin Growths with Dermoscopy