

# Introduction to Dermoscopy

Why you should learn and implement an effective, cheap tool for enhanced diagnosis of skin cancer

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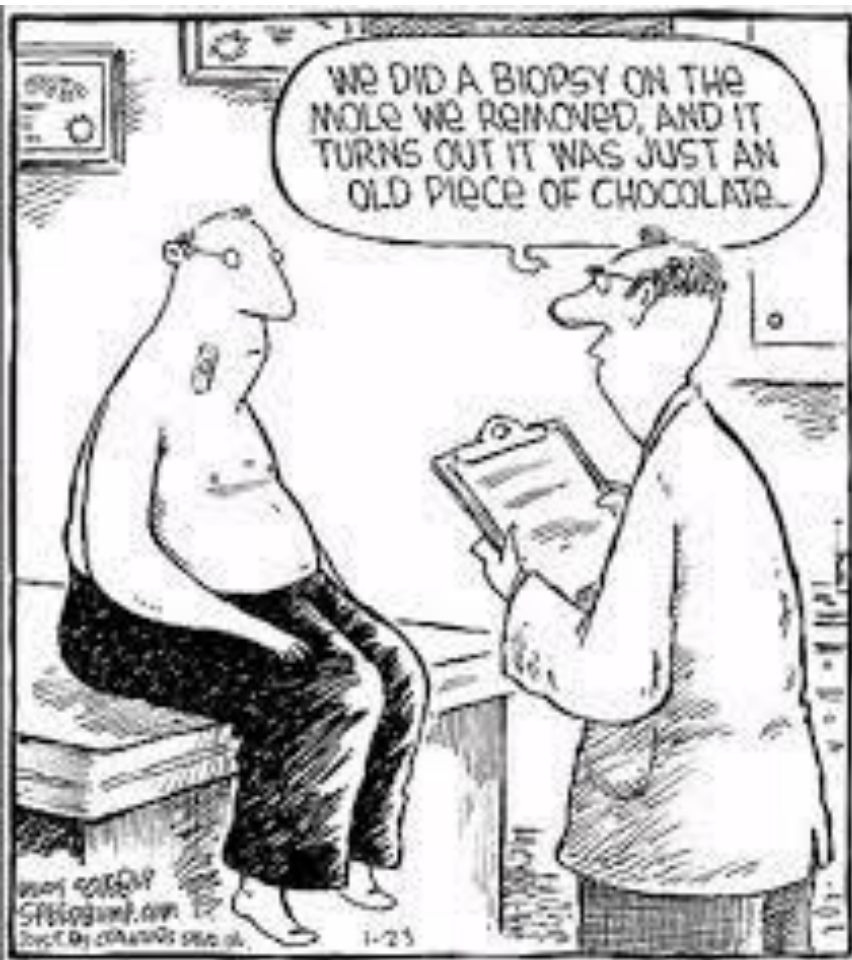
# Disclosures

I am a previous student of the TADA workshop at STFM National Conference 2018 as well as the Cardiff University Introduction to Dermatoscopy course 2019

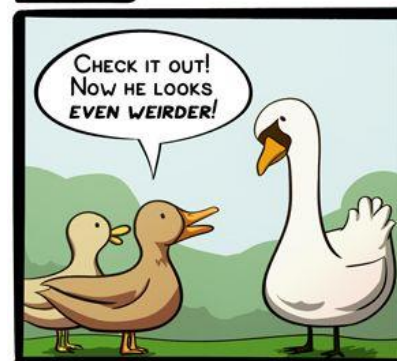
This didactic will not make you an expert, but is meant to stoke interest in the method

# Learning Objectives

1. Understand the utility of dermoscopy in the primary care setting
2. Identify the dermoscopic features of three common benign pigmented neoplasms and features of concern for malignancy
3. Learn two simple algorithms (designed for non-dermatologists!) for determining whether to biopsy a skin growth
4. Dig on some cool dermoscopic photos



ONE DAY



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In Vivo noninvasive diagnostic technique magnifying the skin allowing for better visualization of colors and structures in the epidermis, dermoepidermal junction, and papillary dermis

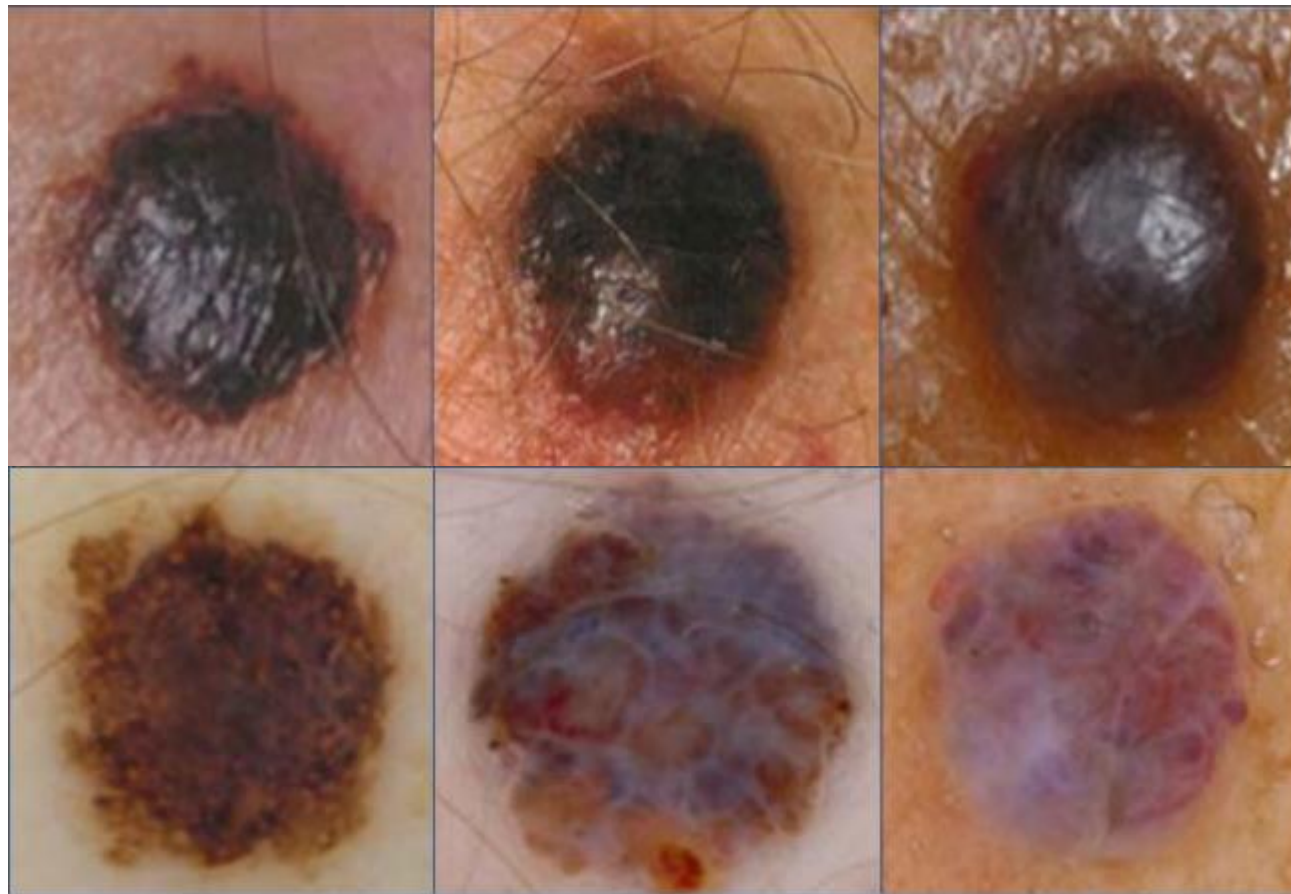
Fluid can be used to reduce surface light reflection, render stratum corneum transparent (classically using oil, lubricant, water, alcohol)



Cross-polarized light can minimize refraction issues without contact or fluid layer

# How Good Are We At Diagnosing Skin Cancer?

- ABCDE developed for lay public – dysplastic nevi, nodular melanoma
- 63% pts with newly diagnosed melanoma had visited PCP within a year, PCPs fail to diagnose up to 1/3 of skin cancers
- There is a dearth of teaching skin cancer screening in GME
  - In one study, 76% of PC residents not trained in SCE, 57% never practiced!
- Meta-analysis diagnostic odds ratio using dermoscopy 4.6 times higher compared to naked eye
  - Sensitivity = 90% D v 71% NE
  - Specificity = 90% D v 81% NE
  - Dramatic reduction in unnecessary excision rates
    - Benign/Malignant ratio of excised melanocytic lesions reduced from 14:1 to 4:1 or better
    - In an RCT combining dermoscopy and digital monitoring 64% reduction in referrals/excisions of benign pigmented lesions



# How Much Time Does It Add?

- Increased time of Clinical Skin Exam from 72s to 142s
  - Interestingly, dermoscopy duration increased with number of lesions
  - Not so for naked eye examination
- To screen or not to screen? USPSTF concluded 2016 Insufficient evidence, update in progress
  - High risk individuals?

# How Much Training Do I Need?

- As little as a 60 minute workshop has been shown to enhance post-test sensitivity for skin cancer identification
  - Resources at end of slide deck range from self paced online, paced online with expert tutors, multi-day workshops
- Many different systems/algorithms (ABC, Menzies, 7 point rule, CASH, Chaos and Clues, BLINK, 2-Step)
- It is an adjunct to your clinical judgement...when in doubt, cut it out (or refer)!!!

# Should I Bother?

Observational Study > [Ann Oncol. 2018 Aug 1;29\(8\):1836-1842. doi: 10.1093/annonc/mdy166.](#)

## Man against machine: diagnostic performance of a deep learning convolutional neural network for dermoscopic melanoma recognition in comparison to 58 dermatologists

**Results:** In level-I dermatologists achieved a mean ( $\pm$ standard deviation) sensitivity and specificity for lesion classification of 86.6% ( $\pm$ 9.3%) and 71.3% ( $\pm$ 11.2%), respectively. More clinical information (level-II) improved the sensitivity to 88.9% ( $\pm$ 9.6%,  $P = 0.19$ ) and specificity to 75.7% ( $\pm$ 11.7%,  $P < 0.05$ ). The CNN ROC curve revealed a higher specificity of 82.5% when compared with dermatologists in level-I (71.3%,  $P < 0.01$ ) and level-II (75.7%,  $P < 0.01$ ) at their sensitivities of 86.6% and 88.9%, respectively. The CNN ROC AUC was greater than the mean ROC area of dermatologists (0.86 versus 0.79,  $P < 0.01$ ). The CNN scored results close to the top three algorithms of the ISBI 2016 challenge.

**Conclusions:** For the first time we compared a CNN's diagnostic performance with a large international group of 58 dermatologists, including 30 experts. Most dermatologists were outperformed by the CNN. Irrespective of any physicians' experience, they may benefit from assistance by a CNN's image classification.

# 3 Point Checklist

1. Dermoscopic asymmetry of color and structure
2. Atypical pigment network (network with irregular holes or thick lines)
3. Blue-white structures (previously known as veil and regression structures)

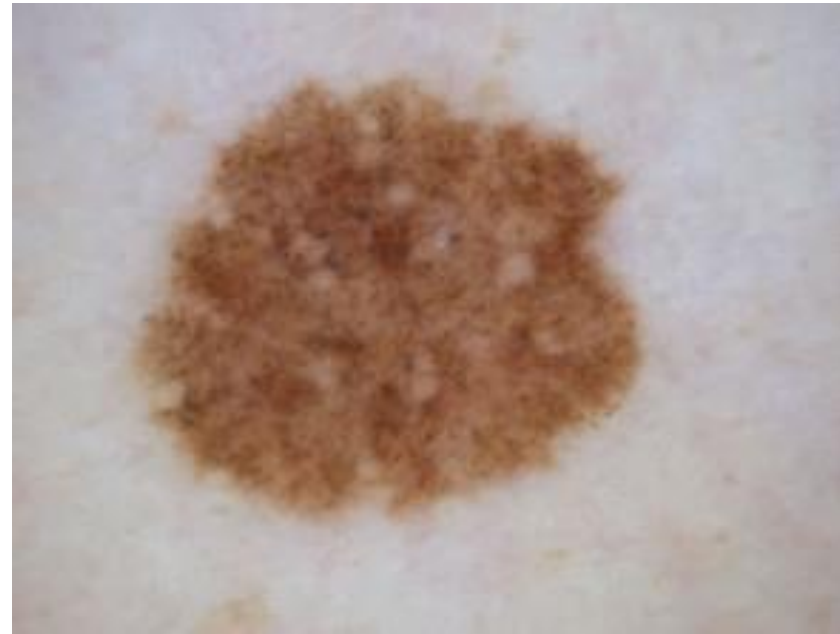
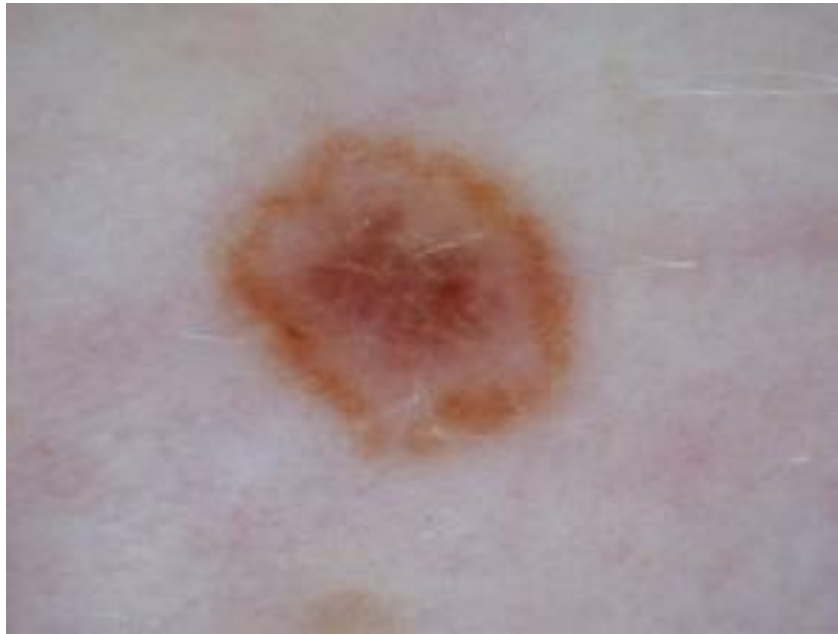
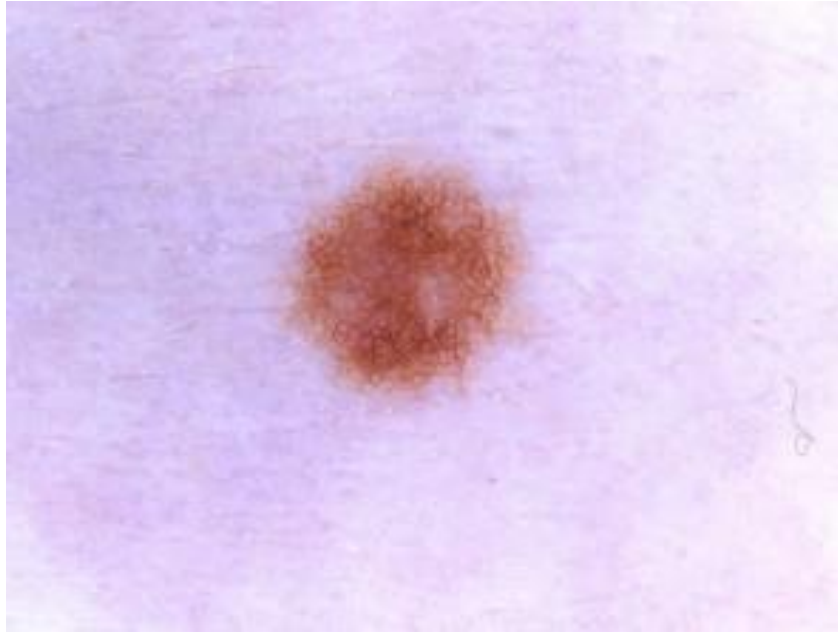
Two or greater has high likelihood melanoma

## Asymmetry of Color/Structure

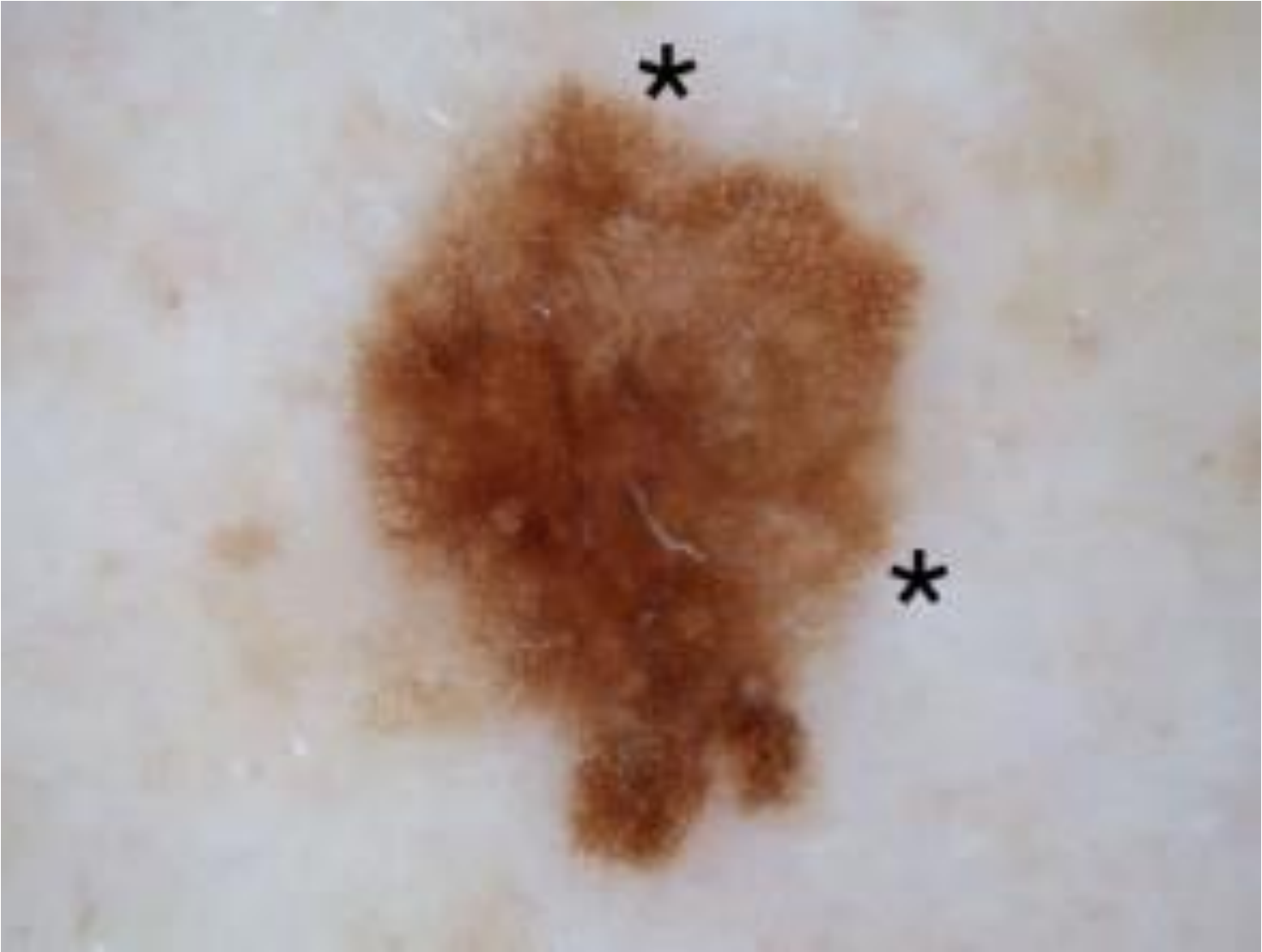


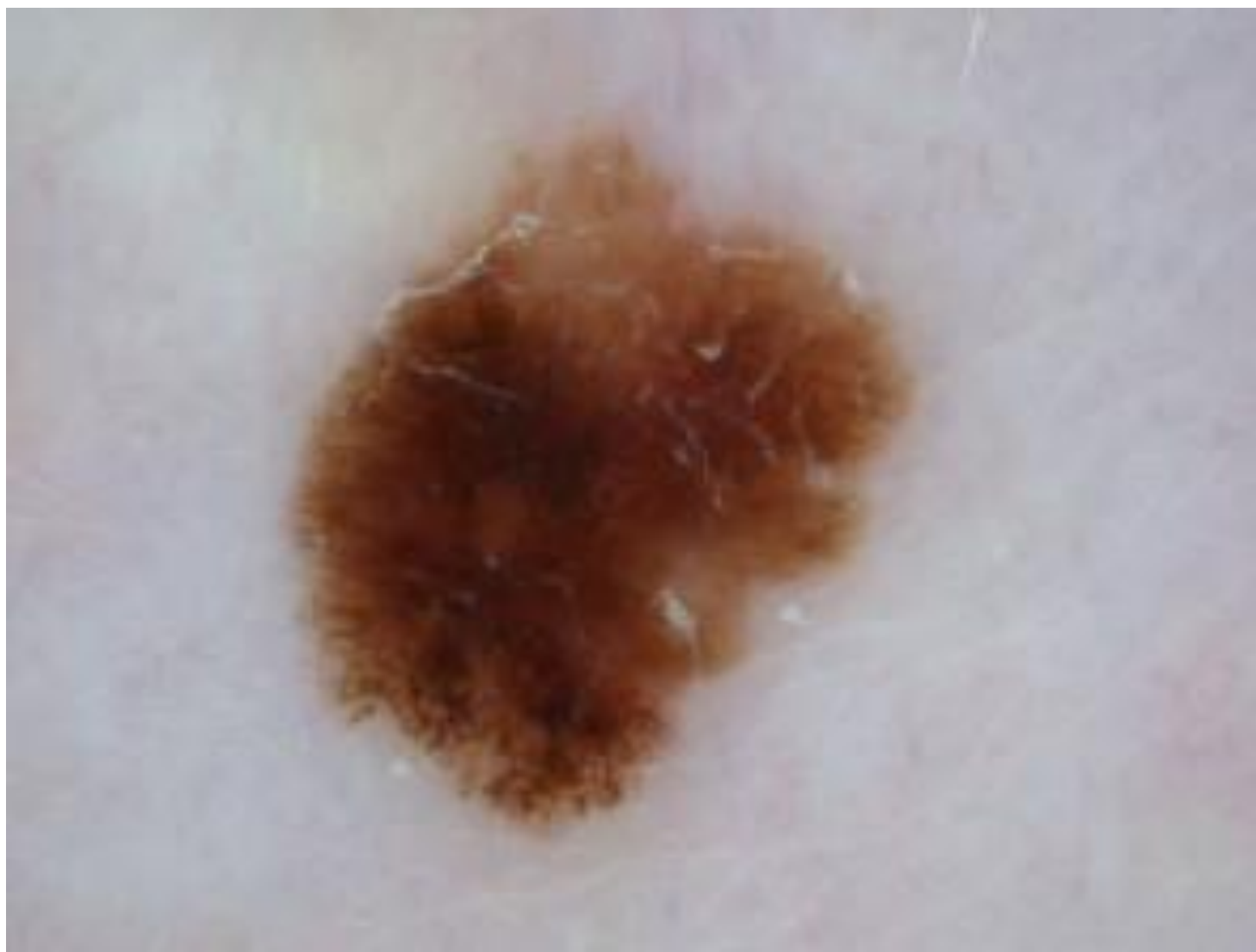


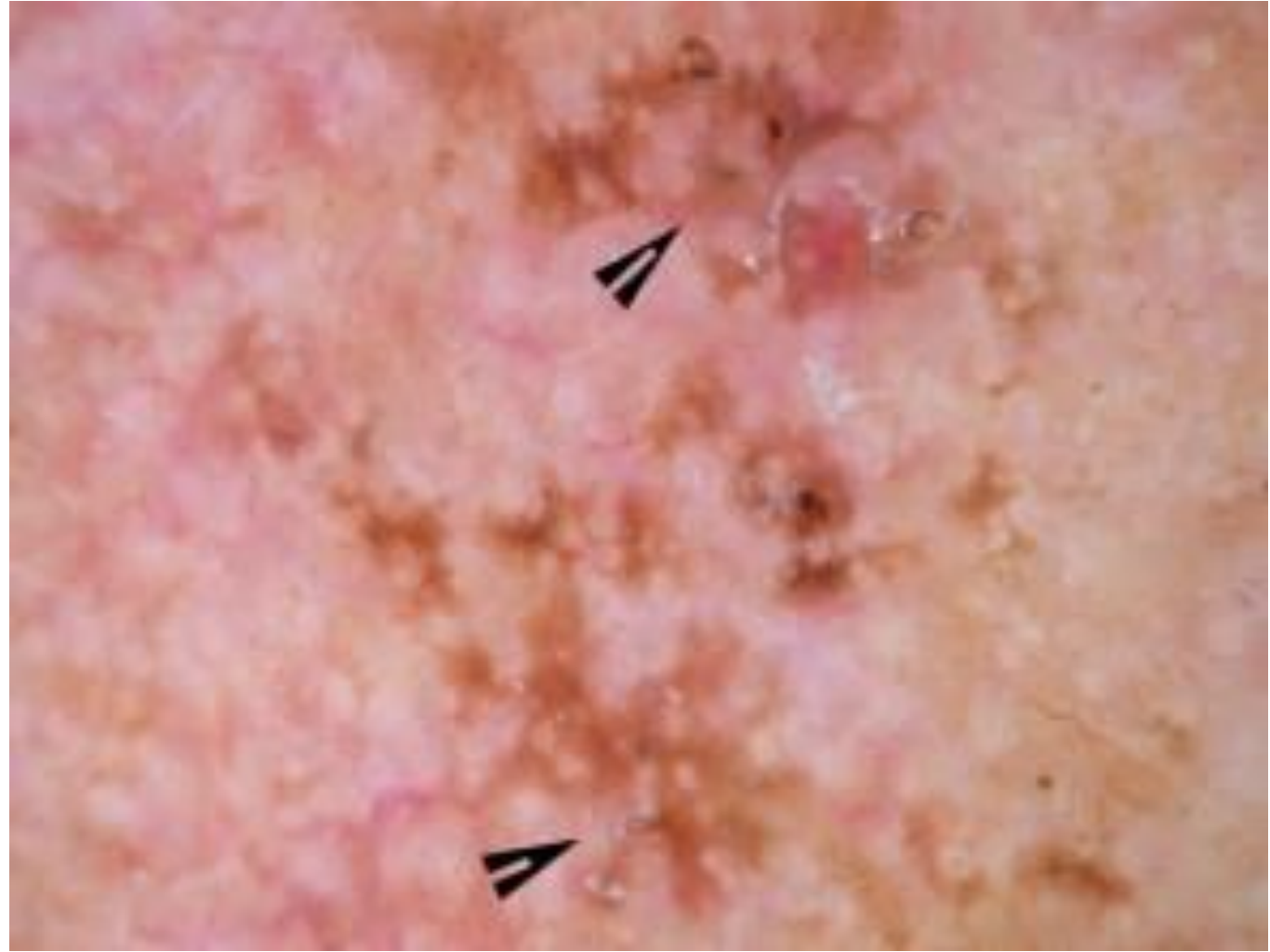


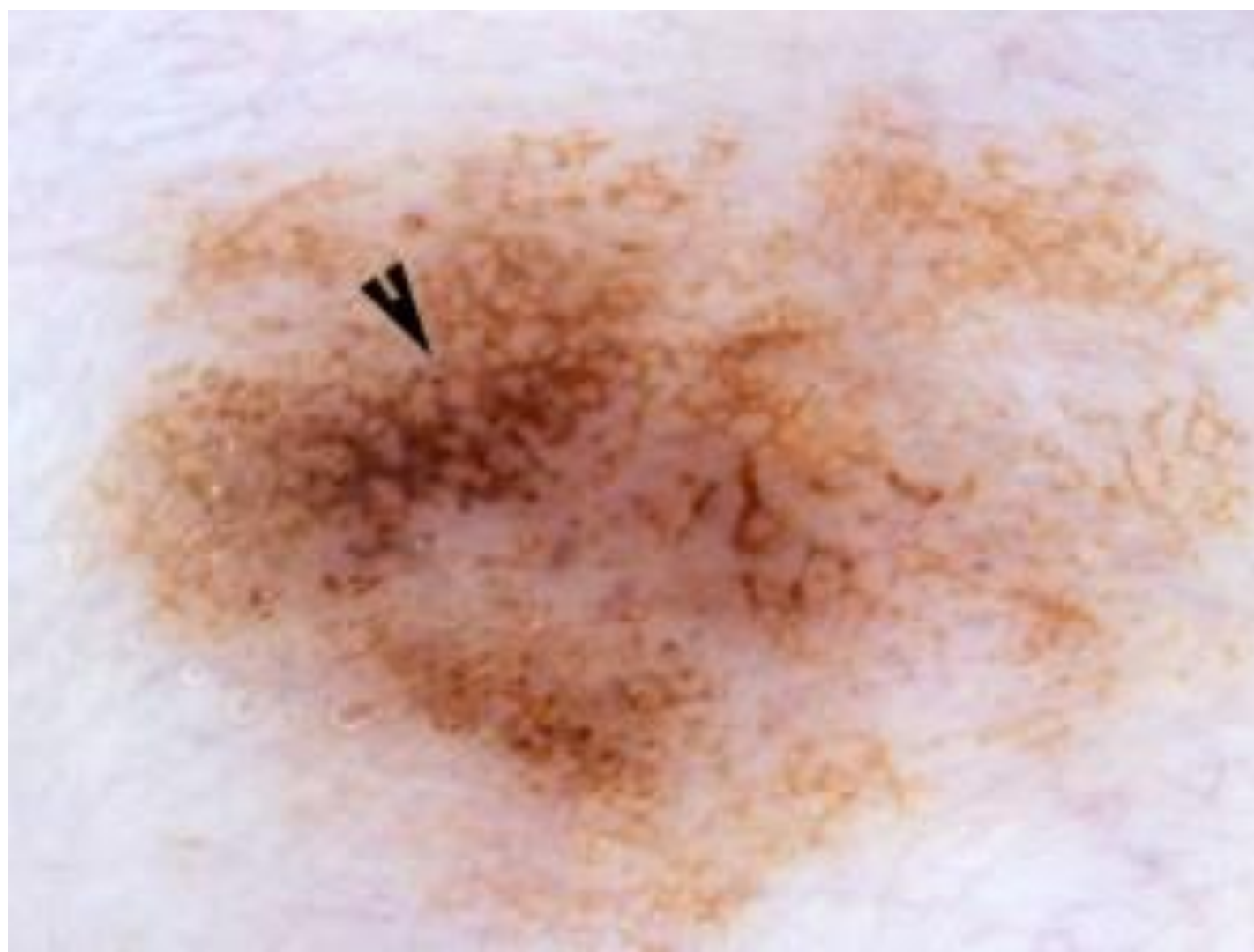


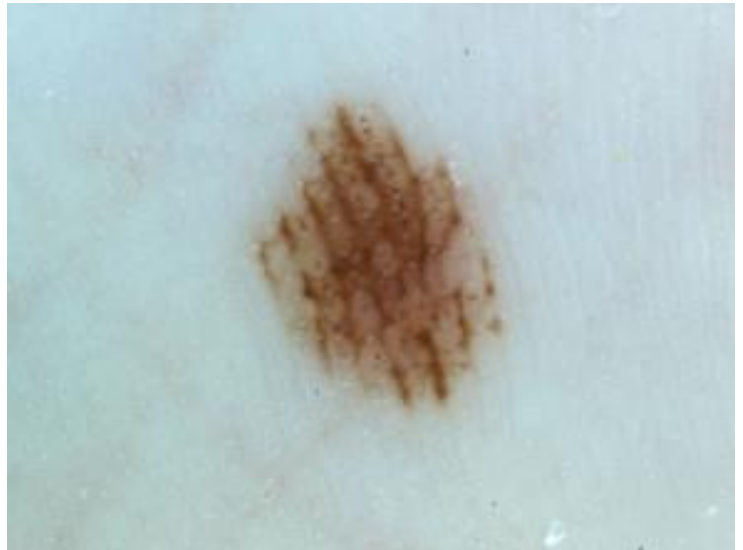
Atypical Pigment Network



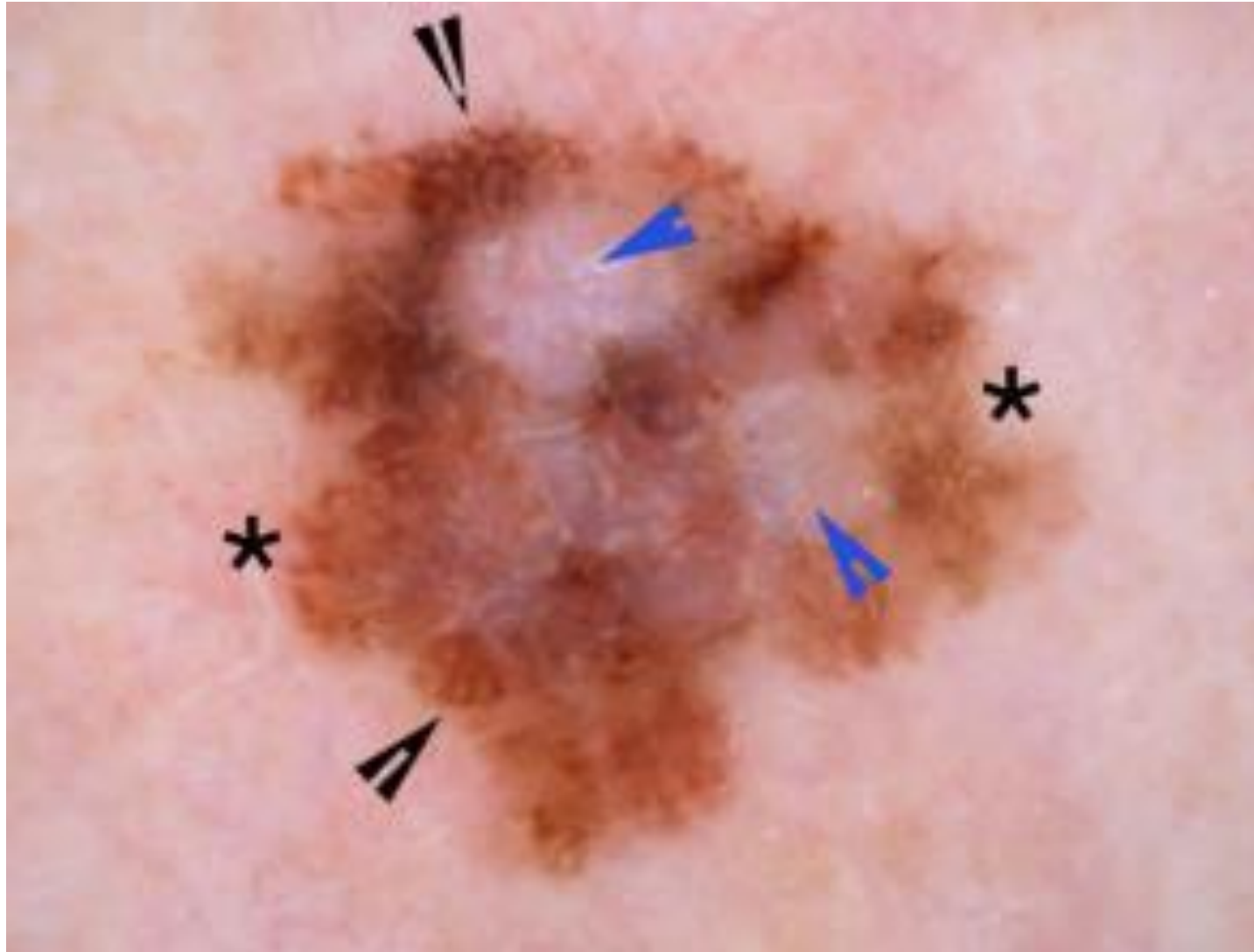


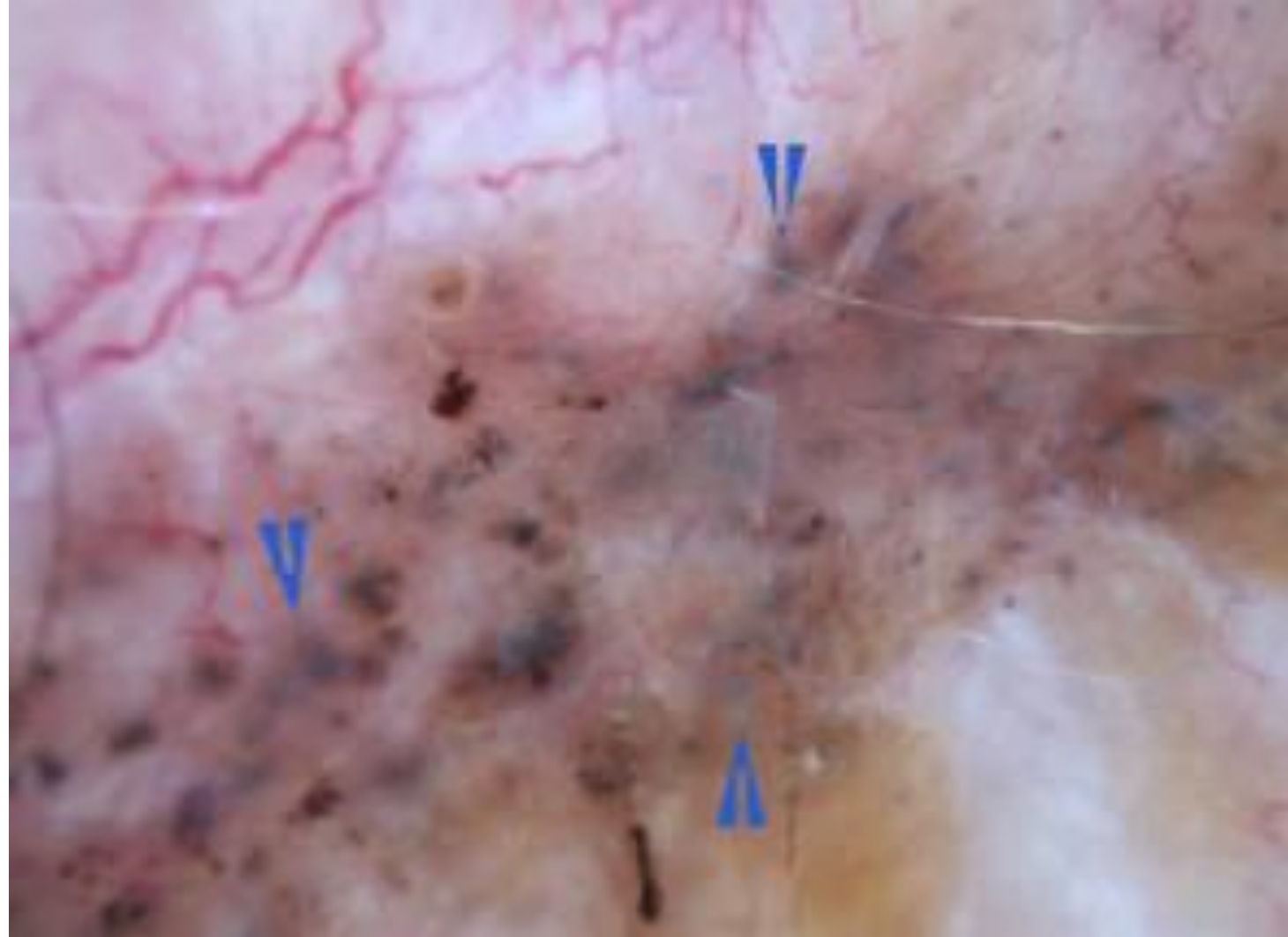


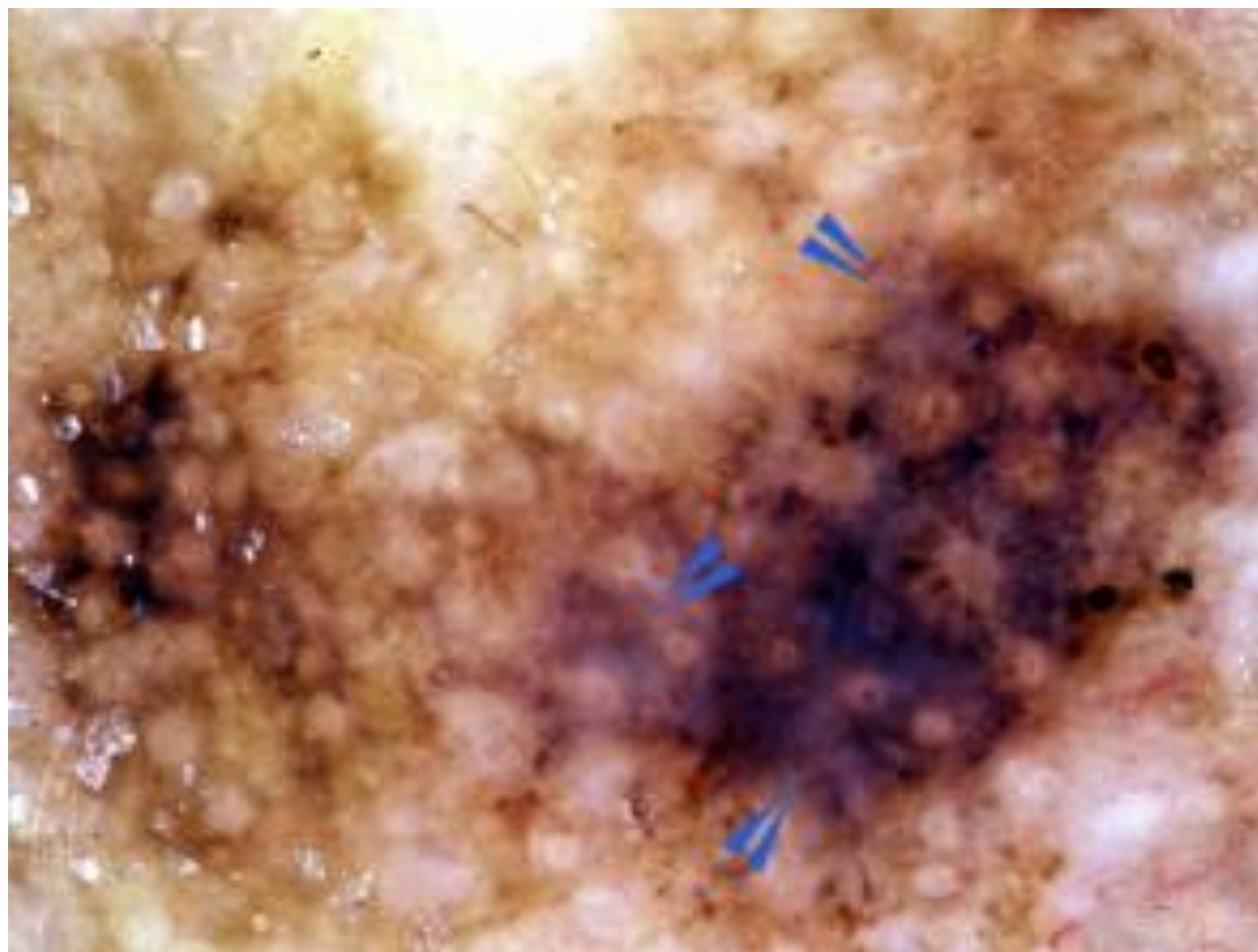




## Blue/White Structures

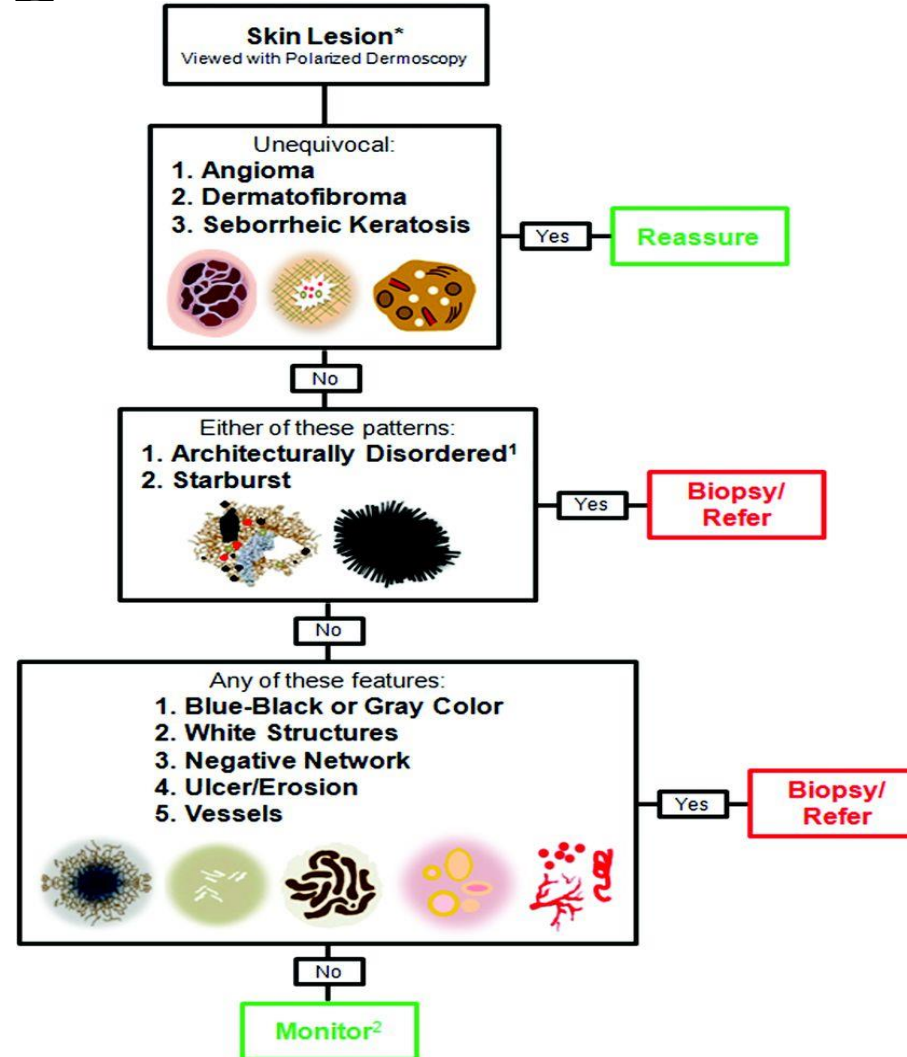








# Triage Amalgamated Dermoscopic Algorithm

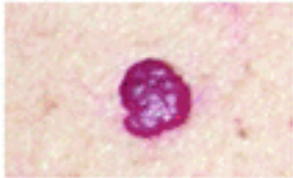


\*Exception: Lesions on palms, soles, or nails

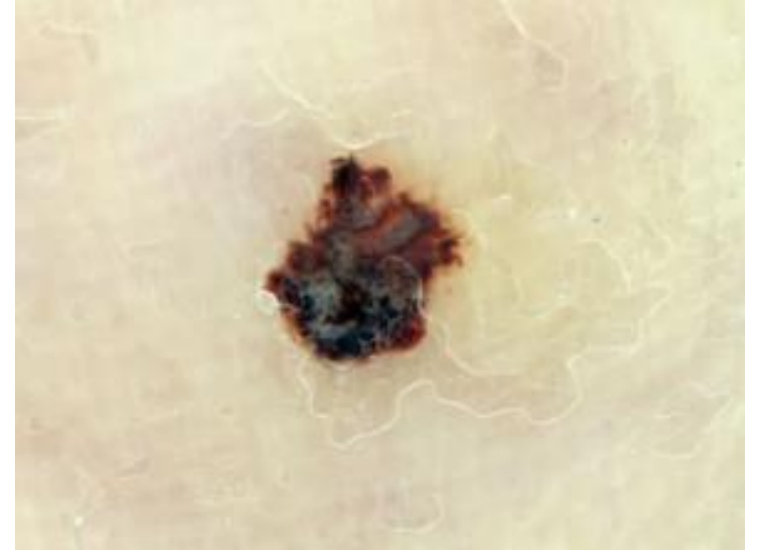
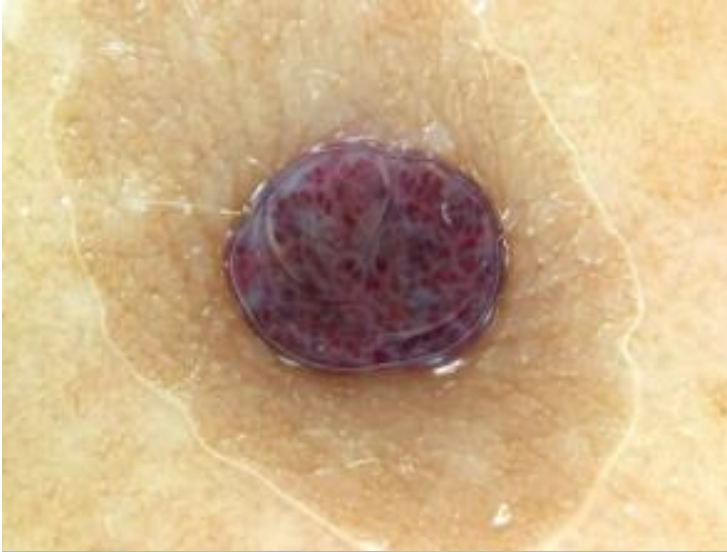
¹Disorganized or asymmetric distribution of colors and/or structures

²Patient should continue self monitoring and any changes or new symptoms (i.e., itching, bleeding) brought to the attention of their physician

Step 1: Identify Common Benign Growths

| Clinically                                                                                                             | Dermoscopically                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <div>Red to Purple Dome-Shaped</div>  | <div>Classic Angioma</div>                 |
| <div>Firm Dimpling</div>              | <div>Classic Dermatofibroma</div>          |
| <div>Keratotic Stuck-On</div>       | <div>Classic Seborrheic Keratosis</div>  |

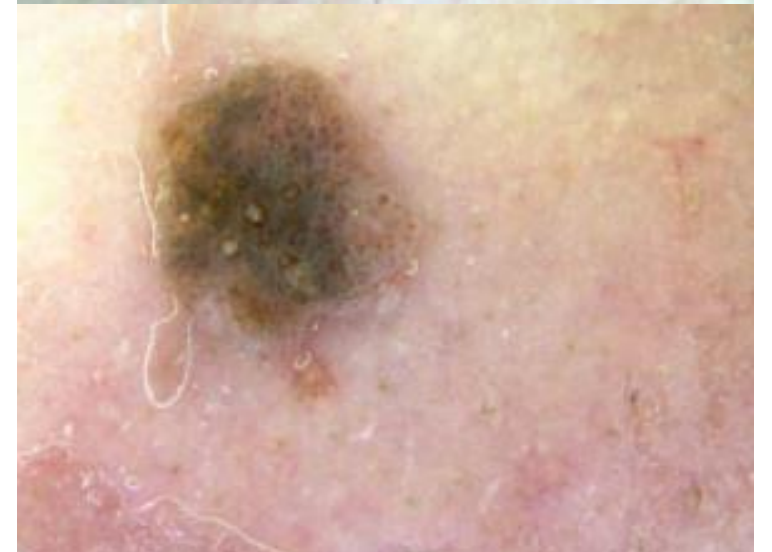
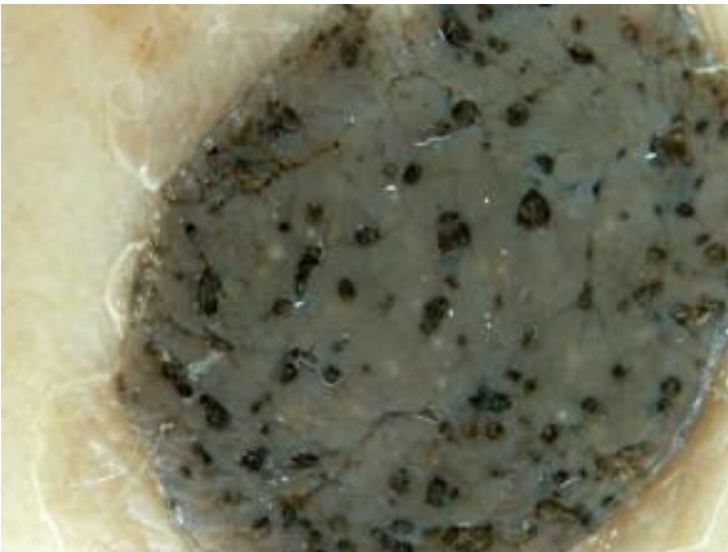
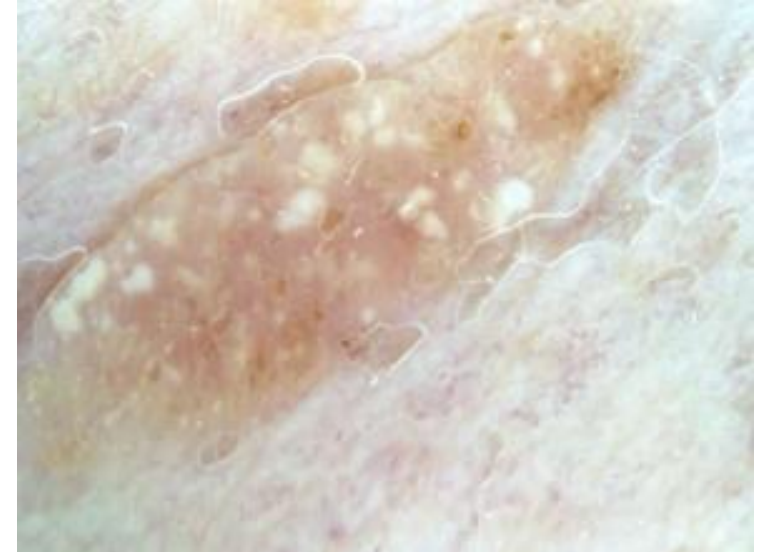
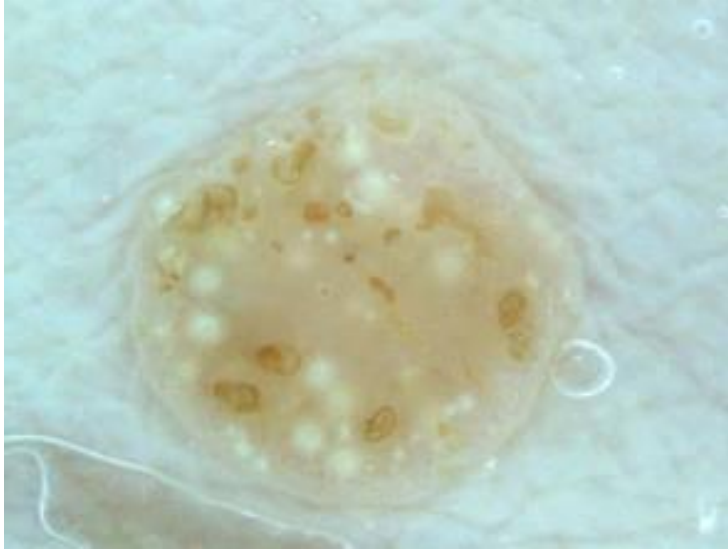
Angioma - Red/Blue/Purple Lacunae, separated by white Septae

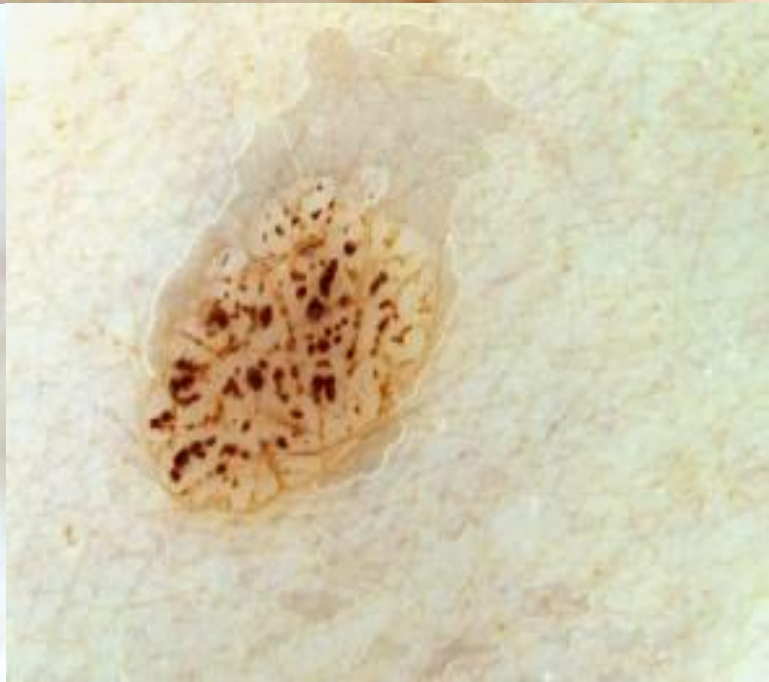
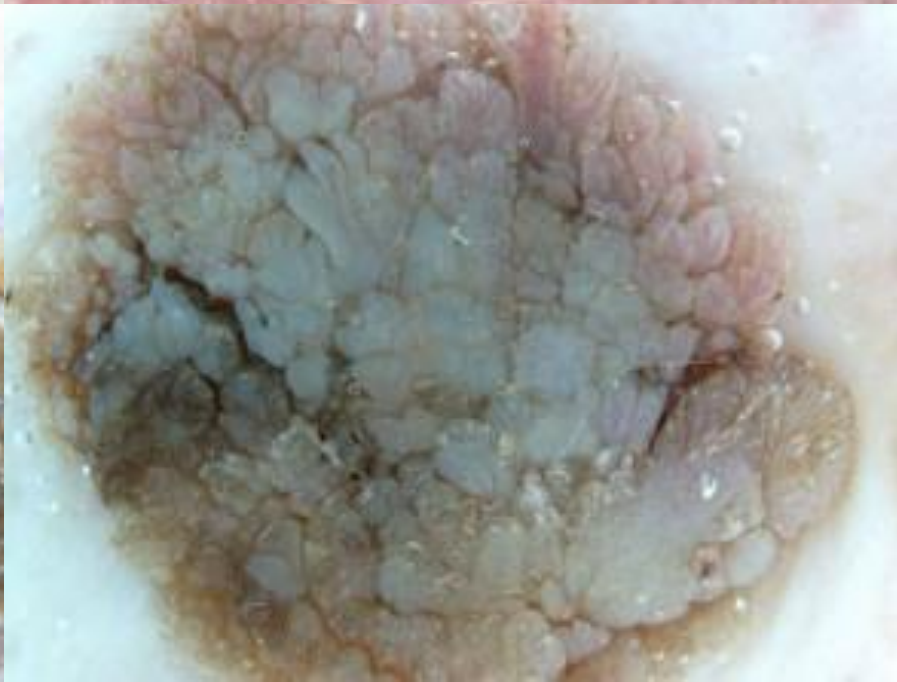
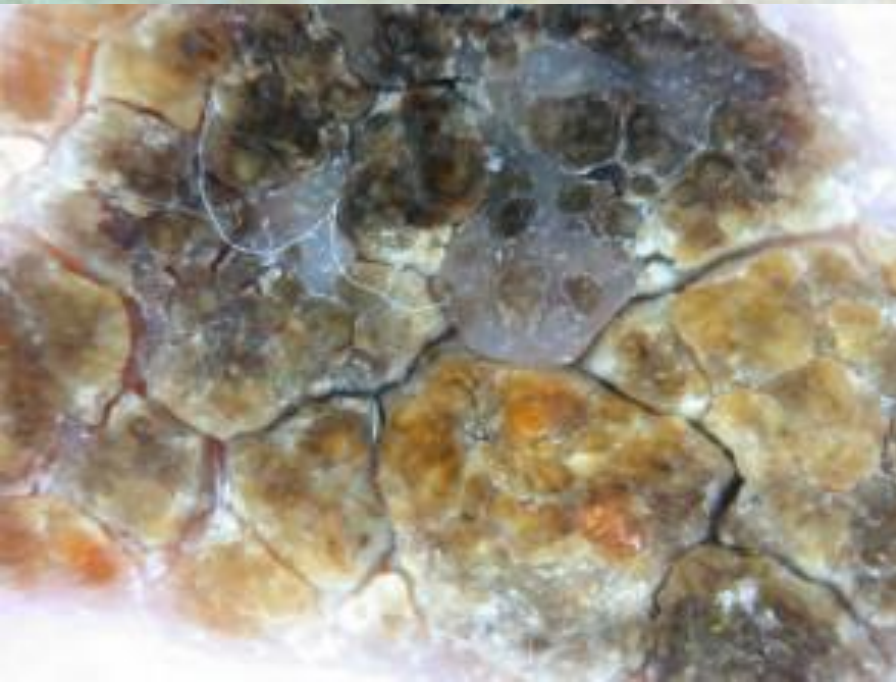
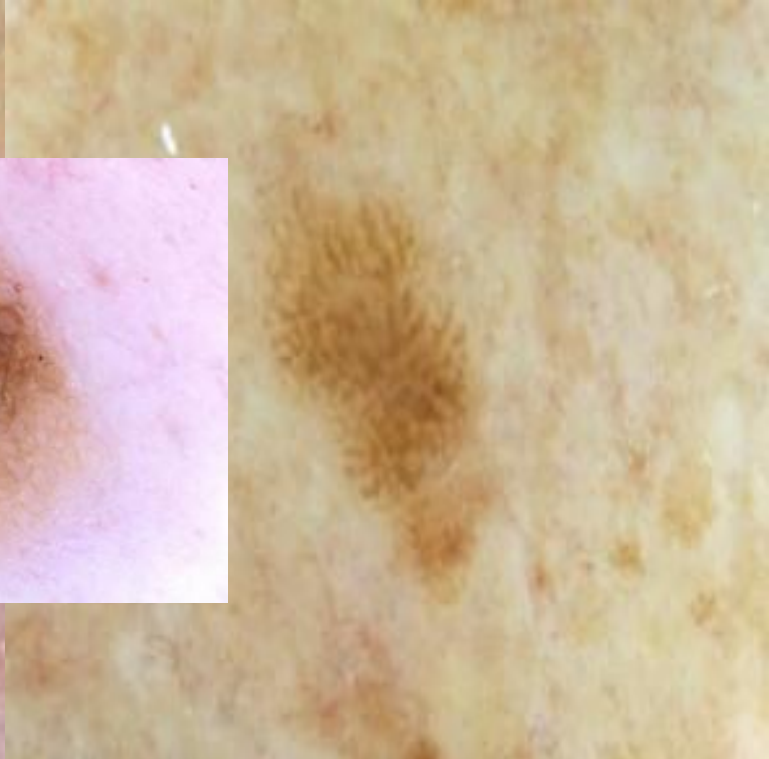
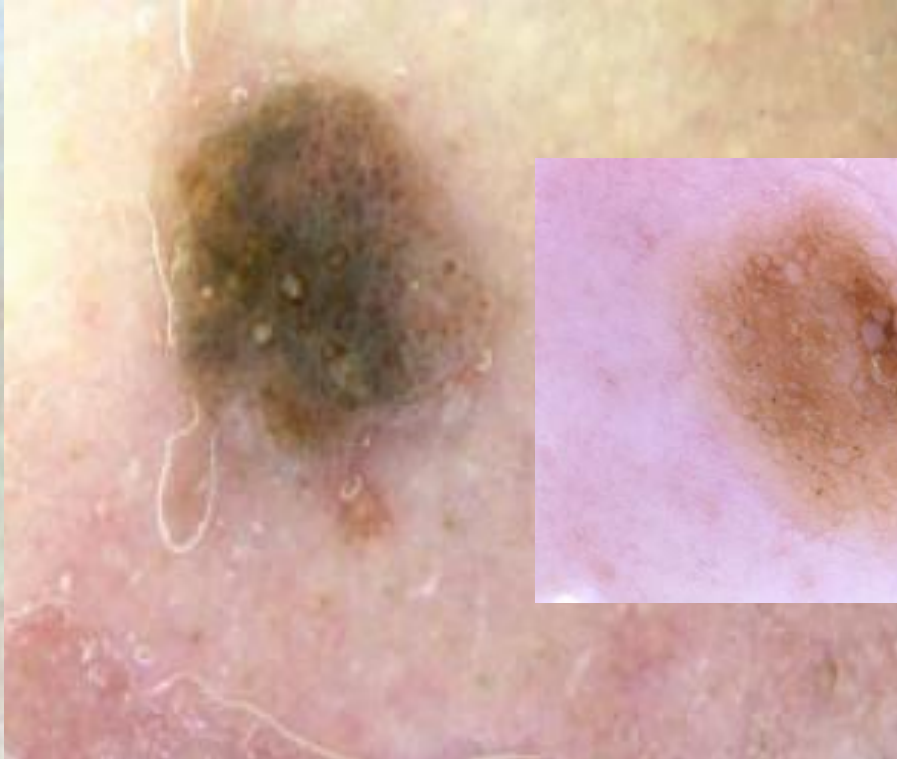
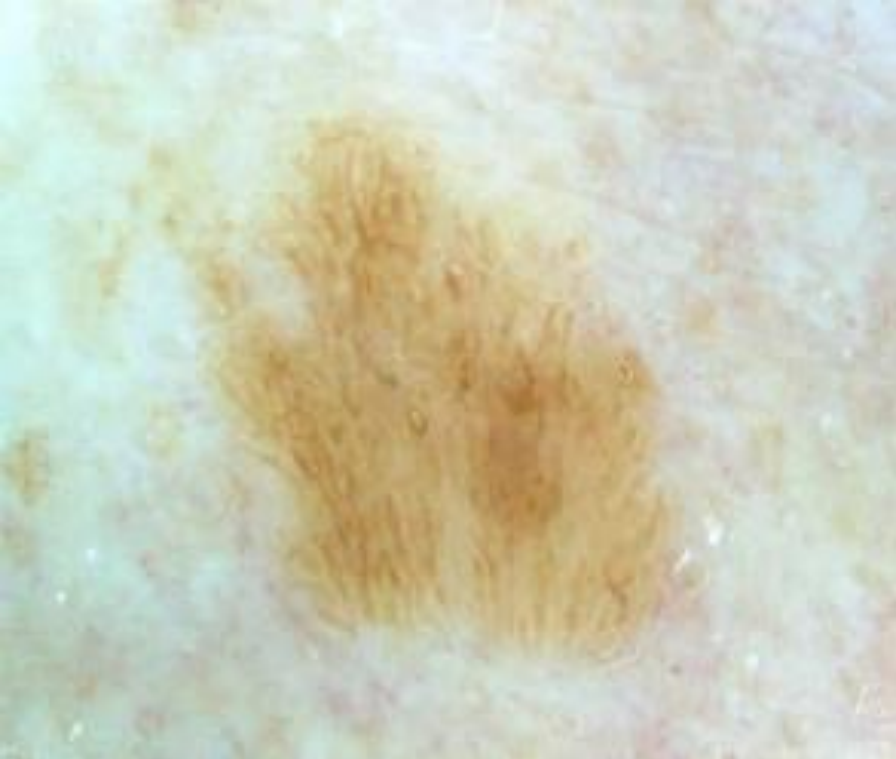


## Dermatofibroma – Central scar-like white area, ring-like brown globules

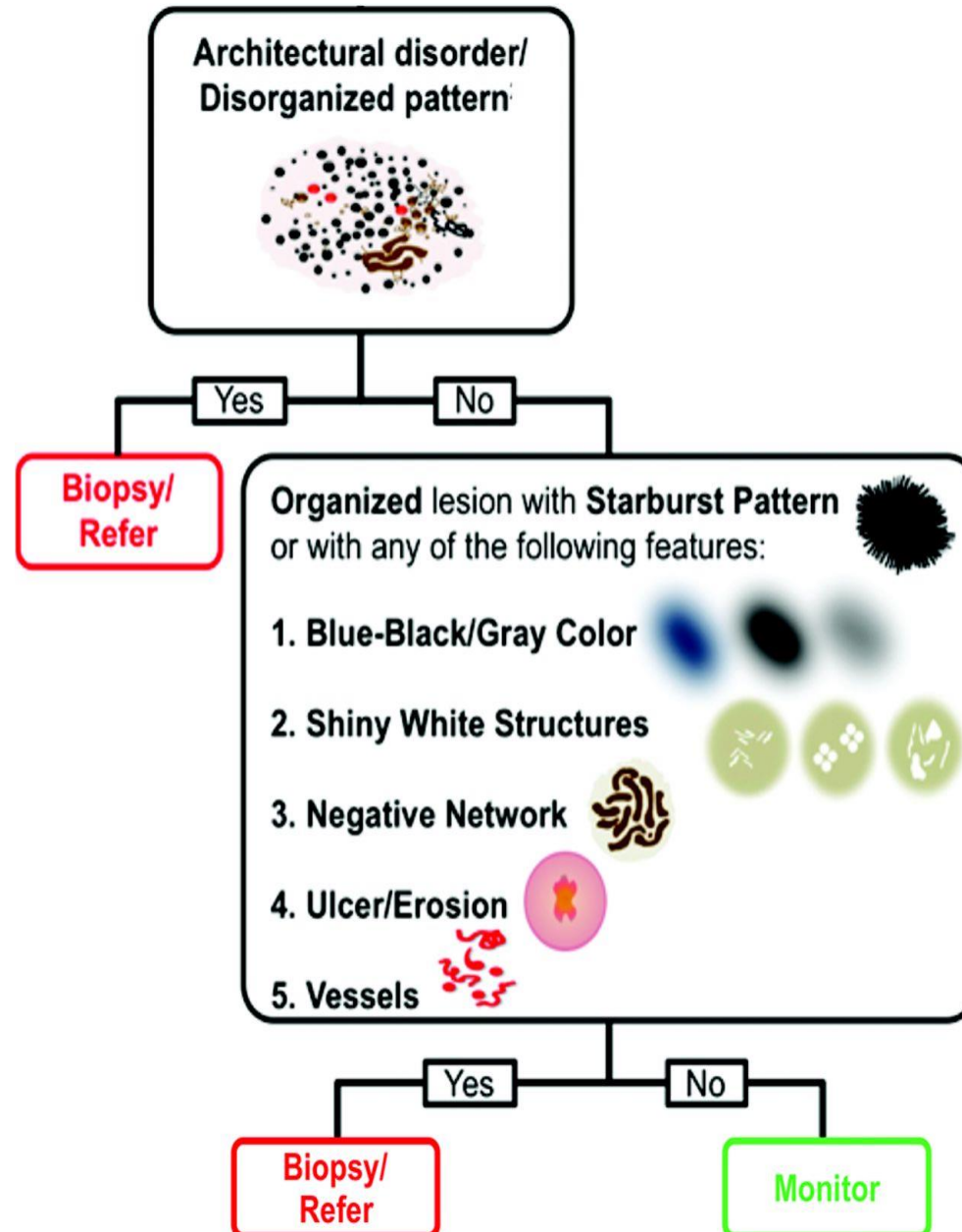


Seborrheic Keratosis – Milia-like cysts, comedo-like openings, gyri & sulci, fingerprint-like, hairpin vessels, moth-eaten border

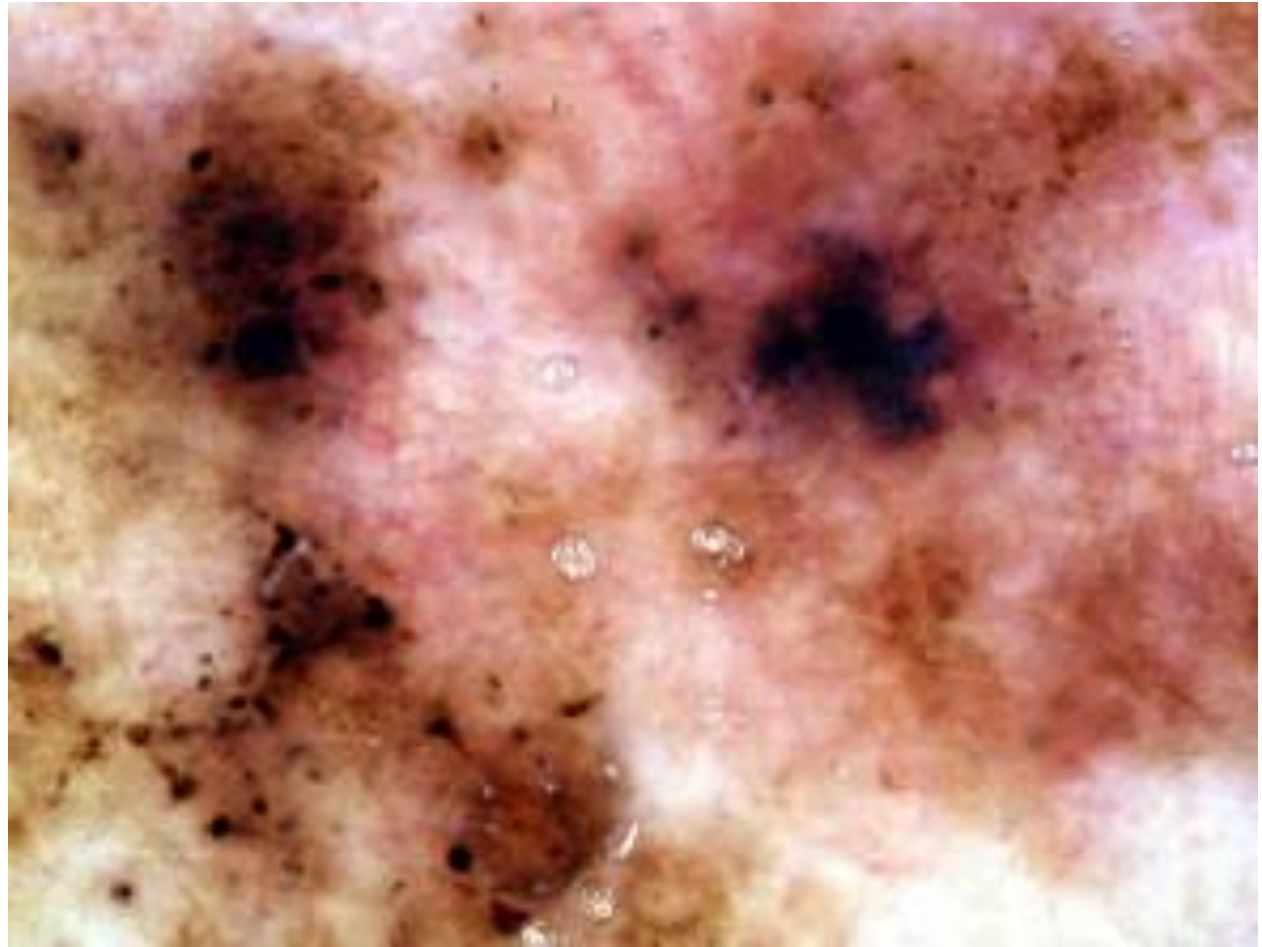




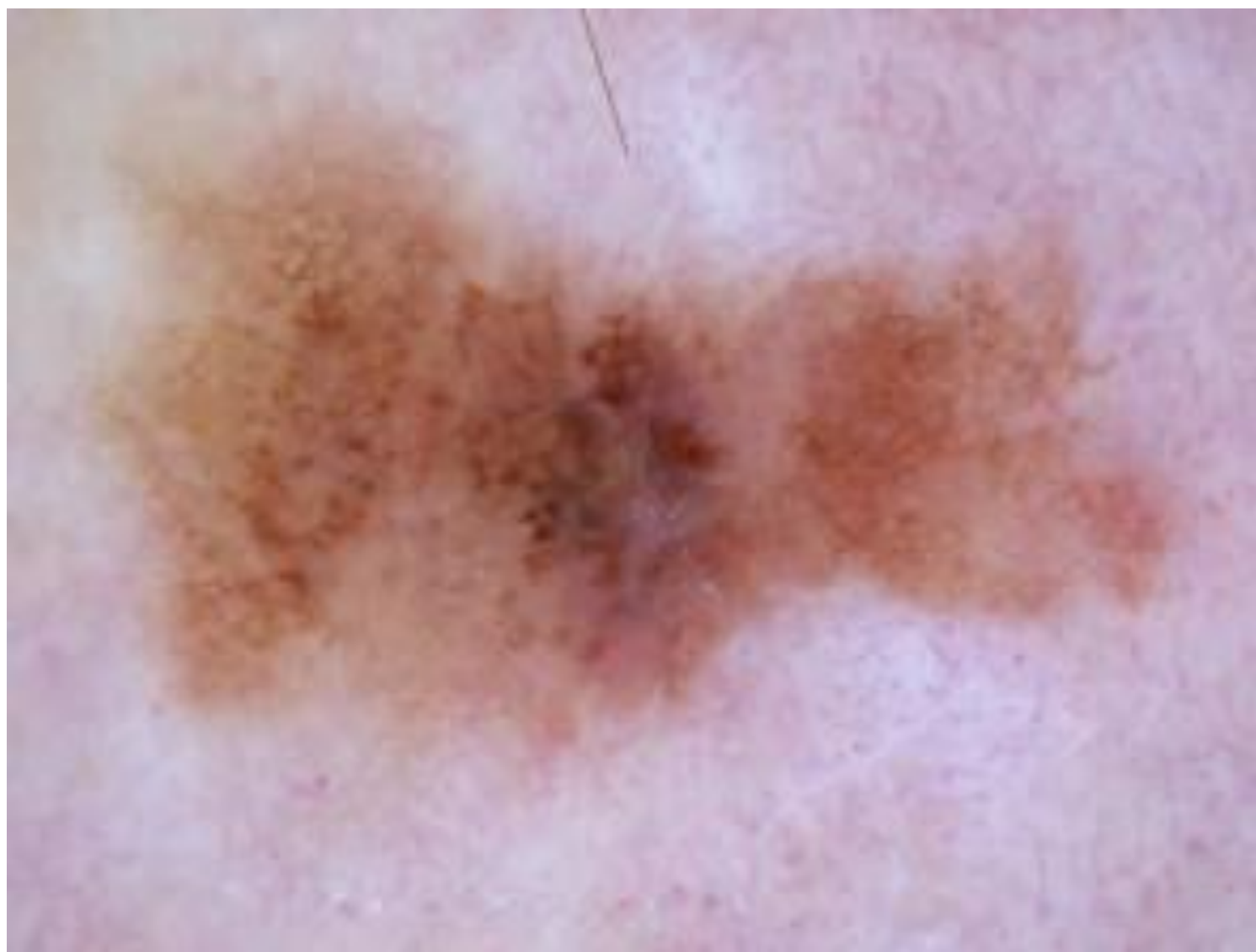
## Step 2 — If it can't be classified as aforementioned

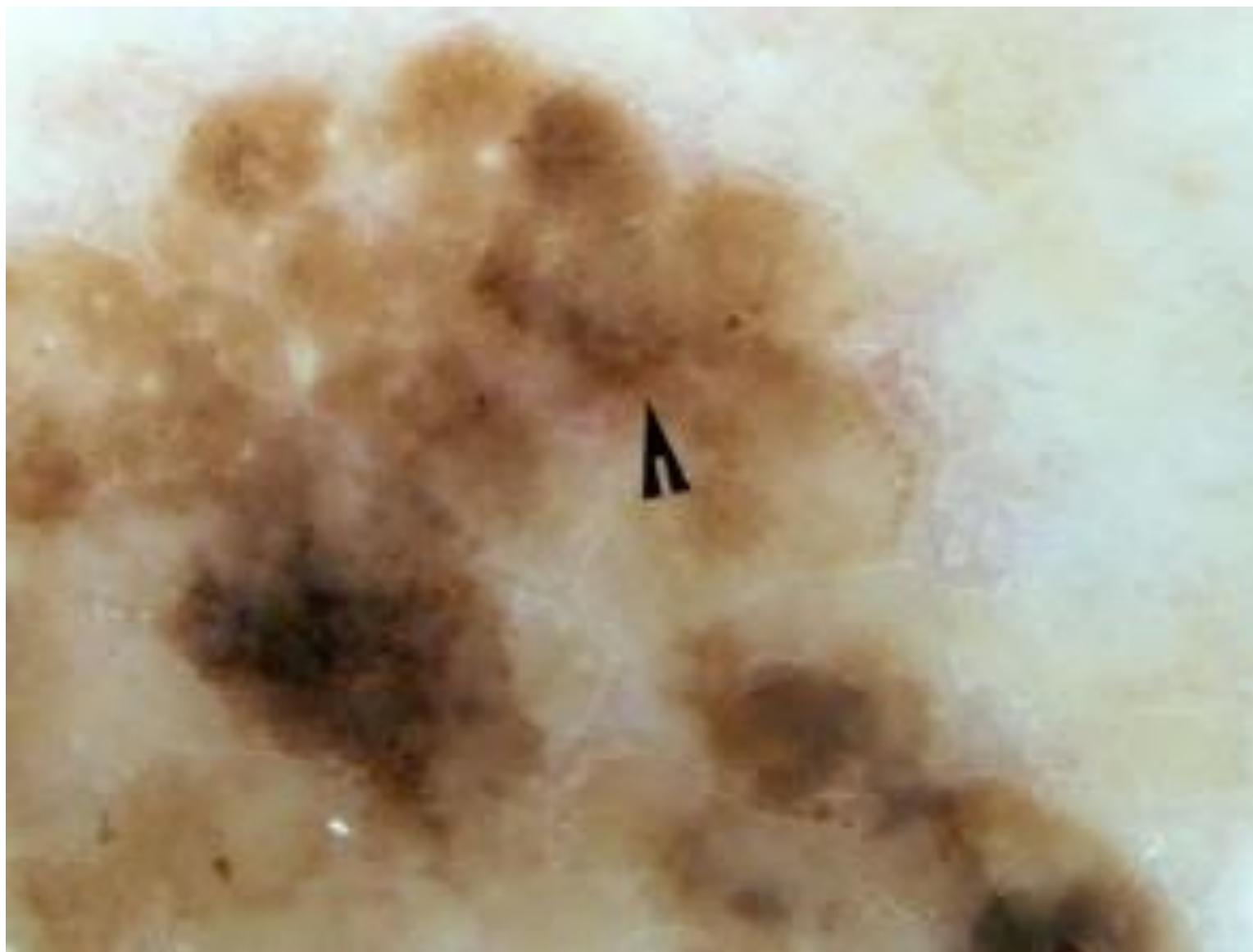


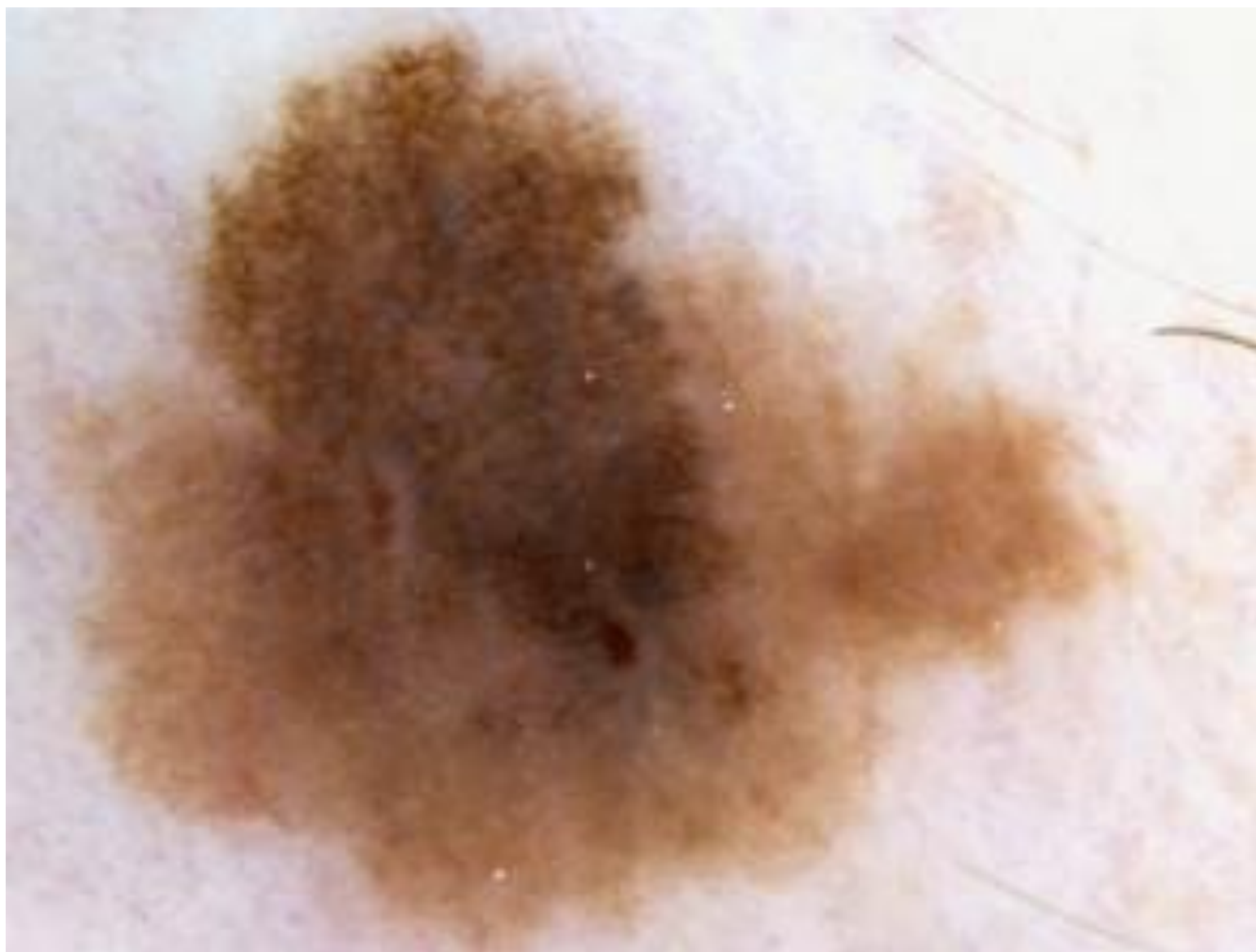






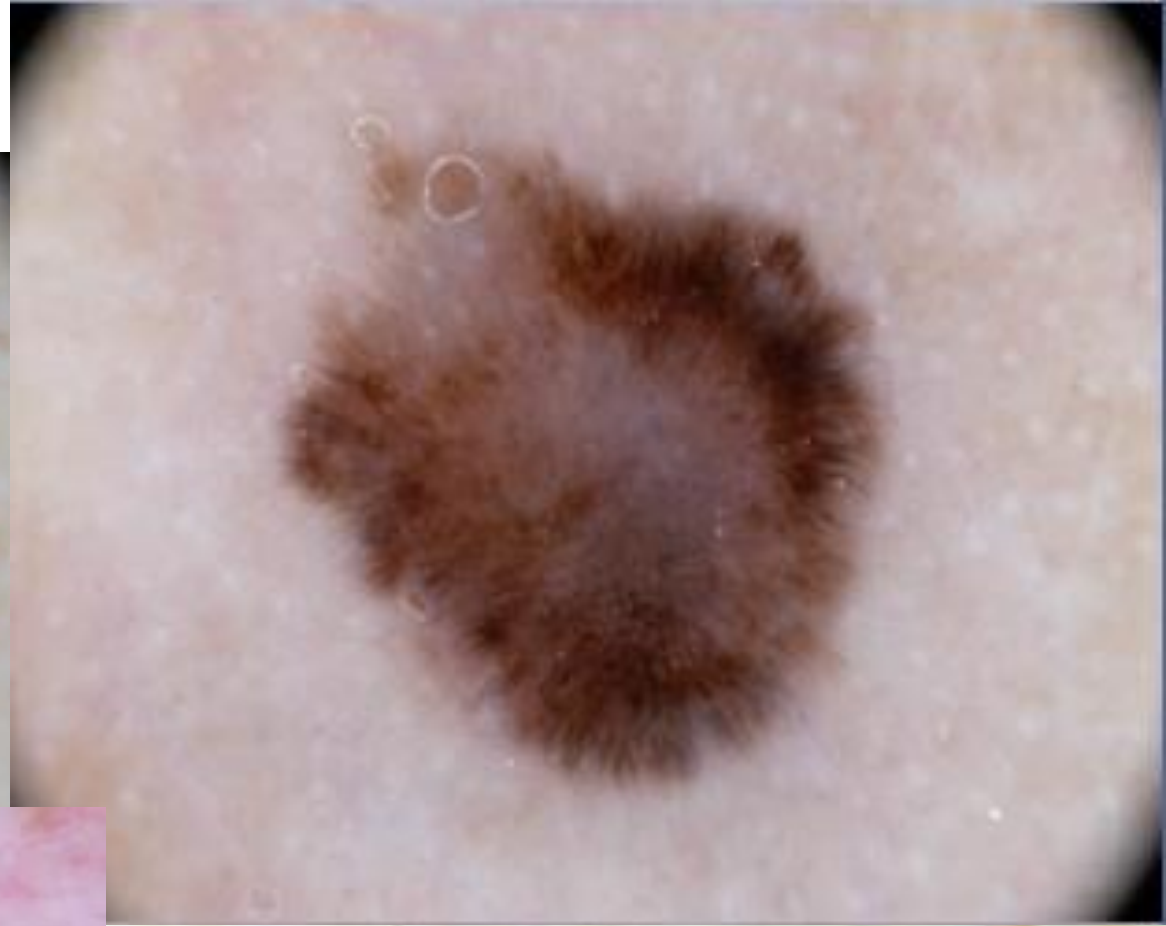




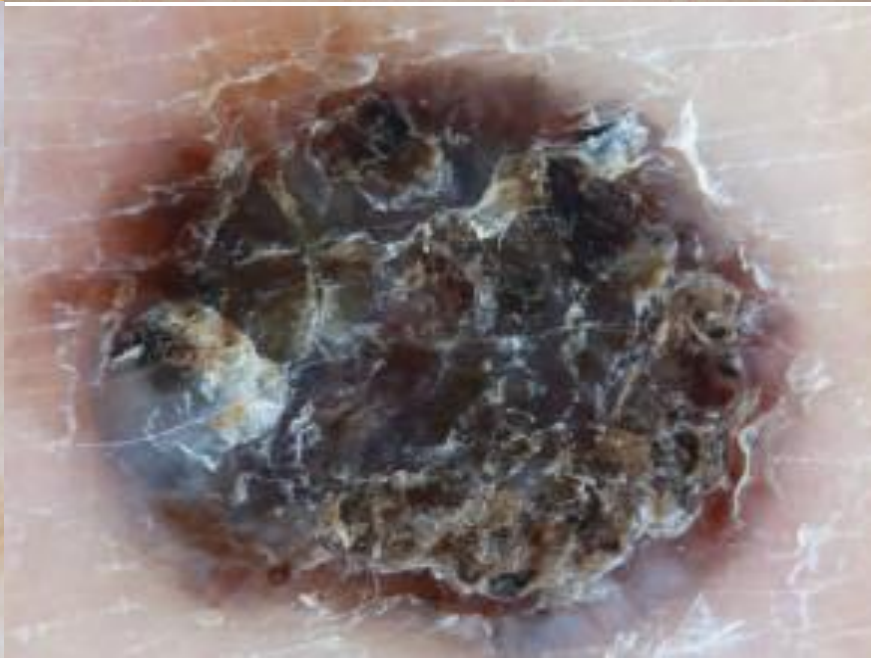
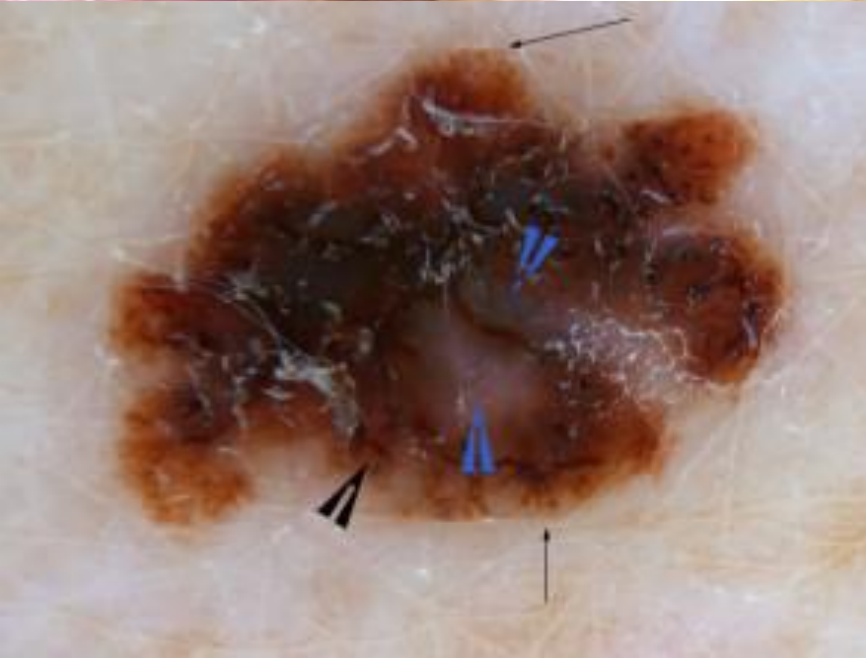
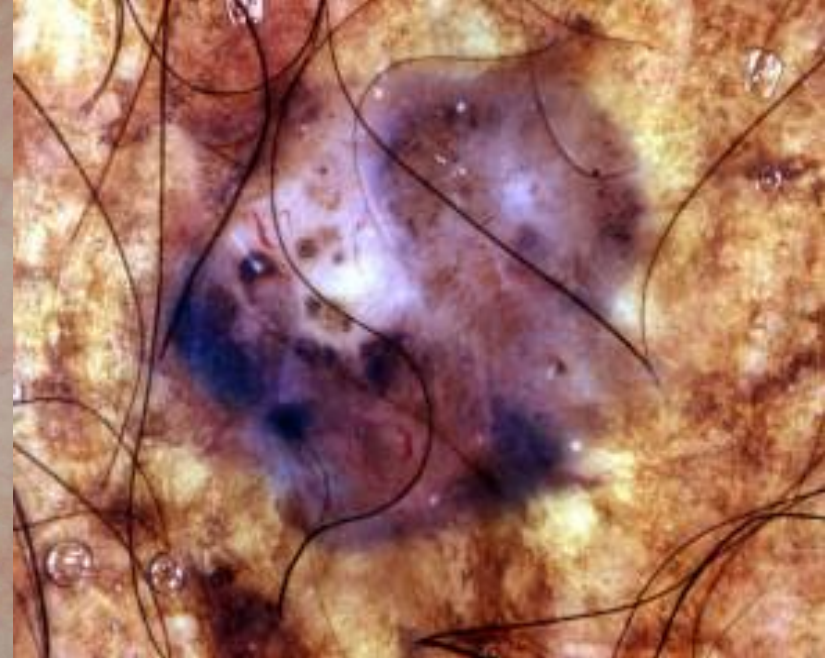
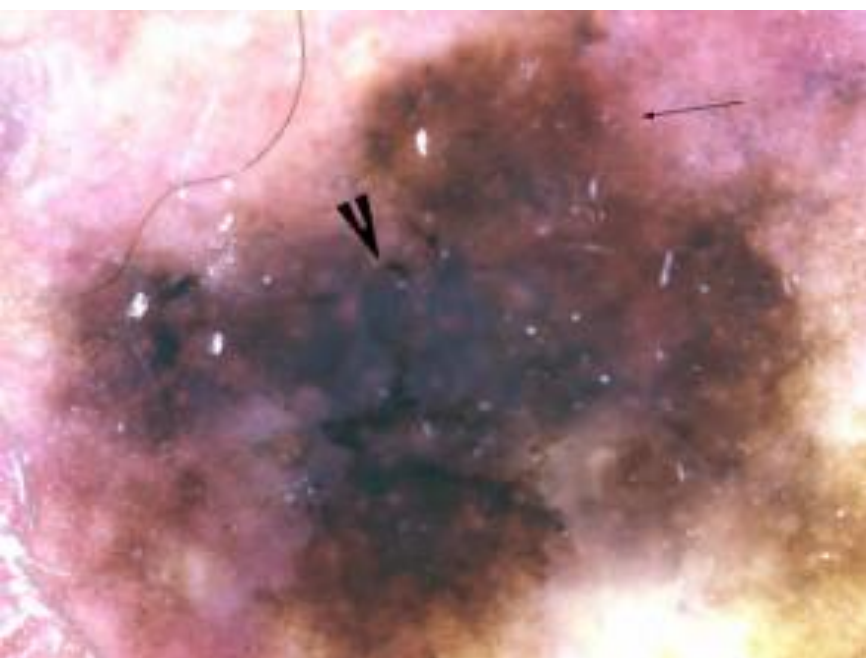




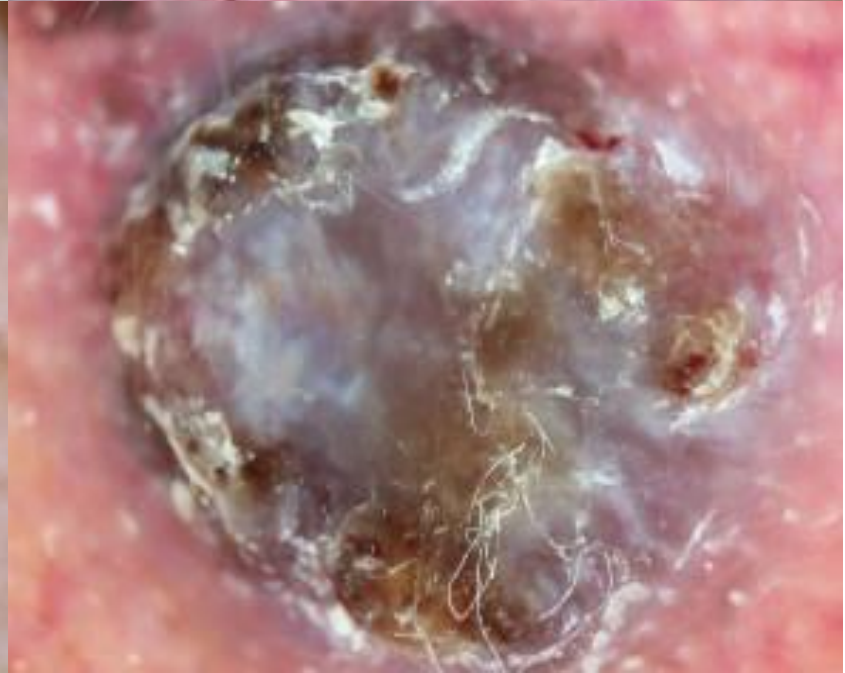
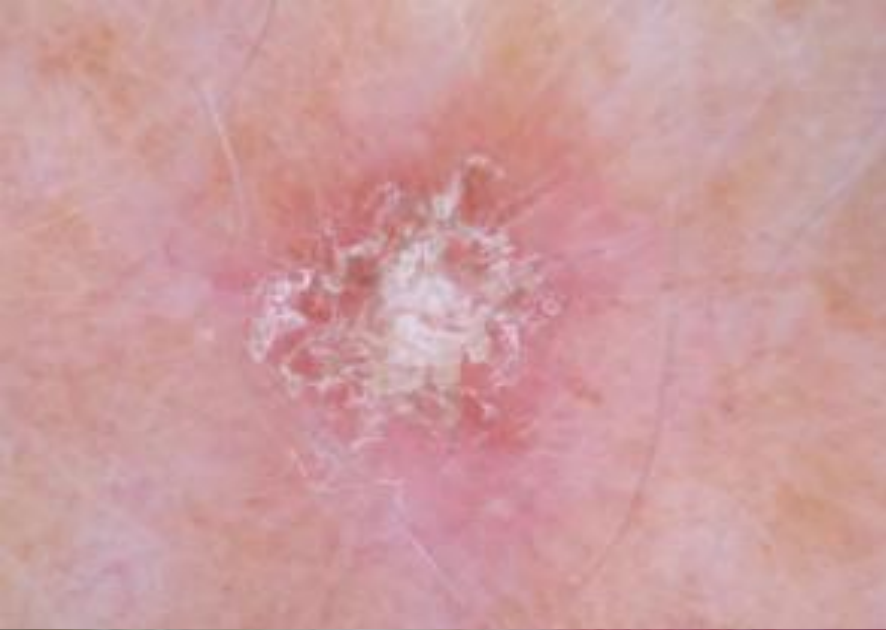
Starburst Pattern/Spitzoid



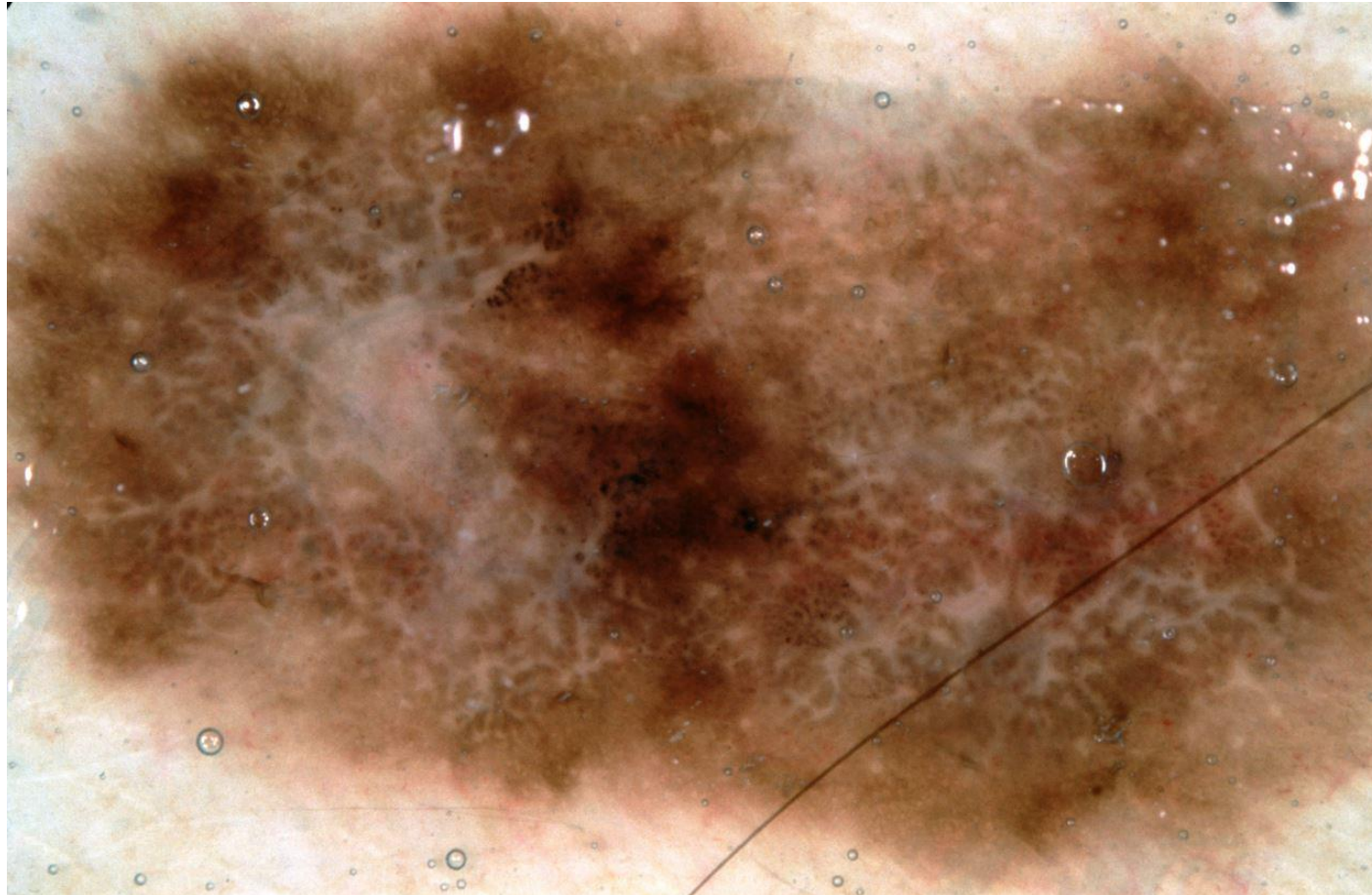
Blue/Black/Grey



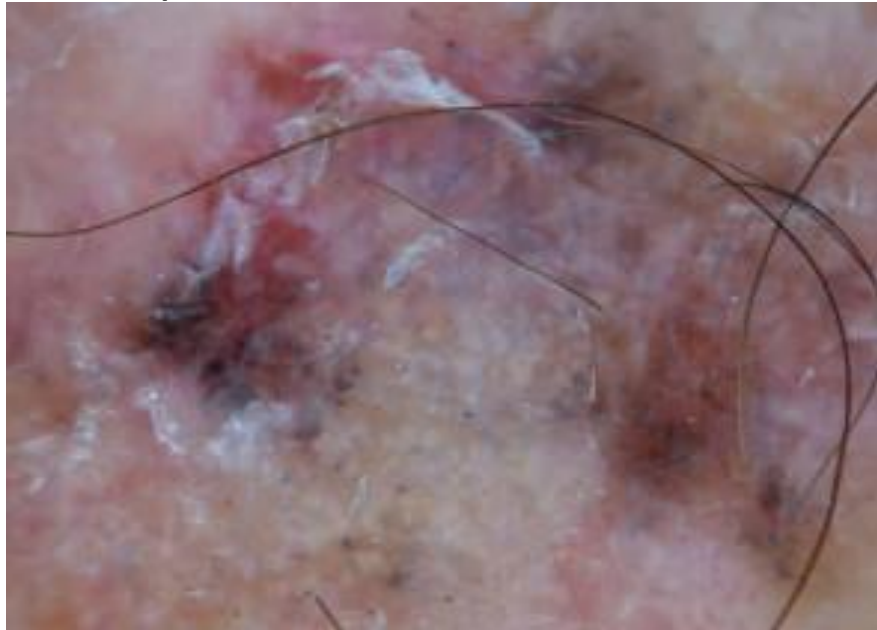
## Shiny White Structures



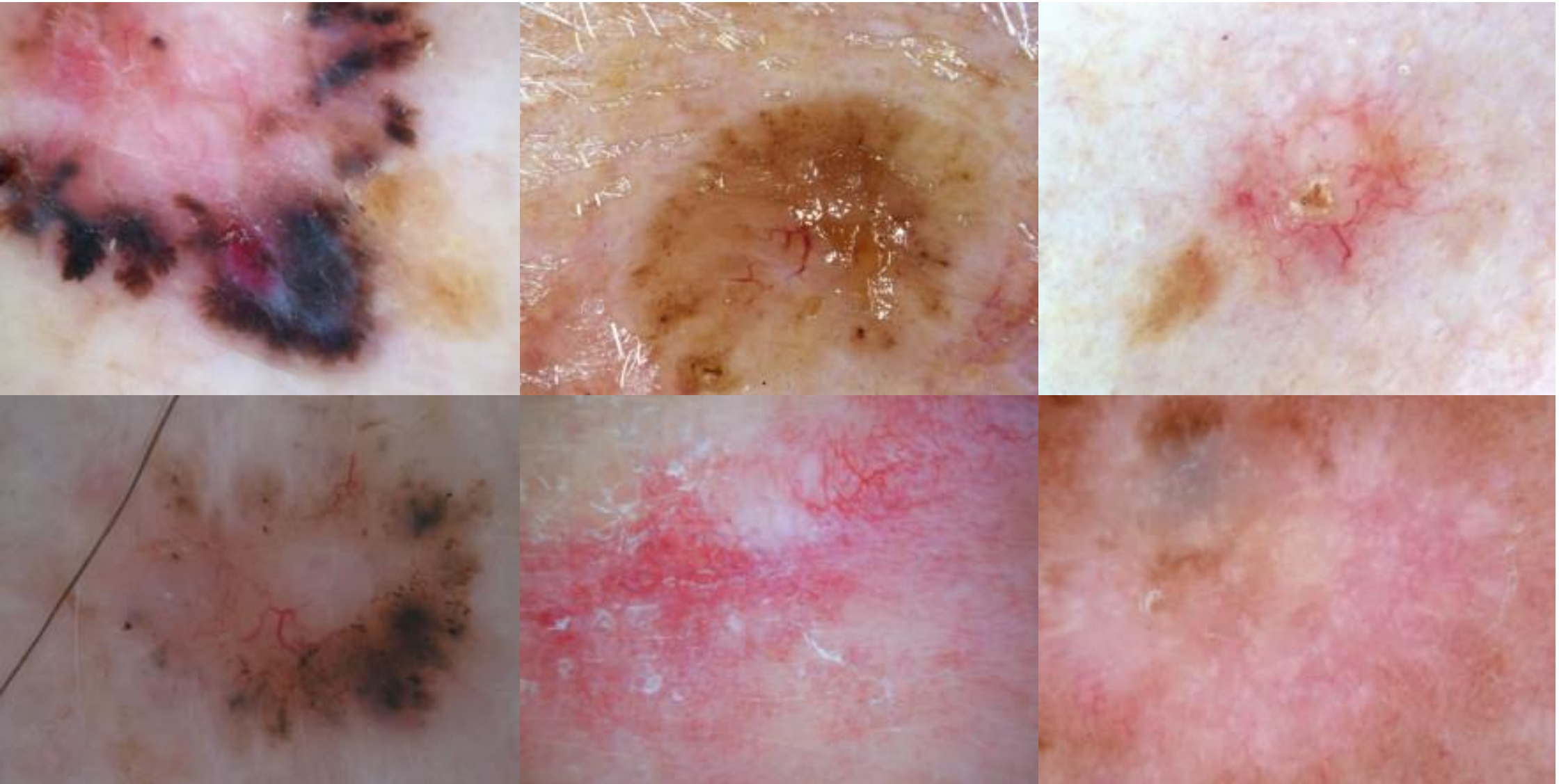
## Negative Network

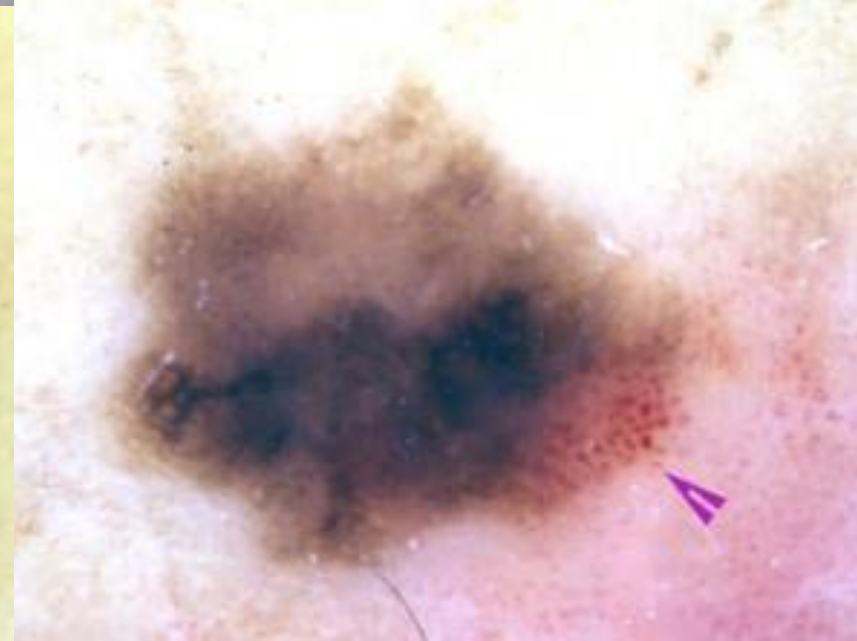
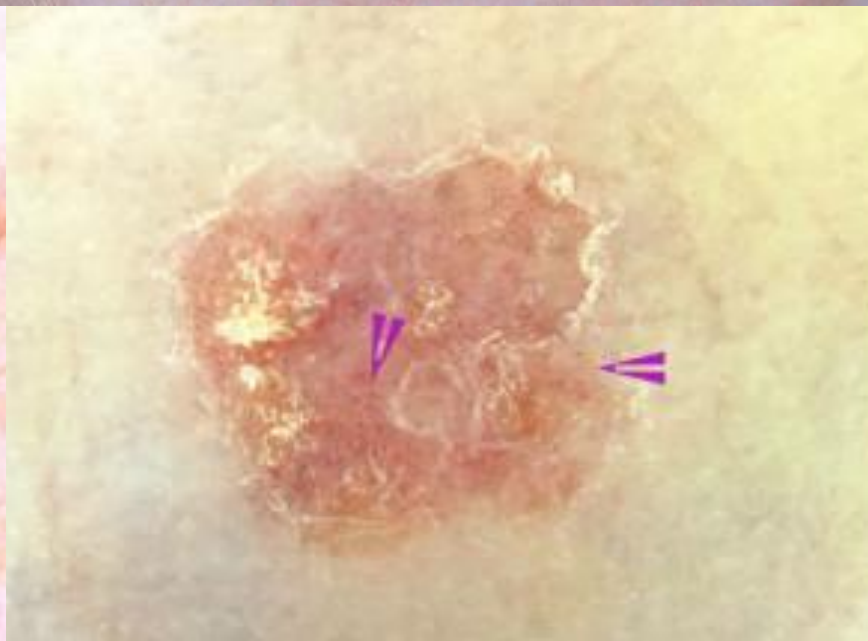
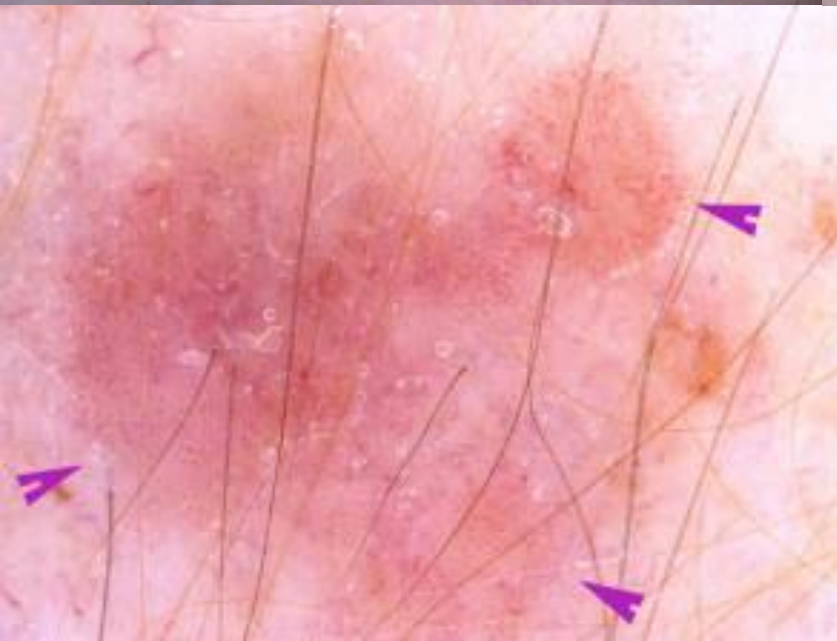


Ulcer/Erosion

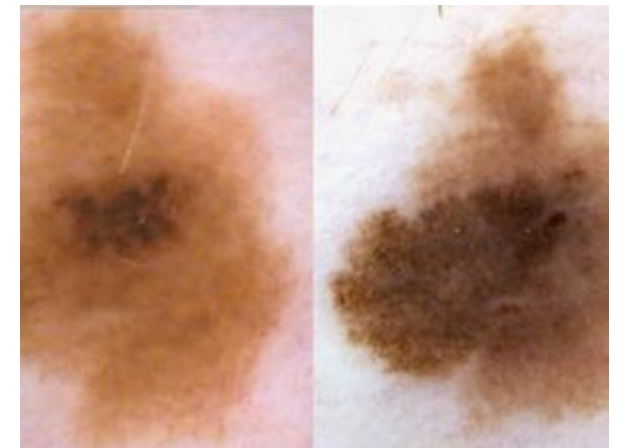
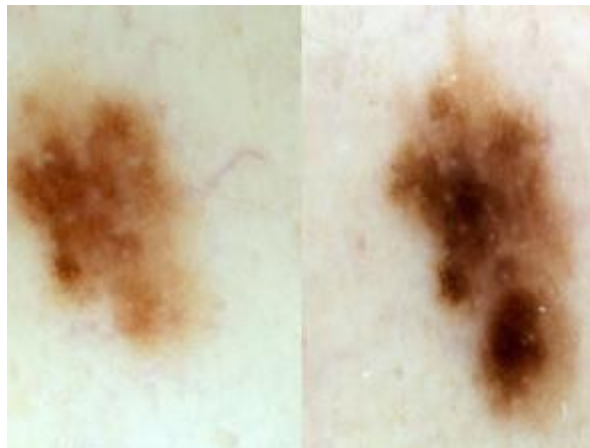
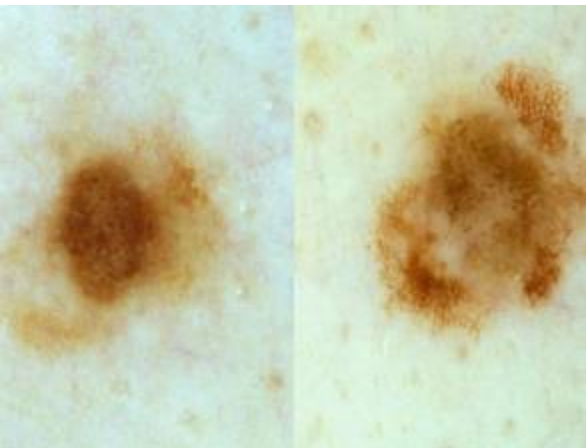
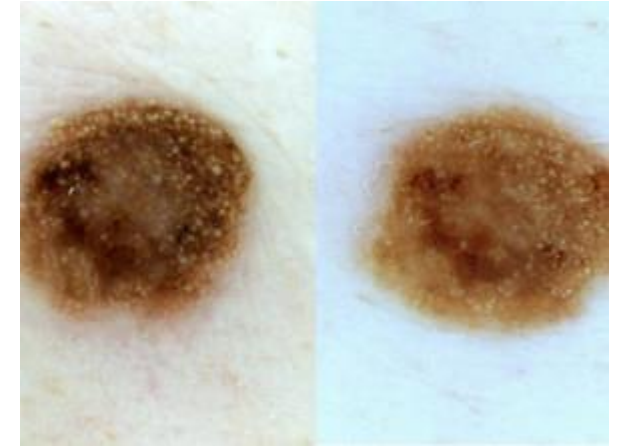
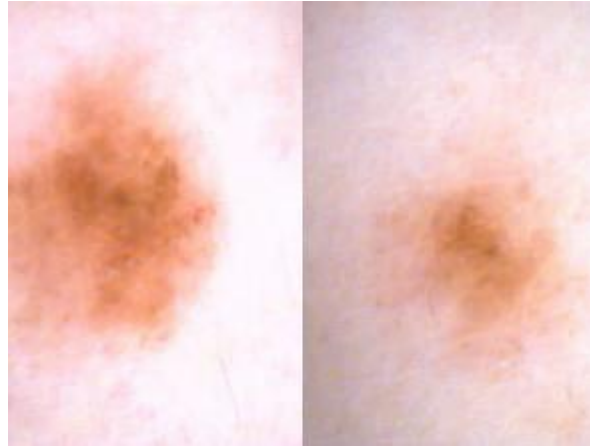
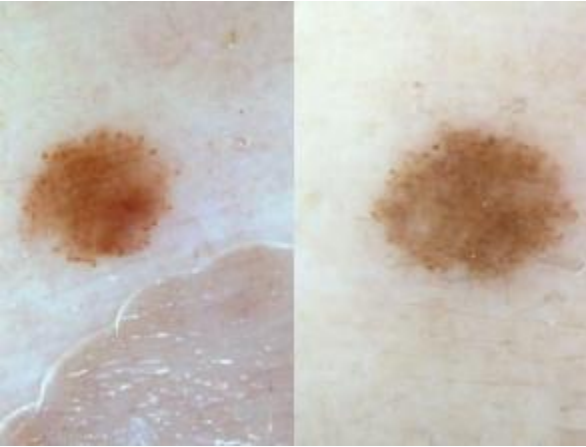


# Abnormal Vessels





# Monitoring – 3 month f/u



# Questions???

- [William.bowen@stvin.org](mailto:William.bowen@stvin.org)
- 914-629-8802

# References

Carli P, de Giorgi V, Chiarugi A et al. Addition of dermoscopy to conventional naked-eye examination in melanoma screening: a randomized study. J Am Dermatol 2004; 50: 683-9

Carli P, de Giorgi V, Crocetti E et al. Improvement in benign/malignant ratio in excised melanocytic lesions in the 'dermoscopy era': a retrospective study 1997-2001. Br J Dermatol 2004; 150: 687-92

Cyr P, et al. Teaching Skin Cancer Detection to Medical Students Using a Dermoscopic Algorithm. PRIMER. 2021;5:6

Dinnes J, Deeks J, Chuchu N et al. Dermoscopy, with and without visual inspection, for diagnosing melanoma in adults. Cochrane Database Syst Rev. 2018 Dec 4;12(12):CD011902

Menzies SW, Emery J, Staples M et al. Impact of dermoscopy and short-term sequential digital dermoscopy imaging for the management of pigmented lesions in primary care: a sequential intervention trial. Br J Dermatol 2009; 161: 1270-7

Rogers T, et al. A Clinical Aid for Detecting Skin Cancer: The Triage Amalgamated Dermoscopic Algorithm (TADA). The Journal of the American Board of Family Medicine November 2016, 29 (6) 694-701

Rosendahl C, Williams G, Eley D et al. The impact of subspecialization and dermatoscopy use on accuracy of melanoma diagnosis among primary care doctors in Australia. J Am Acad Dermatol 2012;67: 846-52

Seiverling EV, et al. Teaching Benign Skin Lesions as a Strategy to Improve the Triage Amalgamated Dermoscopic Algorithm (TADA). The Journal of the American Board of Family Medicine January 2019, 32 (1) 96-102

Vestergard ME, Macaskill P, Holt PE et al. Dermoscopy compared with naked eye examination for the diagnosis of primary melanoma: a meta-analysis of studies performed in a clinical setting. Br J Dermatology 2008; 159: 669-76

Wise E, et al. Rates of Skin Cancer Screening and Prevention Counseling by US Medical Residents. Arch Dermatology. 2009 Oct; 145(10): 1131-6

# References – Images:

- DermnetNZ.org
- Dermoscopedia

# Resources to Learn More

- Online free – DermNet NZ
  - [TADA - https://sites.psu.edu/dermoscopy/](https://sites.psu.edu/dermoscopy/)
  - <http://dermoscopymadesimple.blogspot.com/>
  - <http://dermoscopic.blogspot.com/>
  - Dermoscopy Atlas(.com)
  - Dermlite – On the Spot monthly free webinar series
  - DermaHighlights
  - International Dermoscopy Society
    - <https://dermoscopy-ids.org/education-elearning/links/>
- Mobile App “Dermoscopy Two Step Algorithm” by Usatine Media Free! Contains TADA algorithm as well.

# Books

- James N, et al. *Pocket Guide to Dermoscopy*, 2017
- Marghoob A, et al. *Atlas of Dermoscopy*. 2<sup>nd</sup> ed, 2012
- Markowitz, et al. *A Practical Guide to Dermoscopy*, 2017
- Rosendahl, C & Marozava, A. *Dermatoscopy and Skin Cancer: A handbook for hunters of skin cancer and melanoma*, **Scion Publishing**, 2019
- Soyer P, Argenziano G, Hofmann-Wellenhof R, Zalaudek I. *Dermoscopy: The Essentials*, 2<sup>nd</sup> ed, 2012

# Online Paid Courses

- <http://www.skincancercourses.com.au/certificate-diploma-courses-in-dermoscopy>
  - 8 Modules with webinars, online discussion boards, start anytime, \$1795
- <https://www.cardiff.ac.uk/professional-development/available-training/short-courses/view/an-introduction-to-dermoscopy>
  - 12 weeks (next start 8/30/21) – six two week modules with case fora and tutoring, \$1650
- Northwestern University Online Dermoscopy Webinar [cvent.me/1PRRwa](https://cvent.me/1PRRwa)
  - 6.25 CME, \$230 physicians
- Royal Australian College of General Practitioners – GP Dermoscopy
  - 12 hours online, \$487

# Conferences

- 9<sup>th</sup> American Dermoscopy Meeting – July 21-24
- Mayo 16<sup>th</sup> Annual Practical Course in Dermoscopy & Update on Malignant Melanoma 2021 – Scottsdale AZ Dec 3-5
- Memorial Sloan Kettering?
- AAD, STFM, AAFP