

Intense Pulsed Light Alone in the Treatment of Actinic Keratoses

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Actinic Keratosis

- Prevalence in U.S.A is over 57 million
- 1-15% can progress to SCC
- Cause is thought to be DNA mutation affecting p53, viral DNA(HPV), RAS mutation

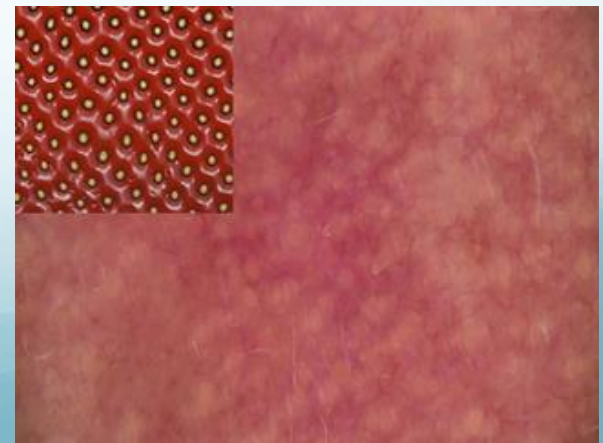
Diagnosis: Actinic Keratosis: the chameleon

- Dermoscopy
- Clinically
- Histologically
- Confocal Microscopy

Bcc
Seb ker
Scc
Bowens disease
Wart
SLE
Porokeratosis
Rosacea
Melasma
Eczema
Psoriasis
Lichen Planus
Lentigo
Lentigo maligna
Normal skin

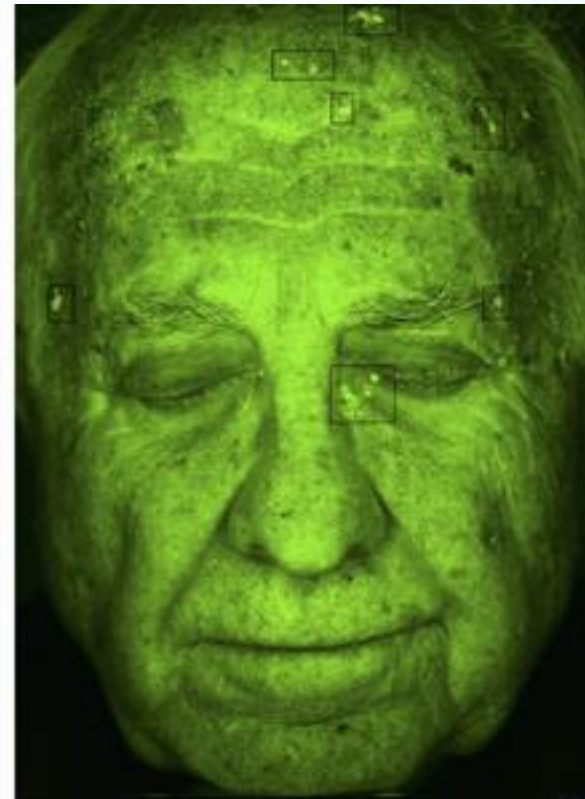
Appearance: Actinic Keratosis

- Dermoscopy:
 - "strawberry pattern"
 - prominent follicular openings surrounded by a white halo
 - pigmented AK on the face include multiple slate-gray to dark-brown dots and globules around the follicular ostia, annular-granular pattern and brown to gray pseudonetwork



Appearance: Actinic Keratosis

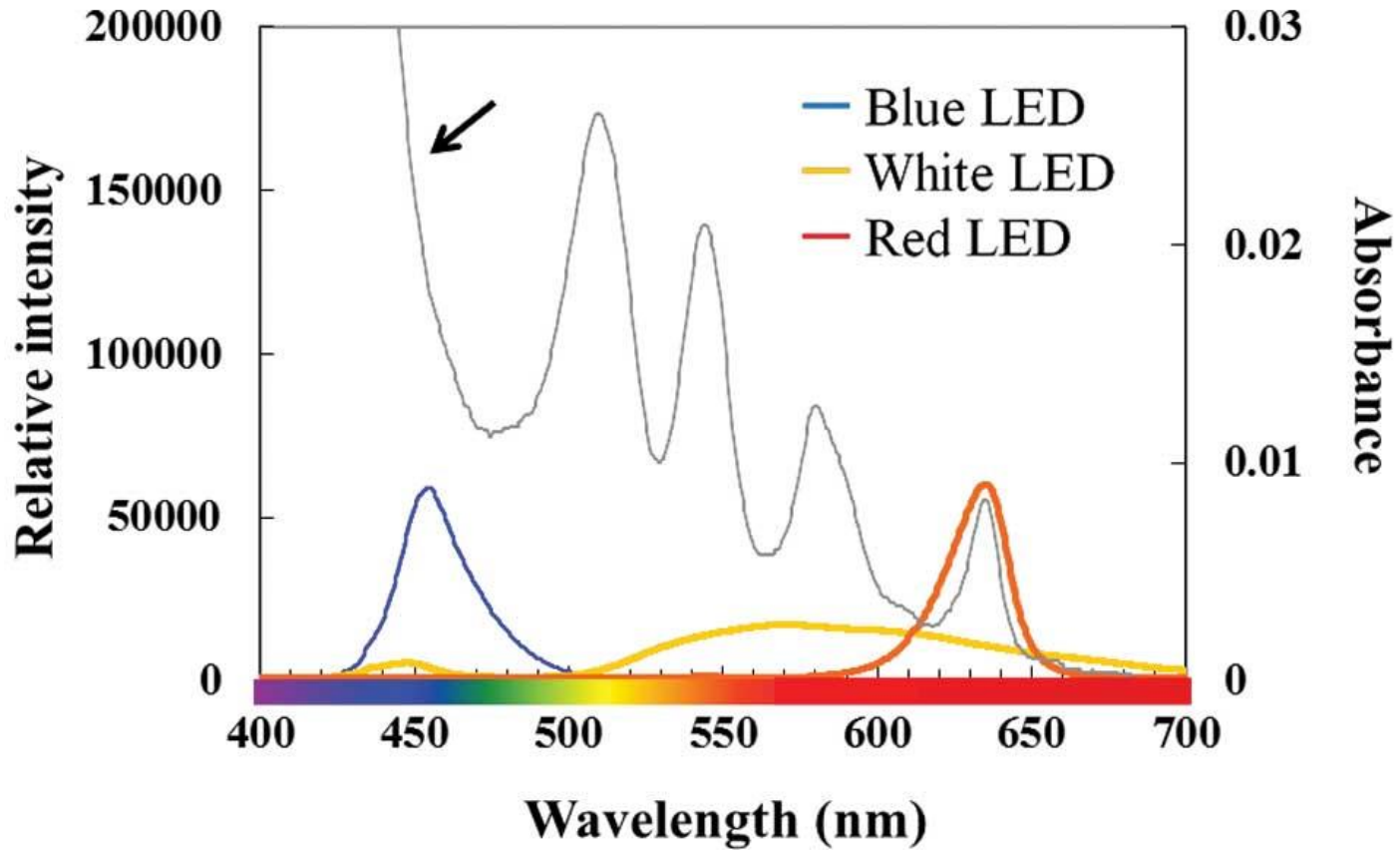
- Clinical
 - Pre-clinical AK
 - Classic AK: scaly with surrounding erythema
 - Hypertrophic AK
 - Atrophic AK
 - Cutaneous Horn
 - Lichenoid AK
 - Pigmented AK
 - Actinic Chelitis
 - Bowenoid AK



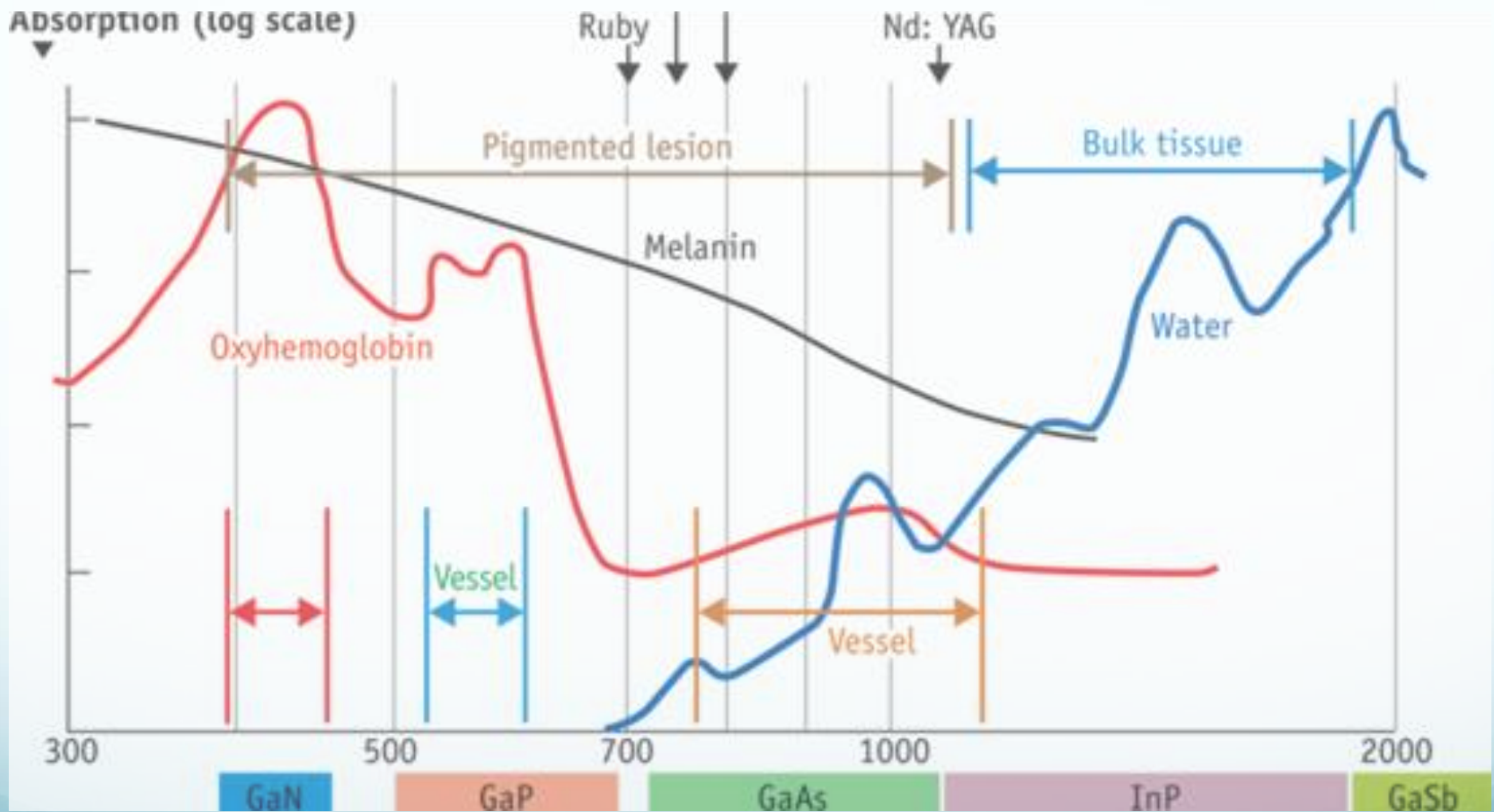
Treatment: Actinic Keratosis

- Field Therapy
 - 5-FU
 - Diclofenac
 - Imiquimod
 - Ingenol mebutate gel
- Focal Destruction
 - Cryotherapy
 - Acid destruction
 - Laser destruction
 - PDT
 - Use of Levulan with different light sources, including IPL

Protoporphyrin IX absorption



Absorption



Intense Pulsed Light

- Intense pulsed light (IPL) is a filtered flash lamp device that emits a non-coherent polychromatic radiation (420-1500 nm)
- IPL has also been used to activate photosensitizers in the treatment of photorejuvenation and actinic keratosis
- In studying the effectiveness of IPL in activating different photosensitizers, a few split-face studies were conducted: IPL alone VS IPL + Levulinic Acid

Question?

Did IPL alone
treat Actinic
Keratoses?

Method

- A literature search was done to identify information on IPL split-face photodynamic therapy studies in the treatment of actinic keratosis up to April 2016. The databases of Google Scholar and Ovid MEDLINE were searched using the Boolean string: (Intense pulsed light AND actinic keratosis).
- The references were reviewed for split-face studies, where IPL had been used as a control against the contra-lateral IPL + topical aminolevulinic acid (ALA). The references cited in the papers identified were also reviewed.

Results

Ref	Site	Light source	λ (nm)	Setting	frequency	# Tx	Age	# Pts	Fitzpatrick type	Results
Gold et al	Face	Vasculight IPL	550-570	34j/cm2 Double pulsed 8x16mm spot	Monthly	3 (judged 3 mo after)	37-63	13	I-IV	53% clearance vs 85% with ALA
Tadiparthi et al		Lumina IPL			monthly	5	65-86	8	I-II	55% clearance vs 60% with methyl-ALA
Haddad et al	face	Vasculight ESC Lumenis	515	20j (1 pt) 25j (2 pts)		1		3	I-IV	7% clearance

Gold et al



Gold et al



Supporting Data

- Dovor et al Topical 5-aminolevulinic acid combined with intense pulsed light in the treatment of photoaging. Arch Dermatol 2005;141:1247-1252
 - In treating “photoaging” IPL alone improves tactile roughness equally to IPL +ALA
- Demetriou C Reversig precancerous actinic damage by mixing wavelengths (1064nm, 532 nm). J Cosmetic Laser Therapy 2011, 13:113-119
 - Reversed AK with combination of Q switched 532nm and 1064nm lasers

Discussion

- IPL is a device that targets red or brown lesions
- Actinic keratoses initially present with redness and some with pigmentation
- IPL alone should be studied further for effectiveness in treating actinic keratosis