Hyperpigmentation my approach

Dr. Peter Velthuis Dermatologist Erasmus Medical Centre, Rotterdam



#### Conflicts of interests

- Consultant at Philips NV
- Consultant at SkinCeuticals
- Trainer at Allergan

### Hyperpigmentation, my approach

- Devices
- Topicals
- Prevention
- My approach to the various hyperpigmentation problems

#### • Lasers

#### targeting melanin

- KTP
- Ruby
- Alexandrite
- 532nm
- 694nm
- 755nm

nanoseconds (Q-switched) nanoseconds (Q-switched) nanoseconds (Q-switched)/ picoseconds



# Q-switched laser treatment immediate effect

#### End point: immediate whitening



picoseconds  $10^{-12}$ nanoseconds  $10^{-9}$ milliseconds  $10^{-3}$ 

#### • Lasers

#### targeting melanin

- KTP
- Ruby
- Alexandrite

532nm 694nm 755nm

nanoseconds (Q-switched) nanoseconds (Q-switched) nanoseconds (Q-switched)/ picoseconds



Pulsed dye laser	585nm	milliseconds
Alexandrite	755nm	milliseconds
КТР	532nm	milliseconds
end point: subtl	e darkening	, ashy grayish discoloration

#### • Lasers

#### direct effect (targeting melanin)

KTP 532nm nanoseconds
Ruby 694nm nanoseconds
Alexandrite 755nm nanoseconds / picoseconds

#### indirect effect (by skin rejuvenaton)

• Ablative

- Non-ablative 1440nm, 1540nm, 1550nm, 1927nm
- Non-ablative Nd:YAG 1064nm
  - Er:YAG 2920nm, CO2 10600nm

fractional non-fractional (non)-fractional

### Ephilides (lentigines simplex)



- Non-laser devices
  - direct effect on melanin
  - Intense Pulsed Light (IPL)

#### indirect effect on skin pigmentation (by skin rejuvenation)

- Microdermabrasia
- Plasma
- Fractional RF

### **Topical remedies**

Inhibition of melanogenesis (= production of melanin by melanocytes) Hydroquinon, arbutin, azelaic acid, Kojic acid, ascorbic acid

Blockage of interaction melanocytes – keratinocytes

(protease activated receptor-2 (PAR-2))

Niacinamide, serine protease inhibitors, lecthins, neoglycoproteins

Acceleration of skin turn-over (exfoliant, peeling) Glycolic acids, lactic acid, linoleic acid, retinoids

### How to prevent hyperpigmentation?

- Avoid overactive melanogenesis
  - sun exposure
  - extensive downtime
- Avoid triggering reactive skin
  - skin type 4-6
  - melasma
- Pretreat with inhibitors of melanogenesis and PAR-2

### How to prevent hyperpigmentation?

- Avoid overactive melanogenesis
  - sun exposure
  - extensive downtime
- Avoid triggering reactive skin
  - skin type 4-6
  - melasma
- Pretreat with inhibitors of melanogenesis and PAR-2

Deliver proper medical care

### Pretreatment my approach

#### For at least 4-6 weeks:

- Avoid sunlight and any procedure impacting the skin
- Pre-treat topical

sunblock	SPF-30+	
melanogenesis inhibitors	hydroquinon + retinoid 0.02%	
PAR-2 inhibitors	cosmeceutical containing niacinamide	
(+ for melasma: triple therapy (hydroquinon, retin-A, steroid))		

- Pre-treat systemic
  - vitamin C 500mg daily
  - other anti-oxidants (Q10, vitamin E, green tea)

### Treatment my approach

Very reactive skin or skin type 4-6? => use low impact

- peeling: glycolic acid, Kojic acid, salicylic acid
- non-ablative laser
- fractional RF

Non reactive skin with skin type 1-3 => consider using high impact

- Q-switched / pico laser systems
- IPL
- ablative laser
- plasma device

### Post-treatment my approach

- Avoid risk factors (sunlight, irritants)
  - SPF-30+
- Continue topicals blocking melanogenesis, PAR-2
  - Hydroquinon (stop retinoic acid until erythema has faded)
  - Cosmeceutical containing niacinamide
- Consider the addition of anti-inflammatory agents
  - Steroids (triamcinolon 0.01% cream)
  - PRP in (fractional) ablative procedures

#### Questionable

- Standard settings
- The same settings as the last treatment before
- The use of test spots

### Questionable

(or: this is my advise after 15 years counseling for medical insurance)

• Standard settings

you may start from those; but you have to individualize

• The same settings as the last treatment before

wrong !!

• The use of test spots

you can do that; it is appreciated;

but never rely on those settings completely !

## Thank you for your attention Dr. Peter Velthuis, dermatologist p.velthuis@erasmusmc.nl