Dermatologic Care of Women with Skin of Color

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INTRODUCTION

The color of skin is intriguing, for it evokes a multitude of societal emotions, interactions, inclusions, and exclusions. Descriptive terminologies for skin pigmentation are influenced by mythology, history, religion, anthropology, and geopolitical philosophies (1). Individuals with deeply pigmented skin comprise myriad racial and ethnic global populations. Skin color, among other defining physical traits, is the key determinant of race.

‘Ethnicity’ is a defined social construct based upon national origin along with phenotypic pigmentation (or skin color). Phrases commonly used when describing skin traits of darker racial ethnic groups include: ethnic, dark, black, skin of color, and pigmented. The key unifying feature is skin with darker shades of pigmentation (tan, olive, brown, and black). Darker skinned populations constitute the majority of the global population. They include Hispanics, Latinos, Africans, African Americans, Caribbeans, Native Americans, Pacific Islanders, East Indians, Pakistanis, Eskimos, Koreans, Chinese, Vietnamese, Filipinos, Japanese, Thai, Cambodians, Malaysians, Indonesians and Aleuts.

MORPHOLOGIC & STRUCTURAL DIFFERENCES

Table 1. Unique morphologic, structural and physiologic differences in black skin

<table>
<thead>
<tr>
<th>Epidermis</th>
<th>Dermis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased epidermal melanin content</td>
<td>Elastic fibers sparse</td>
</tr>
<tr>
<td>Decreased penetration of ultraviolet light</td>
<td>Fibroblast numerous, binucleated and hypertrophic</td>
</tr>
<tr>
<td>(UVA and UVB)</td>
<td>Mast cells large, fusion of granules</td>
</tr>
<tr>
<td>Increased stratum corneum cell layers</td>
<td>Facial soft tissue thickness increased</td>
</tr>
<tr>
<td>Increased stratum corneum lipid content</td>
<td>Curved hair follicles and spiraled hairs</td>
</tr>
<tr>
<td>Decreased ceramides</td>
<td>Decreased anchoring elastic givers for hair</td>
</tr>
<tr>
<td>Increased desquamation</td>
<td>Follicle</td>
</tr>
<tr>
<td>Increased recovery after tape stripping</td>
<td>Decreased hair density</td>
</tr>
</tbody>
</table>
The advantages and disadvantages of deeply pigmented skin are summarized in Table III.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced photoprotection</td>
<td>Hyperpigmentation</td>
</tr>
<tr>
<td>Decreased frequency of skin cancer</td>
<td>Hypopigmentation</td>
</tr>
<tr>
<td>Photoaging minimized</td>
<td>Hypertrophic scars and keloids common</td>
</tr>
<tr>
<td></td>
<td>Vitamin D Deficiency</td>
</tr>
<tr>
<td></td>
<td>Scarring Alopecia</td>
</tr>
</tbody>
</table>

PIGMENTARY DISORDERS

Pigmentary disorders are diseases of major cosmetic concern in women with skin of color. Melasma is a common disorder of hyperpigmentation. It is characterized by symmetrical brown-gray pigmentation affecting the cheeks, forehead, upper lips, and chin. It impacts all races, although the disease is more commonly observed in women of color. The condition is more common in areas with intense UV light exposure. Recently, Grimes et al reported hyperactive melanocytes and increased epidermal melanin in the affected skin of patients with melasma. Electron microscopy studies showed enlarged melanocytes with increased numbers of melanosomes and prominent dendrites. This study suggested that melasma may be a consequence of hyperactive and hyperfunctional melanocytes causing excessive melanin deposition in the epidermis and
dermis. Recent genomic studies suggest upregulation of a variety of pigment related
genes including MITF and tyrosinase related genes. Melasma is considered a phenotype
of photodamage.

Post inflammatory hyperpigmentation (PIH) is characterized by an acquired increase in
cutaneous pigmentation secondary to an inflammatory process. Excess pigment
deposition may occur in the epidermis or in both epidermis and dermis. The condition
occurs in all racial and ethnic groups; however it has a higher incidence in people with
darker complexions. Previous studies have suggested that inflammatory reactions which
cause a release of arachidonic acid from cell membranes may be a cause of PIH.
Mediators implicated in PIH include endothelin 1, prostaglandins, interleukin-1 and stem
cell factor.

Solar lentigo are common light brown to brown lesions occurring as discrete
hyperpigmented macules on sun-exposed areas of skin such as the face, arms, chest, and
back. Solar lentigo is induced by natural or artificial ultraviolet light sources. Such
lesions are common in type IV, in particular Asians and Hispanics. They are less
common in blacks. Histologically, they are characterized by elongated rete ridges, club
shaped extensions, and a proliferation of melanocytes, and keratinocytes.
Therapeutic Approaches for Hyperpigmentation

Mild
- Hydroquinone 2%-4%
- Retinoids
- Azelaic Acid
- Kojic Acid
- Glycolic Acid
- Camouflage
- Sunscreens
- Retinoids

Moderate
- Hydroquinone 4% + Combination Hydroquinone Agents
  - Tretinoin
  - Retinol
  - Glycolic Acid
  - Azelaic Acid
  - Kojic Acid
  - Steroids
  - Chemical Peels
  - Microdermabrasion
  - Camouflage
  - Sunscreens

Severe
- Hydroquinone 4% + Combination Hydroquinone Agents
  - Tretinoin
  - Retinol
  - Glycolic Acid
  - Azelaic Acid
  - Kojic Acid
  - Chemical Peels
  - Microdermabrasion
  - Lasers
  - Intense Pulsed Light
  - Camouflage
  - Sunscreens

Bleaching Agents and their Mechanism of Action

- Retinoids (trans-retinoic acid, retinol and its esters, retinaldehyde)
- Glucosamine, N-Acetyl Glucosamine
- Hydroquinone, resorcinols, kojic acid, arbutin, ascorbic acid, azelaic acid, aloesin, resveratrol, ellagic
- Niacinamide, Protease inhibitors, Soybean Milk Extract
- Topical Steroids, Phytosterol, Glycyrrhetinic Acid
- Retinoids, Salicylic Acid, Lactic Acid, Glycolic Acid, Liquiritin

- Downregulation of Tyrosinase
- Inhibition of Tyrosinase Glycosylation
- Tyrosinase Inhibition
- Melanosome Transfer
- Inhibition of Inflammation
- Increased Epidermal Turnover
Non-Hydroquinone Agents

<table>
<thead>
<tr>
<th>DRUG</th>
<th>MECHANISM</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYT2 (Combination Product 10 Ingredients)</td>
<td>Tyrosinase inhibition, TYRP-1, DCT, and MITF</td>
</tr>
<tr>
<td>Undecylphenylalanine</td>
<td>Antagonist of α-MSH, β-adrenergic, stem cell receptors</td>
</tr>
<tr>
<td>4-n-Butylresorcinol</td>
<td>TRP-1 inhibition</td>
</tr>
<tr>
<td>Methimazole</td>
<td>Peroxidase inhibition</td>
</tr>
<tr>
<td>Cysteamine</td>
<td>Tyrosinase, peroxidase inhibition</td>
</tr>
<tr>
<td>Undecylphenylalanine</td>
<td>Antagonist of α-MSH, β-adrenergic, stem cell receptors</td>
</tr>
<tr>
<td>Melaplex (Combination product 5 ingredients)</td>
<td>Melanosome transfer, tyrosine uptake and inhibition, blocks binding of α-MSH to receptor</td>
</tr>
<tr>
<td>Lumixyl (Oligopeptide)</td>
<td>Tyrosinase inhibition</td>
</tr>
<tr>
<td>Tranexamic acid</td>
<td>Anti-inflammatory, tyrosinase inhibition, tyrosinase degradation, plasmin inhibitor</td>
</tr>
</tbody>
</table>

Sardana K et al. Clin Pharmacol 2015. (8(1)), 123-134

Repigmentation Therapies for Vitiligo

Localized/Limited
- Topical Steroids
- Topical PUVA
- PUVA and (Methoxalen + Sunlight)
- Calcineurin Inhibitors
- Targeted Phototherapy
- Antioxidants/vitamins

Moderate/Severe
- Narrow Band UVB Phototherapy
- Oral PUVA
- Systemic Corticosteroids
- Antioxidants/vitamins

Recalcitrant Localized
- Autologous Grafting
- Sheet Grafts
- Punch Grafts
- Melanocyte Cultures
- Epidermal Suspensions
- Suction Blisters

Recalcitrant Severe
- Depigmentation
- Monobenzone
- 755nm Laser
- Q-Switched ND:Yag
- Cryotherapy

Treatment of Hypertrophic Scars And Keloids
Management Algorithm for Keloids

Minor Keloid (Red/Raised) → Silicone gel/sheeting + Intralesional Corticosteroids → Fractional or Pulsed-Dye Laser Therapy → Surgical Excision with Adjuvant

Major, high-risk keloid (dark/raised) → Intrallesional Corticosteroids → 5-FU + Intrallesional Corticosteroids → Fractional or Pulsed-Dye Laser Therapy → Patient Counseling Regarding Recurrence Rate and Expectations

Surgical Excision with Adjuvant:
- Silicone gel or sheeting or intralesional corticosteroids or both
- Radiotherapy
- Alternative Therapies (Bleomycin, Mitomycin C, Imiquimod)


Characteristics and Properties of Ethnic Hair

- Curved hair follicle with elliptical and spiraled hair
- Smallest mean cross-sectional area
- Fewer elastic fibers anchoring hair follicles in dermis
- Total hair density and total terminal hair follicles significantly lower
- Lower Water Uptake
- Predisposed to breakage

Lindsey et al. Curr Probl Dermatol. 2015. 139-149
COSMETIC PROCEDURES IN SKIN OF COLOR

CHEMICAL PEELS

Chemical peeling agents are classified as superficial, medium-depth, or deep peels. Superficial peels targeting the stratum corneum to the papillary dermis include glycolic acid, salicylic acid, Jessner’s solution, tretinoin and trichloroacetic acid (TCA) in concentrations ranging from 10% to 30%. Medium-depth peels penetrate to the upper reticular dermis and include TC (35%-50%) and phenol 88%. Deep chemical peels utilize the Baker-Gordon formula and penetrate to the midreticular dermis.

Table V summarizes indications for chemical peels

<table>
<thead>
<tr>
<th>Skin Types I-III</th>
<th>Skin Types IV-VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Wrinkles, rhytids</td>
<td>Post Inflammatory Hyperpigmentation</td>
</tr>
<tr>
<td>Solar Keratoses</td>
<td>Melasma</td>
</tr>
<tr>
<td>Photodamage</td>
<td>Acne Vulgaris</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Melasma</td>
<td>Oily Skin</td>
</tr>
<tr>
<td>Post Inflammatory Hyperpigmentation</td>
<td>Textural Changes</td>
</tr>
<tr>
<td>Acne Vulgaris</td>
<td>Acne Scarring</td>
</tr>
<tr>
<td>Rosacea</td>
<td>Fine Wrinkles</td>
</tr>
<tr>
<td>Superficial Scarring</td>
<td></td>
</tr>
</tbody>
</table>

Analysis of morphologic, physiologic and clinical data suggest that the benefits of chemical peeling in skin of color can be maximally achieved with superficial peels while minimizing risks and side effects.

**BOTULINUM TOXIN**
Injection of botulinum neurotoxin type A (BoNT-A) is the most common cosmetic procedure performed in the US, with over 3 million patients receiving treatment in 2010. The increasing use of BoNT-A has been accompanied by an increased use of other treatments, such as dermal fillers; together, BoNT-A and hyaluronic acid fillers account for approximately 54% of non-surgical esthetic procedures in the US. BoNT-A treatment has been shown to be an effective treatment for dynamic wrinkles, regardless of a patients’ age, gender, or race.

**INJECTABLE FILLERS (Tissue Augmentation)**
Injectable fillers include hyaluronic acid, poly-L-lactic acid, calcium hydroxylapatite and others. Fillers are rapidly increasing in popularity in darker racial ethnic groups. Key indicators for use of injectable fillers in darker racial ethnic groups are listed in Table VI. Often the cultural aesthetic ideal dictates protocols and
procedures used for restoration of facial volume and symmetry in people of color.

Table VI. Key Indicators for Use of Injectable Fillers in Darker Racial Ethnic Groups

<table>
<thead>
<tr>
<th>Indications for Injectable Fillers in Darker Racial Ethnic Groups</th>
</tr>
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<tbody>
<tr>
<td>• Glabeller Lines</td>
</tr>
<tr>
<td>• Nasolabial lines</td>
</tr>
<tr>
<td>• Jowls/sagging cheeks</td>
</tr>
<tr>
<td>• Tear trough deformities</td>
</tr>
<tr>
<td>• Lip augmentation</td>
</tr>
<tr>
<td>• Marionette lines</td>
</tr>
<tr>
<td>• Perioral rhytids</td>
</tr>
</tbody>
</table>

LASER HAIR REMOVAL

Multiple studies have documented the efficacy and safety of laser hair removal in women with skin of color. The best results are achieved with the long-pulsed Nd: YAG laser and Diode laser.
The Importance Of Vitamin D

- Best known for its role in calcium absorption and maintenance of healthy bones
- Regulates cell growth and maturation
- Myriad recent studies document major new roles for Vitamin D
  - Immune system / Autoimmunity
  - Cancer prevention
  - Obesity
  - Cardiovascular system
  - Infections disease
  - Neurocognitive function
- Dermatologic Disorders
  - Atopic Dermatitis
  - Psoriasis
  - Skin Cancer
  - Lupus erythematosus
  - Vitiligo

MAJOR DEFICIENCIES IN WOMEN OF COLOR
REFERENCES


18. Steggerda M, Serbert HC. Size and shape of head hair from six racial groups. J Hered 1942; 32: 315-318


