

SAVING YOUR SKIN

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OUTLINE

- **Factors that contribute to skin aging?**
- **Aging skin under the microscope**
- **What do people complain about?**
 - Pigmentary changes
 - Wrinkles
 - Sagging skin
 - Telangiectasiae
- **Topical creams for aging skin**
- **An approach to topical therapy of aging skin**

FACTORS THAT CONTRIBUTE TO CHANGES IN THE SKIN

Primary Factors

- *Intrinsic aging*
- *Photoaging- photo-damage*
- Loss of subcutaneous support

Secondary Factors

- Gravity
- Facial Movement
- Sleep position

INTRINSIC AGING

Laxity

Fine wrinkling

Asteatosis

PHOTOAGING

Yellowing

Roughness

Leathery quality

Irregular pigmentation

Lentigines (freckles)

Comedone formation

Benign tumors

Actinic keratoses

Malignant tumors

GLOGAU PHOTOAGING CLASSIFICATION

♃ **Type I: “No Wrinkles” - Early photoaging**

- Mild pigmentary changes
- No keratoses
- Minimal wrinkles

Twenties or thirties

♃ **Type II: “Wrinkles in Motion” - Early to moderate photoaging**

- Early senile lentiginos (freckles) visible
- Keratoses palpable but not visible
- Parallel smile lines beginning to appear

Later thirties or forties

GLOGAU PHOTOAGING CLASSIFICATION

♁ **Type III: “Wrinkles at Rest” - Advanced photoaging**

- Obvious pigment irregularity, telangiectasia
- Visible keratoses
- Wrinkles even when not moving

Fifties or older

♁ **Type IV: “Only Wrinkles” - Severe photoaging**

- Yellow-gray skin
- Prior skin malignancies
- Wrinkled skin throughout, no normal skin

Sixties or older

- From Glogau RG: Chemical peeling and aging skin. The Journal of Geriatric Dermatology 2:30-35, 1994.

FACTORS THAT CONTRIBUTE TO CHANGES IN THE SKIN

Primary Factors

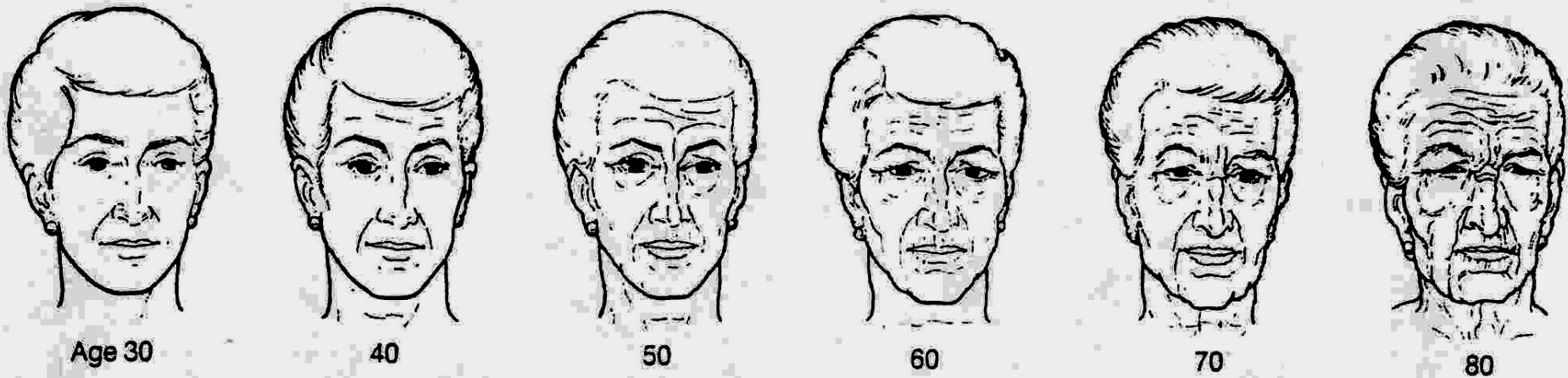
- Inherent aging
- Actinic damage
- Loss of subcutaneous support

Secondary Factors

- Gravity
- Facial Movement
- Sleep position

Loss of subcutaneous support = sagging skin!

- Bone resorption occurs as you age - Skull gets smaller
- Loss subcutaneous fat
- = too much skin!



Larabee WF, Caro I. Postgrad. Med. 76:37-45, 1984

FACTORS THAT CONTRIBUTE TO CHANGES IN THE SKIN

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What are people concerned about?

PIGMENTARY CHANGES

WRINKLES

SAGGING

TELANGIECTASIA

PIGMENTARY CHANGES IN AGED SKIN

Freckles

- **Small dark spots scattered over sun-exposed skin, darken in summer**
- **Appear in genetically predisposed children and increase in number in adults**

PIGMENTARY CHANGES IN AGED SKIN

Irregular pigmentation

- Skin 'goes gray' as you age just like hair
- Loss of active melanocytes (produce pigment)
- In other areas there are focal increases in active melanocytes (lentiginos)
- = mottled pigmentation

PIGMENTARY CHANGES IN AGED SKIN

Guttate hypomelanosis

**Pure white spots on sun
exposed skin**

WRINKLES - “SYNONYMS”

- **Skin tension lines**
- **Langer’s lines**
- **Creases**
- **Lines of dependency**
- **Contour lines**

Telangiectasia

- Fine vessels near the surface of the skin
- “broken capillaries”
- Especially around the nose or on sun- exposed skin
- Laser
- Not Vitamin K cream

What really works?

- What to look for?
 - Penetrates into the skin
 - Demonstrated biochemical effects
 - Visible change under the microscope
 - **Good clinical studies = will the user SEE a difference?**

What really works?

Tretinoin

- Penetrates into skin
 - Biochemical effects:
 - improves collagen synthesis
 - supresses UV induction of metalloproteinases
 - Under the microscope:
 - compaction of SC
 - ↑ epidermal thickness
 - ↓ melanin
 - ↑ collagen
-

What really works? Tretinoin

- **MANY GOOD CLINICAL STUDIES**

**Fine wrinkles and mottled
hyperpigmentation**

ALPHA-HYDROXYACIDS (FRUIT ACIDS)

Glycolic*

Sugar cane

Lactic

Sour milk

Butyric

Rancid butter

Malic

Apples/pears

Oxalic

Sauerkraut

Tartaric

Grapes

Citric

Lemons

ALPHAHYDROXYACIDS

- **Under the microscope**
 - increased epidermal thickness
 - increased GAGs
- **Clinical studies**
 - 2 double-blind studies
 - Glycolic acid (8%) and lactic acid (8 and 12%)
 - Fine wrinkling and mottled hyperpigmentation

ALPHAHYDROXYACIDS

- **Unlikely that the small concentrations in most cosmetics are effective**
- **5% glycolic acid, 3mo, 75 pts. No significant ↓ fine lines** (Thibault P, Dermatol Surg 1998)

ANTIOXIDANTS

Free Radical Theory of Aging -

Accumulated damage to tissues from free radicals results in aging

Tissues are protected from damage by antioxidants

Antioxidants: vitamin C, vitamin E, ubiquinone, lipoic acid, selenium

- Penetrate into skin
- In vitro data/mice: sun protective effects
- Promising agents for preventing and treating photoaging

Antioxidants: Vitamin C

- **Vitamin C and E decreased in human aged and photoaged skin in vivo.** (Rhie et al, JID 2001)
- **Active C (6 mo)**
 - **↑↑ Collagen I and III mRNA**
 - **↑↑ mRNA for enzymes collagen synthesis**
(Nusgens et al, JID 2001)

ANTIOXIDANTS - Vitamin C

- **Cellex C vs. vehicle (n=19) mild improvement in wrinkling**
- **Active C vs. vehicle - 12 weeks, 10 pts**
 - **Improvement in fine wrinkling**
 - **↑ in Grenz zone collagen**
 - **↑ mRNA for type I collagen**
(Fitzpatrick and Rostan, Dermatol Surg, 2002)

Q10 - UBIQUINONE

- ⚡ **Antioxidant in the skin**
- ⚡ **Relatively low levels in skin**
- ⚡ **Shown to penetrate the skin**
- ⚡ **Small pilot study showed a decrease in wrinkles**

Retinol

- Less irritating than tretinoin (Retin A)
 - Penetrates human skin in vivo
 - Retinol (1%) - 'retinoid' effects
 - Cosmetics are lower dose than in studies (many 0.1%)
 - Is it enough to see anything clinically? No clinical trials
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Kinetin

- Prevents senescence of leaves
- Shown to prevent age-related changes in fibroblasts in vitro
- Clinical trial - very modest effects on fine wrinkling/mottled hyperpigmentation

Copper peptides

- Cofactor in collagen synthesis
- Increased collagen synthesis in vitro
- Increased collagen synthesis after one month application on the thigh
- Lack of published clinical studies for treatment of facial photoaging

TNS Recovery Serum

- Human fibroblast conditioned media
- From neonatal foreskin
- Early studies suggest it may help fine wrinkles
- Multi-center double-blind, controlled study underway

DMAE

- Dimethylaminoethanol
- Placebo controlled study (30 women) showed increased skin tautness after one application
 - Duration of effect?
- Clinical study (J and J) showed improvement in fine wrinkles

PROVEN CLINICAL EFFICACY FOR THE TREATMENT OF AGING SKIN

- tretinoin
 - glycolic acid
 - vitamin C
-
- Sunscreens
 - Bleaching agents



SUNSCREENS

ANTI-AGING and SUNSCREEN CHOICE

- ⌘ **SPF** - consider using higher SPFs:
 - ⌘ People don't apply enough
 - ⌘ Substantivity - fair skin
 - ⌘ Higher SPF sunscreens protect against damage from suberythema doses

- ⌘ **UVA protection** -
 - ⌘ Physical blockers - titanium dioxide
 - ⌘ Z-cote
 - ⌘ Parsol 1789 (320-400nm)
 - ⌘ Photoplex, Shade UVA Guard, Ombrelle

SUNSCREENS AND AGING

- Prevent sun-induced skin cancers
 - regular sunscreen use - ↓ actinic keratoses.
Thompson SC, 1993, Naylor MF, 1995
 - regular sunscreen prevents SCC
Lancet 1999
- Prevent sunburn, immunosuppression, and wrinkles.
 - 2 years regular sunscreen use resulted in ↓ solar elastosis Boyd et al., 1995.

BLEACHING AGENTS - Important in the Treatment of Photoaging

- Active primarily as bleaching agents
 - Hydroxyquinone
- Active for wrinkles and bleaching
 - Tretinoin
 - Glycolic acid
- Not active for mottled hyperpigmentation
 - Vitamin C
- Depending on what is being treated either give two products or pick one with a combination effect

APPROACH TO PATIENT WITH PHOTOAGED SKIN

- **Discussion of patient's goals**
 - Can be met with creams vs. surgery
- **Set realistic expectations**
 - Sun protection/avoidance mandatory for success
- **Understand patient skin type and cosmetic preferences**
 - What products are being used
 - Which are liked and why?
- **Determine which cosmetics should be continued/ stopped (e.g. minimize soaps and cleansers)**
- **Decide which anti-aging products to use**

TYPICAL APPROACH TO PHOTOAGING

- **To start:**
 - Renova/Retin A cream 0.05% qhs
 - depending on skin type start with q2-3 day usage, or tretinoin 0.02% and build up
 - \geq SPF 30 sunscreen with UVA protection
- **Follow-up visits:**
 - Glycolic acid in A.M.
 - look for products in 8-12% range, check they are not neutralized
- **Later:**
 - increase to Retin A 0.1%
 - Consider use of different products (e.g., antioxidant, bleaching agent) if Renova not tolerated

GENERAL POINTS

- Minimize soaps/cleansers
- Sunscreen

ANTIAGING AGENTS

- Proven agents
 - Renova
 - Glycolic acid
 - Bleaching agents
 - Combinations

“Sunscreens don’t work”

- **Epidemiologist (Memorial Sloan-Kettering Cancer Center)**
- **sunscreens and melanoma**
 - **retrospective study, low SPF**

ANTIOXIDANTS

Vitamin C

⌘ **Ascorbic acid**

⌘ formulated to pH 2.3 to be absorbed by the skin

⌘ **Cellex C**

⌘ **Ascorbyl palmitate** - ester of vitamin C

⌘ fat soluble = more stable

⌘ **C-esta**

⌘ **Clinically there is only one small (n=19) study showing mild improvement in wrinkling (Cellex C)**