Dry Skin in the Elderly

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Introduction
Xerosis, or dry skin, is a common problem and its incidence and severity increase with age. Data on the prevalence of xerosis in the elderly show a wide range of variation, from 29.5–85%. Although dry skin is often a cosmetic problem, it also may affect quality of life. It commonly causes symptoms such as itching, burning, stinging and a feeling of tightness. It is the most common cause of generalised pruritus in the elderly.

Dry skin occurs predominantly on the extremities, but also can be seen on the sides of the torso and on the face. Features include roughness, an increase in skin markings and a scaly appearance, with other possible features of redness and cracking developing as the problem worsens.

Dryness results when water content in the stratum corneum diminishes to a level below 10%, although this may be an oversimplification as electron microscopic studies of dry skin show a stratum corneum that is thickened, fissured and disorganised.

Etiology: The Effects of Aging
The cause of dry skin is not completely understood. It has a genetic component and is influenced by environmental factors such as cold or dry climates and the use of soaps and harsh cleansers. Certain diseases such as chronic renal failure and hypothyroidism can cause xerosis, as can drugs such as isotretinoin. Skin changes in the elderly also can explain the dryness that tends to develop with age. The management of xerosis should be directed towards altering environmental factors and treating the signs and symptoms of the patient. Attention to the care of dry skin becomes more important as our population ages.

Key words: dry skin, xerosis, aging skin, stratum corneum, moisturisers.

Table 1
Changes in Elderly Skin that Contribute to Dryness

<table>
<thead>
<tr>
<th>Epidermal</th>
<th>Reduced quantity of stratum corneum intercellular lipids.</th>
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<tbody>
<tr>
<td></td>
<td>Slower turnover of cells.</td>
</tr>
<tr>
<td></td>
<td>Reduced levels of Natural Moisturizing Factor in stratum corneum cells.</td>
</tr>
<tr>
<td>Dermal</td>
<td>Reduced number and function of sebaceous glands.</td>
</tr>
<tr>
<td></td>
<td>Reduced number and function of sweat glands.</td>
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<tr>
<td></td>
<td>Reduced number of blood vessels.</td>
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<tr>
<td></td>
<td>Reduced water movement from dermis to epidermis.</td>
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</table>

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The management of xerosis should be directed towards altering environmental factors and treating the signs and symptoms of the patient. The aim of treating dry skin is to restore the epidermal barrier of the skin and to maintain stratum corneum hydration (Table 2).

Humidity
The moisture in the air contributes to the water content of the stratum corneum and dryness tends to occur when relative humidity drops below 30%. Many patients only develop dry skin in the winter when the heated air in the house is extremely low in moisture. This may be exaggerated with forced-air systems indoors and the cold wind outdoors, which evaporates moisture from exposed skin. Humidifiers, either attached to the furnace or freestanding (and regularly maintained), are recommended, as is adjusting the room temperature to the lowest that is comfortable and tolerated. When the relative humidity is set at or greater than 60%, the stratum corneum water content does not drop below the critical 10% level when clinical dryness becomes apparent. The normal stratum corneum water content is thought to be 20–35%.

Bathing
There are two schools of thought on the recommended frequency of bathing in those with dry skin. One is to reduce the bathing frequency to once or twice per week, and the other is to bathe daily with the body totally immersed in water for 10 minutes or under the continuous spray of the shower for 10 minutes. The latter is the current recommendation, with certain adjustments. The soap chosen should be mild with low irritancy (e.g., Dove), and if the dryness is severe the use of soap may be limited to “dirty” areas such as the neck, underarms and groin. Another option is the use of a soap substitute (e.g., Cetaphil lotion). The temperature of the water should be at or just below body temperature. The skin should be patted dry and a moisturiser applied within three minutes of exiting the tub to trap the moisture into the skin.

(Personally, I do not recommend bath oils for the elderly. When I was a dermatology resident, I was asked to consult on an elderly patient with multiple pressure sores on the back of her head, elbows, buttocks and heels. She had put some oil in the bath to treat her dry skin and slipped repeatedly when trying to exit the tub. The superintendent found her in the tub two days later and took her to the emergency room for treatment.)

Moisturisers
Draelos defines moisturisers as externally applied compounds comprising multiple components, including occlusive ingredients and humectants that rehydrate the skin optimally (Table 3).

Occlusive moisturising ingredients are oily substances that act to prevent the evaporation of moisture from the skin by forming a greasy film that impedes transepidermal water loss (TEWL). Petroleum is the most effective occlusive moisturiser. It not only drops TEWL by 99%, but also permeates throughout the stratum corneum intercellular substance, allowing the initiation of the stratum corneum repair mechanisms despite its occlusive properties. The signal for barrier repair is TEWL and it cannot be initiated if TEWL drops to zero.

Other occlusive moisturising ingredients include mineral oil (decreases TEWL by 30%), silicones such as dimethicone, and vegetable and animal fats such as cocoa butter, Crisco and lanolin.

Humectant moisturising ingredients attract water from deeper skin layers to the stratum corneum. Humectants include glycerin, sorbitol, urea, sodium lactate,

<table>
<thead>
<tr>
<th>Occlusive Agents</th>
<th>Humectants</th>
<th>Emollients</th>
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</thead>
<tbody>
<tr>
<td>petrolatum (Vaseline)</td>
<td>urea</td>
<td>Alcohols</td>
</tr>
<tr>
<td>mineral oil</td>
<td>glycerin</td>
<td>octyl dodecanol</td>
</tr>
<tr>
<td>lanolin</td>
<td>sorbitol</td>
<td>hexyl decanol</td>
</tr>
<tr>
<td>silicones</td>
<td>hyaluronic acid</td>
<td>oleyl alcohol</td>
</tr>
<tr>
<td>Crisco</td>
<td>propylene glycol</td>
<td>Esters</td>
</tr>
<tr>
<td>paraffin</td>
<td>alpha-hydroxy acids</td>
<td>octyl stearate</td>
</tr>
<tr>
<td>beeswax</td>
<td>honey</td>
<td>myristyl myristate</td>
</tr>
<tr>
<td>cocoa butter</td>
<td>some vitamins</td>
<td>isopropyl myristate</td>
</tr>
</tbody>
</table>

Table 3: Moisturising Agents
Age-related Changes in the Skin that Contribute to Xerosis

In aged skin, changes occur in both the epidermis and dermis. The most important changes in the epidermis occur in the stratum corneum, which is made up of corneocytes and the intercellular substance. These age-related changes explain the elderly’s susceptibility to environmental insults, their diminished Natural Moisturizing Factor (NMF) levels, and the appearance of cracking, fine white scales and wrinkling.
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hyaluronic acid and propylene glycol. Moisturisers that contain only humectants will increase TEWL when applied to a damaged or dehydrated stratum corneum, because they do not prevent the hydrated stratum corneum from losing its water content into the atmosphere. Hence, most good moisturisers have a humectant and an occlusive ingredient to block TEWL.

Emollient ingredients include certain alcohols and esters. Alcohols such as octyl dodecanol, hexyl decanol and oleyl alcohol have excellent skin smoothing and moisturising properties, and patients should be advised that not all alcohols are drying. Esters that are good emollients include octyl stearate, cocaate, myristyl and isopropyl myristate and stearyl isononanoate. Emollients fill in the spaces between the desquamating corneocytes, thus giving skin a smooth texture.

Other additives to moisturisers include alpha-hydroxy (also a humectant) and beta-hydroxy acids, which increase corneocyte shedding and reduce corneocyte adhesion.

Topical Steroids

Only if the skin becomes inflamed or eczematous (eczema craquelé) should a low-potency topical steroid ointment be used. 1% hydrocortisone ointment is usually very helpful. The combination of urea and hydrocortisone in a cream base also may be quite effective.

Conclusion

Attention to the care of dry skin becomes more important as our population ages. General measures reviewed in this article should be discussed with patients, in addition to the importance of moisturising to prevent or treat the condition.

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References