Dermatology in Geriatrics

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Abstract

Over the past few years the world's population has continued on its remarkable transition from a state of high birth and death rates to one characterized by low birth and death rates. Consequently, primary care physicians and dermatologists will see more elderly patients presenting age related dermatological conditions.As people age, their chances of developing skin-related disorders increase due to multiple underlying medical conditions i.e. diabetes mellitus, atherosclerosis and decreased immunity. Common skin disorders found in the elderly individual are xerosis, pruritus, eczematous dermatitis, purpura, chronic venous insufficiency, psychocutaneous disorders etc. Caregivers and medical personnel can help decrease or prevent the development of many skin disorders in the elderly by addressing several factors i.e patient's nutritional status, medical history, current medications, allergies, physical limitations, mental state, and personal hygiene and for specific underlying etiologies; several pharmacological treatment choices are suggested.

INTRODUCTION

The famous old saying OLD IS GOLD doesn't apply to human skin as elderly people are recognized by their wrinkled and dull skin. The population is getting older, with a greater percentage of the population in the over-65 age group. This trend is expected to continue well into the 21st century.[1] Additionally, with the population of those age 80 and over also rapidly increasing, an increased emphasis on geriatric medicine is inevitable. Geriatric dermatology is a speciality that will receive particular attention.[2]

As people age, their chances of developing skin-related disorders increases. Two types of skin ageing exist, which may be divided into intrinsic ageing, which includes those changes that are due to normal maturity and occur in all individuals, and extrinsic ageing, produced by extrinsic factors such as ultraviolet light exposure, smoking, and environmental pollutants.

Decreased mobility, drug-induced disorders, and increased incidences of many chronic diseases are among the reasons elderly individuals are at heightened risk for skin diseases. Atherosclerosis, diabetes mellitus, human immunodeficiency virus (HIV), and congestive heart failure are some disease processes that can be detrimental to skin. These diseases are known to impede vascular efficiency and decrease immune responses, thereby reducing the body's ability to heal.

Many elderly persons will spend their time in nursing homes and assisted living facilities[3] .Caregivers and medical personnel can help decrease or prevent the development of many skin disorders in the elderly by addressing several factors i.e patient's nutritional state, medical history, current medications, allergies, physical limitations, mental state, and personal hygiene

HISTOLOGICAL CHANGES

Many histological changes occur with aging and photoageing (Tables I and II). Variation in cell size, shape, and staining results in epidermal dyscrasia of photo-aged skin. Melanocytes decline and Langerhans' cells (intradermal macrophages) decrease in density. The dermis becomes relatively acellular, avascular, and less dense, and the loss of functional elastic tissue results in wrinkles. The nerves, microcirculation, and sweat glands undergo a gradual decline, predisposing to decreased thermoregulation and sensitivity to burning. Nails undergo a slow decline in growth, with thinning of the nail plate, longitudinal ridging, and splitting. The subcutaneous fat layer atrophies on the cheeks and distal extremities, but hypertrophies on the waist of men and thighs of women.

_____ Table I: Aging Skin

Epidermal Changes Melanocytes Approximately 15% decline per decade Density doubles on sun-exposed skin Increased lentigines

Langerhans cells Decreased density Decreased responsiveness

Dermal changes Decreased collagen--1% annual decline, altered fibers Decreased density Progressive loss of elastic tissue in the papillary dermis

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Table II: Skin Changes in Aging Loss of elasticity and thinning of the skin Clinical Results: xerosis, laxity, wrinkling, uneven pigmentation, easy tearing, traumatic purpura

Photo-aging Clinical Results: actinic keratoses, fine and coarse wrinkling, telangiectasia, blotchiness and pigmentary changes, elastotic skin with giant comedones

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COMMON SKIN DISORDERS

This article will look at common skin disorders found in the elderly individual. These include xerosis, pruritis, eczematic dermatitis, purpura, and chronic venous insufficiency.

XEROSIS

Xerosis is characterized by pruritic, dry, cracked, and fissured skin with scaling. Xerosis occurs most often on the legs of elderly patients but may be present on the hands and trunk. The appearance of xerotic skin is like a pattern of cracked porcelain. These cracks or fissures are present from epidermal water loss. If the skin splits and cracks deeply enough to disrupt dermal capillaries, bleeding fissures may occur.[4]

Pruritus occurs leading to secondary lesions. Scratching and rubbing activities produce excoriations, an inflammatory response, lichen simplex chronicus, and even edematous patches. Subsequently, environmental allergens and pathogens can easily penetrate the skin, increasing the risk of allergic and irritant contact dermatitis, as well as infection. Allergic and irritant contact dermatitis may be a cause for a persistent and possibly more extensive dermatitis, despite therapy.

Eczematous changes can occur with a delayed hypersensitivity response, even in advanced age.[5] Secondary infection is an inherent risk with any break in the skin barrier. This cycle needs to be broken to disable the process and prevent complications.

Xerosis preys upon the elderly. This is primarily due to the fact that these individuals have decreased sebaceous and sweat gland activity; this reduced activity predisposes the aged skin to moisture depletion. There are a number of situations that deplete the skin's moisture. For example, xerosis tends to relapse in the winter when a lower humidity environment predominates. Another contributor is the daily use of cleansers and/or bathing without replacing natural skin emollients.[6]

Additionally, pre-existing disease states, therapies, and medications make the aging individual more susceptible to xerosis. Some of these pre-existing situations include radiation, end-stage renal disease, nutritional deficiency (especially zinc and essential fatty acids), thyroid disease, and neurological disorders with decreased sweating, anti-androgen medications, diuretic therapy, human immunodeficiency virus, and malignancies.[7-9]

Deficits in both skin hydration and lipid content play a key role in xerosis. Consequently, the skin's inability to retain moisture and provide an effective barrier directly impacts the development of xerosis in aging skin.[10]

Once the stage is set for xerosis development, the scenarios of flaking, fissuring, inflammation, dermatitis, and infection develop. The xerotic vicious cycle needs to be broken to disable the process and prevent complications.[11,12]

To achieve this goal, keratolytics, moisturizers, and steroids are the primary components of xerosis treatment. The keratolytic effect of ammonium lactate 12% lotion is effective in reducing the severity of xerosis.[13,14]

Individuals with sensitive skin may not tolerate some products formulated with alpha hydroxy acids (AHAs), due to unacceptable levels of stinging and irritation. In this case, a sensitive skin variant formulation should be substituted.[15] Liberal use of moisturizers reduce scaling and enhance the corneodesmosome degradation process.[16] Additional treatment via application of topical steroids (Class III-VI) is recommended in moderate-to-severe cases. Antipruritics should be added if disturbing pruritis is present.

Other additional management suggestions include the following:

- •Reduced frequency of bathing with lukewarm (not hot) water
- •Minimal use of a nonirritant soap

- •Avoidance of harsh skin cleansers
- •Application of moisturizer of choice directly on skin that is still damp
- •Avoidance of friction from washcloths, rough clothing, and abrasives
- •Use of air humidification in dry environments 17,18
- Pruritus

Characteristic features of pruritis include scratching and inflammation. The condition is often associated with other underlying diseases. Itching is thought to be induced by the effect of histamine and is mediated exclusively by the peripheral nervous system.[19] Itching evokes the desire to scratch.20,21 Scratching produces an immunology-based inflammatory response.[19,20] Pruritic skin diseases are the most common dermatological problem in the elderly.[21,22]

Pruritis can be psychogenic in origin. However, there are a number of dermatological and metabolic conditions that involve pruritis. Xerosis is the most common underlying dermatological condition. Other dermatological conditions include infestations, infection (fungal, bacterial or viral), lichen planus, nodular prurigo, dermatitis, eczema, and miliaria. Underlying metabolic conditions that can produce pruritus include renal failure, HIV, diabetes mellitus, thyroid disease, parathyroid disease, hypervitaminosis A, iron-deficiency anemia, neuropathy, hepatic disease, malignancy, and drugs.[4]

Initial treatment focuses on relief of pruritis. The specific etiology is then determined. To maximize effectiveness, pruritis treatment strategy is then tailored to the specific underlying condition.

There is little understanding of the pathophysiology of pruritus. Pruritus is known to be a feature of inflammation. Inflammation is the result of activation of the body's immune response, normally in response to an antigen. Involved skin cells have IgE molecules on their surface. The main physiological role of IgE is to trigger acute inflammation.[23] Release of compounds such as histamine and heparin (vasoactive amines) occurs.[24] Histamine causes small blood vessels to dilate, and heparin acts as an anticoagulant. Skin blood vessel walls have lymphocyte receptors on their surface, aiding the migration of lymphocytes from the blood into the tissues25 and setting the inflammatory stage. With repetitive rubbing, scratching, and touching (induced by a foreign body or self-induced), inflammatory and pigmentary cutaneous manifestations occur.[26] Some of these manifestations include excoriations, prurigo nodularis, and lichen simplex chronicus.[26-28]

Immediate relief of pruritus is the focus of initial treatment efforts. The goal of these efforts is to dull the inflammatory response.[29] Treatment regimens for pruritus and products recommended are highly variable.[22] Furthermore, pruritus relief evaluation is subjective since valid itch measurement techniques are needed for the evaluation of antipruritic therapies.[20] Mild pruritus may respond to nonpharmacologic measures such as avoiding hot water and irritants, maintaining proper humidity, using cool-water compresses, trimming the nails, and behavior therapy. Topical symptomatic treatments include moisturizers, emollients, tar compounds, topical corticosteroids, topical anesthetics such as benzocaine or dibucaine, and pramoxine HCl (alone or combined with menthol, petrolatum, or benzyl alcohol). [30]

Once temporary pruritic relief is obtained, efforts should focus on finding the underlying cause. This process begins with a thorough history, physical exam, and laboratory result evaluation. The goal of pruritis therapy is to optimize treatment efficacy by tailoring the treatment to the underlying etiology. For example, doxepin cream has been shown to be very effective in pruritus associated with eczematous dermatitis. [29] It can be used alone for acute pruritus or with corticosteroids in chronic conditions.[30] Avoidance of fragrance soap, irritating chemicals, and hot water help reduce pruritus, especially in elderly patients who have the xerotic changes of aging.

ECZEMATOUS DERMATITIS

Asteatotic eczema, nummular eczema, seborrheic dermatitis, gravitational eczema, and autoeczematization eczema fall under the category of eczematous dermatitis. Several of these disorders are commonly seen in the elderly.

Nummular eczema is characterized by pruritic, coin-shaped lesions that may develop into scales. These lesions are most commonly found on the lower legs, upper extremities, dorsum of hands, and the trunk. A treatment regimen may include the use of medium- or high-potency topical steroids and emollients such as petroleum jelly.[31] Secondary infections should be treated with antibiotics that cover staphylococci, such as dicloxacillin or cephalexin, and careful attention should be given to watch more severe infections such as methicillin-resistant staphylococcus

aureus.

Stasis dermatitis occurs with venous insufficiency, pedal edema, and varicose veins. The brownish colour results from hemosiderin deposition. The disease can lead to increased susceptibility to ulceration or cellulitis. An acute exacerbation of stasis dermatitis can result in "id" reaction or auto sensitization dermatitis, producing secondary, acute, papulovesicular, often symmetrical distribution on the extremities.

Seborrheic dermatitis presents as xerotic, erythematous, scaly, or flaky skin in the scalp and on the face, trunk, and/or anogenital region. The central nervous system may play a role in the severity of this disorder due to apparent increased incidence of this form of dermatitis with Parkinson's disease, quadriplegia, and emotional distress.[32] Pityrosporum ovale has also been implicated in this disorder. Treatment should include ketoconazole or ciclopirox applied daily. Severe cases may require oral ketoconazole or fluconazole and antistaphylococcal antibiotics if secondary infection is suspected.[31]

Psychogenic dermatological diseases include disorders such as lichen simplex chronicus, prurigo nodularis, neurotic excoriations, and delusions of parasitosis. The lesions of lichen simplex chronicus are characterized as lichenified, red scaling plaques that are sharply demarcated.[32] This disorder usually occurs in atopic patients who obsess over pruritic lesions. These patients will habitually rub, scratch, and otherwise irritate a pruritic area until lichenification occurs. Treatment may include behavior modification along with water soaks and topical steroids for body lesions. Scalp treatment may require triamcinolone acetonide injections for scalp nodules, and fluocinonide or clobetasol solutions or foams for resistant lesions. [31]

Prurigo nodularis, like lichen simplex chronicus, may be stress-related, and the lesions are secondary to habitual scratching and picking. The nodules are characteristically erythematous or hyperpigmented. They are usually scattered and discrete keratotic nodules on the extremities.[32] Triamcinolone acetonide or other topical corticosteroids may be applied to the affected areas. Consider neurotic excoriations when a disease does not fit into any regular pattern; in addition, the patient may often admit to using his or her skin as an outlet for stress. The skin is often a reservoir of habitual frustrations, and it allows the observant and caring practitioner a chance to explore options for quality-of-life improvement. Fruensgaard[33] has recommended psychotherapeutic strategies such as establishing constructive patient-doctor relationships, training patients in diversion strategies to avoid scratching, discovering daily stress that can be reduced, and heightening patients' awareness of trigger factors.

Patients complaining of the sensation of parasites crawling on them without evidence of the presence of parasites may have delusions of parasitosis. This condition is more attributable to a psychosis than to a dermatological problem. Drug addictions, toxins, nutritional deficiencies, and arteriosclerosis may contribute to this disorder.[31]For those patients with depression prominent, consider doxepin or fluoxetine; with anxiety prominent, consider hydroxyzine or alprazolam; and with delusion prominent, consider pimozide or haloperidol.[34]

PURPURA

Purpura can be defined as any of a group of conditions characterized by ecchymoses or other small hemorrhages in the skin, mucous membranes, or serosal surfaces. Purpura may be caused by decreased platelet counts (thrombocytopenia), platelet abnormalities, vascular defects, trauma, or drug reactions.[35]

Elderly persons are especially susceptible to hemorrhage into the skin. Aging causes a gradual reduction in the number of blood vessels and elastic fibers, as well as losses in dermal collagen and fat, causing a thinning of the skin and reduced protection from external trauma.[35]

Many elderly persons are taking medications that can cause thrombocytopenia (platelet counts below 100,000/cubic mm), leading to purpura. Post-traumatic bleeding is common when platelet counts are lower than 50,000/cubic mm. Spontaneous bleeding can occur when platelet counts fall below 20,000/cubic mm. Drugs commonly associated with thrombocytopenia include penicillins, quinine, quinidine, thiazide diuretics, methyldopa, and heparin.[36]

Thrombocytopenic purpura presents as petechiae and/or ecchymoses in association with decreased platelet counts. Petechiae are small, nonpalpable, nonblanchable, reddish macules. Ecchymoses are larger (> 0.5 cm) bluish-to-black lesions. These lesions tend to lighten in color over time due to enzymatic degradation of the pooled blood.

Treatment should focus on the underlying cause. Administration of oral glucocorticoids and immunoglobulins may be necessary. If platelet counts are extremely low (<

10,000/cubic mm), platelet transfusion may be needed.[37]

Skin tears most often result from a purpura torn open by inadvertent trauma. This is one of the most difficult problems to treat, especially with patients taking steroids.

Important measures include skin protectors and designing living environments to prevent injuries.

CHRONIC VENOUS INSUFFICIENCY

Chronic venous insufficiency is due to venous hypertension secondary to valvular incompetence. Etiological factors include heredity, prolonged standing, and venous thrombosis. The disease may manifest as edema, varicosities, brown discoloration, superficial neovascularization, dermatitis, and venous ulcers (most common on the medial lower leg). Therapy includes elevating the legs, exercise, supportive stockings, surgery, mild-to-moderate corticosteroids, and oral antibiotics if secondary infection is present.

CONCLUSION

Many disease processes are present in geriatric dermatology. Two of the major ones are xerosis and pruritus. The perceived itch of pruritis induces scratching and is often associated with several underlying dermatological and systemic diseases. However, pruritis can be psychogenic in origin. Xerosis is the most common underlying dermatological condition. Several infectious, metabolic, hepatic, hematological, and other systemic conditions are associated with pruritus. Immediate relief of pruritus is the initial treatment goal. After initial pruritic relief, a thorough history, physical examination and laboratory testing work-up is necessary to find the underlying treatable cause. An effective pruritic treatment strategy is tailored to the underlying etiology. For specific underlying etiology categories, several pharmacological treatment choices are suggested.

Many other geriatric dermatological problems are nutritional deficiencies, decubitus ulcers, bullous pemphigoid, infections, tumors, alopecia, photosensitivity disorders, paraneoplastic syndromes, and erythroderma are among other disorders and diseases that deserve attention. Many of the diseases are localized to the skin, but illnesses originating in other organ systems are often made manifest on the skin. As stated before, chronic diseases such as diabetes mellitus and HIV compound the diagnoses and treatment of dermatologic problems.

Since the human population is living longer, chronic diseases will become more prevalent, including the diseases of the skin. As clinicians see more elderly patients presenting with age-related dermatological conditions, it will become increasingly important to keep up with learning as much about the field as possible in order to care for the growing elderly population of patients.

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