

MISE AU POINT/IN-DEPTH REVIEW

COMMON CUTANEOUS DISORDERS IN THE GERIATRIC POPULATION

A Review

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ABSTRACT • There is a growing interest in the field of geriatric health maintenance and management especially in the industrialized world where life expectancy continues to increase. The skin is one of the many organs affected by the process of aging. Skin aging basically encompasses structural and physiological changes that are a part and parcel of two processes referred to as “intrinsic” and “extrinsic” skin aging. Skin aging is induced and modified by multiple factors, including environmental exposures and life style choices over time, in addition to the genetic make-up. The aged skin becomes more susceptible to certain dermatologic diseases that generally fall under the following categories: bacterial, fungal, viral infections, and parasitic infections, vascular disorders, adverse drug reactions and eruptions, papulosquamous disorders, and neoplasms. In addition, skin disorders seen in the elderly population are unique in their presentation, diagnosis, progression and physicians must be aware of when taking history and examining an elderly patient.

Treatment of dermatologic complaints in the elderly is delicate. Social, financial, psychological, and physiological factors play a central role in designing a management plan. Particular attention must be given to matters such as patient compliance, presence of concerned caregivers, medical comorbidities, polypharmacy and the increased risk of drug reactions.

Keywords : geriatrics, elderly, aging skin, photoaging

INTRODUCTION

Life expectancy is on a consistent and predictable increase particularly in the industrialized world, making geriatric health maintenance and management a growing area that deserves special considerations. Much attention is given to preventing or rather delaying skin aging mainly because it is associated with increased susceptibility to many diseases.

STRUCTURAL AND PHYSIOLOGICAL CHANGES IN THE SKIN WITH AGING

Aging of the human skin integument can be viewed as a set of progressive structural and functional disturbances. These disturbances are the result of both intrinsic factors and extrinsic damage.

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RÉSUMÉ • Il existe un intérêt croissant dans le domaine du maintien et de la gestion de la santé gériatrique, surtout dans les pays industrialisés où l'espérance de vie continue d'augmenter. La peau est l'un des organes affectés par le processus de vieillissement. Le vieillissement de la peau englobe des changements structurels et physiologiques qui font partie intégrante de deux processus “intrinsèque” et “extrinsèque” du vieillissement de la peau. Il est induit et modifié par de multiples facteurs, dont l'exposition à l'environnement et les choix de style de vie au fil du temps, en sus du bagage génétique. La peau âgée devient plus sensible et sujette à certaines maladies dermatologiques telles que : infections bactériennes, fongiques, virales et parasitaires, troubles vasculaires, toxidermies médicamenteuses indésirables, dermatoses papulosquameuses, et néoplasmes. En outre, les troubles de la peau chez les personnes âgées sont uniques dans leur présentation clinique, diagnostic et progression; les médecins doivent en être conscients lors du recueil des antécédents de la maladie et de l'examen d'un patient âgé. Le traitement des affections dermatologiques chez les personnes âgées est délicat. Les facteurs sociaux, financiers, psychologiques et physiologiques jouent un rôle central dans la conception d'un plan de gestion. Une attention particulière doit être accordée à des questions telles que l'observance thérapeutique, la présence de soignants concernés, les comorbidités médicales, la polypharmacie et le risque accru de toxidermies médicamenteuses.

Mots-clés : gériatrie, personnes âgées, vieillissement de la peau, photovieillissement

Intrinsic skin aging is an inevitable phenomenon that represents an ongoing physiologic decline. Central to the pathophysiology of many skin diseases in the elderly is the compromise in the barrier function of the skin. The cellular composition of the epidermis changes with age, and there is a decrease in the number of melanocytes and of immunologically active Langerhans' cells. There is also an estimated 50% reduction in nail growth and reduction in sweat and sebaceous gland activities [1]. Moreover, aged skin will have increased fragility mainly to shear stress because the epidermis becomes thinner, and the dermo-epidermal junction flattens [2]. Over time there is loss of undulations at the dermo-epidermal junction and thus a decrease in the area available for nutrient transfer. This implies a decrease in the protective lipids in the stratum corneum leading to an impaired barrier, in addition to a xerotic skin. Moreover, decreased division

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of keratinocytes and longer migration from the basal layer to the skin surface has been observed leading to a significantly slower epidermal turnover and thus a dysfunctional barrier.

The effects of normal aging are also evident in the dermis, where thinning and decreased vascularity is observed. Furthermore, fibroblasts that reside in the dermis tend to have a significant decrease in their biosynthetic capacity leading to impaired collagen synthesis and delayed wound healing. Additionally, elastin biosynthesis declines and thus the elastic fiber network degenerates with time and this can be noted [to start] as early as the 4th decade. Decreased skin resilience and loss of hydration have been attributed to changes in the glycosaminoglycan macromolecules in the dermis. However, the main reason for skin sagging and wrinkling is the loss of the underlying support secondary to decreased sub-dermal fat. This layer of fat is thought to be protective and thus aged skin is inevitably more susceptible to trauma. Moreover, trauma particularly to the lower extremities is also common due to the decrease in sensory perception that accompanies aging. Additionally, in the aged skin the surface pH is increased slightly above the expected pH of 5.5 thus increasing the likelihood of the elderly suffering from skin infection, allergy and irritation [3]. In females, the beginning of intrinsic skin aging seems to be associated with menopause; indicating that a normal decrease in hormonal levels, specifically estrogen, play a significant role in the process of aging in the skin integument [4].

Extrinsic factors also play a central role in skin aging and damage that is cumulative and possibly preventable. Free radical insults seem to be a central player in the pathophysiology of aging and age-related diseases. Ultraviolet light induces reactive oxygen species that turn on the transcription factor activator protein-1 (AP-1) [5]. AP-1 induces upregulation of matrix metalloproteinases (MMPs) like collagenase-1 (MMP-1), stromelysin-1 (MMP-3), and gelatinase A (MMP-2), which degrade collagen and elastin and indirectly inhibit the collagen synthesis in the skin, thus leading to the changes seen in photo-damaged skin such as fine and coarse wrinkles, dyspigmentation, and loss of skin elasticity. Furthermore, nicotine seems to be associated with a significant increase in MMP-1 mRNA in the skin of smokers [6].

CUTANEOUS DISORDERS IN THE ELDERLY

Infections

Infections in the elderly tend to be similar to those in younger patients with few exceptions. The immunity in the elderly is considered partially depressed. Elderly individuals have particular susceptibility to infections due to psychosocial limitations such as diminished attention to personal hygiene, residing in nursing homes, and preference of warmer and humid climates, among other factors.

Dermatophytic infections

Although dermatophytic infections are common and considered non-alarming or life threatening in the general population, this is not always the case in the elderly given the potential to develop systemic infections secondary to decreased circulation and relatively immune-compromised states [7]. Therefore, clinical presentations could be unusual with failure of response to treatment.

Tinea capitis in the elderly tends to be misdiagnosed as seborrheic dermatitis or psoriasis. The infection can progress to alopecia and kerion formation with posterior cervical lymphadenopathy. Griseofulvin is considered the gold standard of therapy, however it has several significant drug interactions making terbinafine a safer option for elderly patients given the high prevalence of polypharmacy in this age group. Tinea pedis, specifically the moccasin type, is more prevalent in the elderly population (in 80% of individuals above the age of 60) and is usually overlooked and misdiagnosed as dryness and scaling that accompany old age. It is frequently diagnosed in summer because it worsens in terms of symptoms and distribution.

Tinea pedis can present in any of the four clinical patterns (moccasin, interdigital, inflammatory, and ulcerative). The causative agent is mainly *T. rubrum*, and *T. mentagrophytes* the leading cause of the bullous/inflammatory type. Chronic interdigital dermatophytic infection progressing to ulcerative tinea pedis and secondary bacterial superinfections are not uncommon in the elderly diabetic individuals [8]. Both topical and oral treatments are efficacious and safe, however topical applications may be troublesome and noncompliance may lead to poor results given the frequency, duration, and extent of body area involved.

Tinea cruris distributed in the inguinal folds, perineum, and buttocks, sparing the scrotum and penis, is commonly seen in the elderly particularly men with concomitant tinea pedis and/or onychomycosis and thus, whenever present, physicians should always check for associated infections.

Tinea unguium (onychomycosis) is prevalent in around 40% of individuals above the age of 60 years [9]. Onychomycosis should be addressed in the elderly despite the long and arduous treatment for two main reasons. The first is that the infected nails could function as a reservoir for organisms that can later develop into more acute and serious lower extremity infections particularly in older individuals with vascular insufficiency or diabetes mellitus (Fig. 1). Arthritis, obesity and even cataracts can make it hard to perform the simple act of clipping and trimming the toenails. Consequently, thick and dystrophic toenails can become extremely painful and subsequently restrict the patient's ability to walk comfortably and perform routine daily activities.

Candidal infections

Around 80% of candidal infections in humans are caused by *Candida albicans* and are common in all age groups but most often occur in individuals at the extremes

of age (i.e., neonates and the elderly). It is particularly important that therapy addresses the primary infection and the underlying systemic conditions, which commonly include diabetes, endocrinopathies, malnutrition, leukopenia, and malignancy. Otherwise the candidal infection is expected to become persistent and recurrent. Oral candidiasis (thrush) is the most common of the cutaneous candidal disease but is not expected in healthy individuals even with advancing age. It is the health factors associated with old age that predispose to oral thrush in this age group, mainly broad-spectrum antibiotics, corticosteroids (inhaled, systemic, or topical), malnutrition and dentures. Up to 70% of denture wearers develop oral candidiasis [10]. The main risk factors to be addressed are poor oral hygiene, overnight wearing of dentures (> 24 consecutive hours), and mucosal trauma caused by poorly fitted dentures. There is an additional increase in the incidence of angular cheilitis (perleche) particularly in the elderly patients who suffer from redundant skin and drooling problems.

Candidal intertrigo is commonly seen in healthy individuals, but more so in the geriatric population given the frequency of obesity, diabetes mellitus, humid environments, skin occlusion, and the use of broad-spectrum antibiotics. Diaper dermatitis, a variant of intertrigo, exacerbated by skin breakdown secondary to urine ammonia can be a chronic problem in incontinent elderly patients. Antifungal powders that contain nystatin or clotrimazole can be easily and regularly applied by the elderly patient to keep the skin dry in those areas and prevent the occurrence of the disease. Many cases are chronic and severe and require oral azole or terbinafine treatment.

Pityrosporum infection

The yeast *Pityrosporum orale* (*Malassezia furfur*) is known to be a colonizer of human skin particularly after the onset of puberty. The number of these lipophilic yeasts decreases in elderly patients, possibly due to a concomitant decrease in skin lipids with aging [11]. Seborrheic dermatitis among the elderly population is consistently higher than those in the general population, particularly among those with loss of activities of daily living [12]. The pathogenesis of this eczematous condition is being studied. (Fig. 2)

Kaposi's sarcoma

Kaposi sarcoma is an angioproliferative disorder that develops as a result of infection with human herpes virus 8 (HHV-8). The classical or sporadic type typically presents in individuals > 60 years, particularly males of Middle Eastern, Mediterranean or Central/Eastern European origin and tends to occur in the lower extremity as purplish, reddish blue, or dark brown/black macules, plaques, and nodules (Fig. 3). One should expect edema and a possible eczematous process on the surface that responds to mild steroid application. The course is usually indolent with new lesions appearing slowly over several years. Therapy can range from radiation therapy, excision, cryo-



Figure 1. Stasis dermatitis with associated onychomycosis. Erythema, scaling, and crusting of bilateral lower extremities with evidence of scars at locations of recently healed ulcers of the medial malleolus. Nail plate thickening, yellowish discoloration and subungal hyperkeratosis is also noted.



Figure 2. Seborrheic dermatitis of the face, ear, and scalp. Sharply demarcated pink plaques and patches covered with white flaky and greasy scales.



Figure 3. Kaposi sarcoma. Localized plaque of Kaposi sarcoma on the medial aspect of the distal lower leg of an elderly man.

therapy, laser ablation to chemotherapy with pegylated liposomal doxorubicin (PLD) or axane, oral etoposide, vinblastine, or gemcitabine.

Herpes zoster

Herpes zoster (shingles), is the result of reactivation of latent varicella-zoster virus (VZV) infection within the sensory dorsal root ganglia. It is characterized by a painful, unilateral vesicular eruption in a restricted dermatomal distribution [13]. With age, cellular immunity diminishes thus increasing the incidence of clinical VZV infection and shingles. It is estimated that approximately 50% of persons who live to the age of 85 will have an episode of zoster [14]. Shingles may first manifest itself with pain, skin lesions, or both. The risk of post herpetic neuralgia (PHN) increases with age as demonstrated in a recent study showing that PHN occurred in 18% of all adult patients with herpes zoster, but in more than one third of those aged 79 years or older [15]. Initiating therapy within 3 days of the onset of herpes zoster will have more rapid healing and decreased viral shedding and a shorter duration of pain; and this is particularly relevant in the geriatric population given the associated risks. Since immunization is associated with a boost in VZV-specific T cell immune responses, the zoster vaccination is recommended in individuals who are 60 years of age or older to decrease the risk of zoster and post herpetic neuralgia by approximately 66.5% [16].

Vascular disorders

Stasis dermatitis is considered a common inflammatory skin disease among the middle aged and elderly (Fig. 1). Stasis dermatitis is the earliest cutaneous sequelae of chronic venous insufficiency and the precursor of venous leg ulceration and lipodermatosclerosis, predominantly in elderly obese females with a possible hereditary susceptibility [17]. It involves pruritus, discoloration, and edema of the lower extremities.

Risk factors known to cause dependent edema and which are mandatory to screen for include congestive heart failure, long-standing hypertension with diastolic dysfunction, and some antihypertensive medications (such as amlodipine) [18].

Chronic ulceration of the lower leg is a frequent condition among the elderly, with a prevalence of 3-5% in the population over 65 years of age. Aging plays a major role in the pathophysiology of the disease as well as other associated risk factors for atherosclerotic occlusion such as smoking, obesity and diabetes. The main causes in this population are venous valve insufficiency and lower extremity arterial disease.

Venous ulcers are shallow and irregularly shaped occurring on the medial aspect of the lower extremity and are typically associated with stasis dermatitis. On the other hand, arterial ulcers are punched out lesions with • surrounding loss of hair • atrophy • dry, cold skin and • thickened toenails, typically located over pressure points, such as the toes, lateral side of the ankle and associated with intermittent claudication and severe debilitating pain. Other less



Figure 4. Venous ulcer

Chronic non-healing ulcers on the medial aspects of bilateral legs. Note the presence of a yellow fibrinous base, irregular borders, surrounding erythema, crusting, and exudate.

frequent conditions may occur in the elderly and result in ulceration such as infection, vasculitis, rheumatoid arthritis, systemic lupus erythematosus, antiphospholipid syndrome, skin malignancies and ulcerating skin diseases such as pyoderma gangrenosum, or combination of vasculitis and hypercoagulability states [19]. (Fig. 4)

Decubitus ulcers: Two thirds of pressure sores occur in patients older than 70 years. The prevalence rate in nursing homes is estimated to be 17-28%. They occur chiefly among those with decreased mobility such hospitalized patients, bedridden or those in need of help to turn in bed, or frequently using wheelchairs. Additional aggravating conditions are dry skin over bony prominences, incontinence, sensory deficiency, and/or poor nutritional state. When managing such ulcers, the physician must explain to the patient and family that even with optimal medical and surgical therapies, patients who achieve healed wounds have recurrence rates of as high as 90% [20].

Adverse drug reactions and eruptions

Cutaneous reactions account for approximately 2 to 3% of all adverse drug reactions. The incidence of adverse drug reactions (ADR) increases with aging, and the elderly are more likely to suffer serious or fatal reactions that require hospitalization. This largely reflects the increased utilization in this population of over-the-counter and prescription drugs, predominantly those with a narrow therapeutic index associated with a high risk of dangerous adverse reactions and interactions.

Moreover, with aging there is a reduced ability to withstand side reactions due to concomitant diseases such as heart and renal failure, and an altered pharmacokinetic and dynamic response that tends to increase drug effects [21].

Table I lists helpful points to keep in mind when evaluating a possible drug reaction.

TABLE I MAJOR CATEGORIES OF DRUG REACTIONS IN ELDERLY PATIENTS

Photoallergic reactions	- Common in the elderly taking thiazides, diuretics, sulfonylureas, phenothiazines, and amiodarone. - Must rule out: a phototoxic or photoallergic response to a topical preparation or connective tissue disease, such as lupus erythematosus and dermatomyositis.
Bullous drug-associated eruptions	- Bullous pemphigoid is the most common presentation in adults above the age of 65 and mainly linked to the use of furosemide and penicillins. - Drug-induced pemphigus mimics idiopathic pemphigus (both vulgaris and foliaceus), which is typically seen in middle-aged individuals but can also present in the elderly who are taking captopril, ACE inhibitors, D-penicillamine or cephalosporins.
Drug-hypersensitivity syndrome	- Triad of fever, skin eruption, and internal organ involvement seen in elderly patients started on associated drugs, including anti-convulsants (phenytoin, phenobarbital, carbamazepine, and lamotrigine), sulfonamide antibiotics, dapsone, trimethoprim, minocycline, metronidazole, azathioprine, and allopurinol. - Reactive blood changes (atypical lymphocytosis and neutrophilia early in the syndrome, with eosinophilia appearing later, agranulocytosis, thrombocytopenia, Coombs-positive hemolytic anemia, and aplastic anemia) may be less marked in the elderly. - The elderly have a potentially higher mortality rate with these reactions.
Itching-drug-induced pruritus	- Dry skin is usually asymptomatic, but it seems that drug-induced xerosis is relatively severe and is accompanied by intense pruritus and secondary asteatotic dermatitis or eczema. - Lipid-lowering agents (e.g., HMGCoA reductase inhibitors, and gemfibrozil) have been noted to contribute to skin dryness theoretically by impairment of cholesterol's role in the barrier function of the skin. - Spironolactone and cimetidine cause dryness and itching possibly due to reduced sebum production. - Reduction in the amount of perspiration by drugs with atropine-like actions also may contribute to dryness. - Theoretically diuretics and other drugs may reduce the skin's water content and lead to skin dryness.
Urticarial drug reactions	Increased risk in elderly because of their increased likelihood of hospital admissions and exposure to penicillin, cephalothin, and ampicillin, vancomycin, radiographic contrast media, several anesthetic agents, aspirin, nonsteroidal anti-inflammatory drugs, and angiotensin-converting-enzyme inhibitors.
Maculopapular exanthematous (Fig. 5)	- The most common pattern. - More than twice as common in the ninth and tenth decades of life as they are in the third or fourth decades. - Major culprits are penicillin, cephalosporin and sulfonamide antibiotics, anticonvulsants, and gold. - In the geriatric population, chronic lymphocytic leukemia and/or concurrent allopurinol are more likely to be cofactors that increase the risk of an exanthematic eruption associated with antibiotic therapy. - Typically the eruption begins 5-14 days after initiation of drug therapy and resolves over 1-2 weeks after drug discontinuation, but it seems that exanthematic eruptions in the elderly have a more gradual onset and a slower resolution compared with that of younger patients.
Fixed drug reactions	- Commonly implicated <u>drugs</u>: penicillins, tetracycline, sulfonamides, barbiturates, phenolphthalein, and gold salts. - There does not seem to be a reported increased prevalence in the elderly population in particular.
Erythroderma (Fig. 6)	- Necessitates hospitalization in the elderly. - Increased skin perfusion and fever place significant demands on the baseline fragile cardiorespiratory systems of these patients. - Careful attention to fluid balance, electrolytes, cardiac function, temperature regulation, and nutritional support are important in this setting.
Anticoagulant -induced skin necrosis	- Secondary to a transient pro-coagulant state in patients with the inherited protein C and S deficiencies. - Its incidence is very low 0.01-0.10%, peaking in the sixth and seventh decades of life, with four times higher prevalence in women than in men. - Obesity is a major risk factor. - The majority of cases appear between day 3 and 6 of onset of warfarin therapy. - Late onset from 15 days to 15 years after onset of therapy has been documented namely in postmenopausal obese females, HIV patients and individuals with predisposing hypercoagulable states. - A purple-toe syndrome also can occur 3 to 8 weeks into coumadin therapy. - Investigate for an accompanying infection (e.g., pneumonia, viral infection, and erysipelas), which is expected in as many as 25% of patients.



Figure 5. Maculopapular exanthematous adverse drug reaction
Maculopapular pruritic eruption mainly involving the trunk
in a hospitalized patient.

Bullous pemphigoid

Bullous pemphigoid is more prevalent among those who are 60-80 years of age.

Theories to explain this predilection include the age-associated increase in circulating autoantibodies and vulnerability of skin layers leading to dermal-epidermal separation. Another theory to entertain is that age-associated changes in the basement membrane itself render it specifically vulnerable to this disease process [22].

Keep in mind that bullous pemphigoid can have a diverse array of presentations including tense blisters, excoriated eczematous lesions (Fig. 7). Occasionally urticarial plaques are the only manifestation as part of the urticarial phase of bullous pemphigoid.

Papulosquamous disorders

Psoriasis is known to present in early adulthood however a well-known milder form of the disease presents in individuals above the age of 55 with a weaker genetic association [23].



Figure 6. Erythroderma (a) Erythema and scaling involving > 90% of the skin surface. (b) Exfoliation of the scale on the palms is noted.



Figure 7. Bullous pemphigoid (a) Diffuse erythematous lesions over trunk and extremities (b) Excoriated eczematous lesions on the back. (c) Urticarial plaques, some of which are confluent with tense blisters.

Psoriasis often displays atypical features in the elderly such as a predisposition for flexural areas. A theory to explain this distribution is the higher incidence of intertrigo in this population predisposing the affected skin to psoriasis development, commonly known as Koebner phenomenon. Koebner phenomenon manifests in the elderly at sites of urinary incontinence, hearing aids, corsets, and braces. Psoriasis is often hard to control in this population for many reasons with polypharmacy being a major reason. For instance, β -blockers, non-steroidal anti-inflammatory drugs, and angiotensin-converting enzyme inhibitors are commonly used medications and known to aggravate the disease. Psoriasis in the elderly is often exquisitely sensitive to antiproliferative drugs such as methotrexate. This is mainly due to altered proliferative homeostasis that occurs with aging and concomitant diseases. While complete resolution of plaques is seen with minute doses, conversely, standard doses may cause extensive erosions and complications [24]. There is a growing interest in using biologic therapies, such as recombinant cytokines, fusion proteins, and monoclonal antibodies for management of psoriasis in this population.

Neoplasms

As the skin ages, there is a clinically significant increase in benign proliferative growths. Lentigines, seborrheic keratosis, acrochordons, and cherry angiomas begin to appear in middle age and are numerous in nearly every adult beyond age 65 years.

Seborrheic keratoses are considered biomarkers of “intrinsic aging” of the skin because they increase with age in a fashion independent of sun exposure [25]. Focal

epidermal homeostatic loss resulting in non-malignant clonal proliferations of both keratinocytes and melanocytes is the presumed mechanism of their development. Increased secretion of endothelin-1, an inducer of melanogenesis, dendriticity, and proliferation in melanocytes, is hypothesized to play a central role in the pathogenesis [26].

The age-specific incidence of skin cancer is known to increase exponentially with age. The reasons for this include the cumulative exposure to the various carcinogens and UV irradiation over a lifetime and the age-associated decrease in DNA repair capacity and immunosurveillance, as well as the decline in proliferative homeostasis [27].

Premalignant actinic keratosis (Fig. 8) and squamous



Figure 8. Actinic keratosis - Cutaneous horn



Figure 9

Squamous cell carcinoma (a) Scalp. (b) Leg.
Note the surrounding sun damage and multiple actinic keratosis.



Figure 10. Nodular malignant melanoma

(a) Black shiny papule noticed 2 months ago to be growing over a brownish macule that had been present for years.
(b) Asymptomatic skin colored papule on upper back.
Note the surrounding cumulative sun damage on the back.

cell carcinoma (Fig. 9) are primarily induced by habitual sun exposure of fair-skinned individuals in a direct dose-response relationship and subsequently associated with cumulative exposure to sunlight. This is in contrast to basal cell carcinoma (BCC) and malignant melanoma risk that is related to intermittent sun exposure. The mechanism underlying these different epidemiologic patterns remains unknown.

Melanomas are one of the few remaining cancers whose incidence and mortality are on an annual rise. Melanomas are commonly seen in men above the age of 65 on a background of multiple benign cutaneous lesions. Melanomas in the elderly appear as thicker lesions than those of younger adults (Fig. 10). The more severe presentation in the elderly is partly due to failure to conduct proper self-skin examinations and therefore late presentation. Patients older than 65 years of age have a significantly increased mortality risk that can reach up to four times that of younger patients. Increased age seems to be a worse prognostic factor in elderly males compared to elderly females. Among all the types of melanomas that have increasing age-specific incidences, lentigo maligna melanoma incidence dramatically rises among individuals who are above 60 over sun-exposed sites [28].

A rare but alarming presentation in the elderly is the rapidly growing nodular lesion in the head and neck region. Upon encountering such a growth, the physicians should entertain the following two serious entities among their differential diagnosis: the first is merkel cell carcinoma (MCC) (Fig. 11) that arises from a pluripotent cell that displays neuroendocrine differentiation and occurs



Figure 11. Merkel cell carcinoma

most commonly over sun-exposed areas. More than 90% of patients diagnosed with this tumor are older than 50 years, with the mean age of onset being 68 years. MCC is thought to be caused by the integration of polyoma-virus sequences within the DNA of tumor cells in combination with age-associated compromise in cellular immunity [29].

The second is angiosarcoma and this most commonly occurs over the head and neck of the elderly white men. Appropriate diagnosis is crucial because this tumor is associated with rapid growth and early metastasis resulting in death within two years of diagnosis. This vascular tumor's rapid growth has been partly explained by immunohistochemical analysis showing high levels of VEGF and VEGF receptor-2, as well as cell cycle-associated proteins [30].

CONCLUSION

In conclusion, when approaching all these skin disorders, physicians must keep in mind that in the elderly the management plan must be based on more than a chief complaint and diagnosis. The management should be individualized. It must incorporate social, financial, psychological, and physiological factors which play an important role in both the development of a treatment plan and in its success. Finally, dermatologists need to be able to customize the conventional diagnostic and therapeutic modalities to fit this delicate population. This will ensure the delivery of appropriate, patient-centered services with the best expected outcomes.

REFERENCES

- Yaar M, Gilchrist BA. Skin aging: postulated mechanisms and consequent changes in structure and function. *Clin Geriatr Med* 2001; 17: 617-30.
- Moragas A, Castells C, Sans M. Mathematical morphologic analysis of aging-related epidermal changes. *Anal Quant Cytol Histol* 1993; 15: 75-82.
- Farage M, Miller K, Elsner P, Maibach H. Functional and physiological characteristics of the aging skin. *Aging Clin Exp Res* 2008; 20 (3): 195-200.
- BrinCAT M, Muscat Baron Y, Galea R. Estrogens and the skin. *Climacteric* 2005; 8 (2): 110-23.
- Angel P, Szabowski A, Schorpp-Kistner M. Function and regulation of AP-1 subunits in skin physiology and pathology. *Oncogene*. 2001; 20 (19): 2413-23.
- Chung J, Seo J, Choi H et al. Modulation of skin collagen metabolism in aged and photoaged human skin in vivo. *J Invest Dermatol* 2001; 117 (5): 1218-24.
- Ameen M. Epidemiology of superficial fungal infections. *Clin Dermatol* 2010; 28: 197-201.
- Vanhootegehem O, Szepietuk G, Paurobally D et al. Chronic interdigital dermatophytic infection: a common lesion associated with potentially severe consequences. *Diabetes Res Clin Pract* 2011 Jan; 91 (1): 23-5.
- Elewski BE, Charif MA. Prevalence of onychomycosis in patients attending a dermatology clinic in northeastern Ohio for other conditions. *Arch Dermatol* 1997; 133: 1172-3.
- Budtz-Jorgensen E. Oral mucosal lesions associated with the wearing of removable dentures. *J Oral Pathol* 1981; 10: 65-80.
- Faergemann J, Aly R, Maibach HI. Quantitative variations in distribution of *Pityrosporum orbiculare*. *J Invest Dermatol* 1976; 66: 178-82.
- Mastrolonardo M, Diaferio A, Vendemiale G et al. Seborrhoeic dermatitis in the elderly: inferences on the possible role of disability and loss of self-sufficiency. *Acta Derm Venereol* 2004; 84 (4): 285-7.
- Gnann JW Jr, Whitley RJ. Clinical practice. Herpes zoster. *N Engl J Med* 2002; 347: 340-6.
- Schmader K. Herpes zoster in older adults. *Clin Infect Dis* 2001; 32: 1481-6.
- Yawn BP, Saddier P, Wollan PC et al. A population-based study of the incidence and complication rates of herpes zoster before zoster vaccine introduction. *Mayo Clin Proc* 2007; 82: 1341-9.
- Harpaz R, Ortega-Sanchez IR, Seward JF, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). Prevention of herpes zoster: recommendations of the Advisory Committee on Immunization Practices. *MMWR Recomm Rep* 2008; 57: 1-30.
- Raffetto J. Inflammation in chronic venous ulcers. *Phlebology* 2013 Mar; 28: Suppl 1: 61-7.
- Gosnell AL, Nedorost ST. Stasis dermatitis as a complication of amlodipine therapy. *J Drugs Dermatol* 2009; 8 (2): 135-7.
- Margolis DJ, Berlin JA, Strom BC. Risk factors associated with the failure of a venous leg ulcer to heal. *Arch Dermatol* 1999; 135: 920-6.
- Revis DR. Decubitus ulcers. *Medscape*: <http://emedicine.medscape.com/article/190115-overview#a0199>
- Brawn L, Castleden C. Adverse drug reactions: An overview of special considerations in the management of the elderly patient. *Drug* 1990; 5: 421-35.
- Yaar M, Gilchrist BA. Bullous pemphigoid: Disease of the aging immune system. In: Ahmed AR, editor. *Clinics in Dermatology*. Philadelphia: Lippincott, 1987: 135.
- Henseler T, Christophers E. Psoriasis of early and late onset: Characterization of two types of psoriasis vulgaris. *J Am Acad Dermatol* 1985; 13: 450-6.
- Grozdev IS, Van Voorhees AS, Gottlieb AB et al. Psoriasis in the elderly: from the Medical Board of the National Psoriasis Foundation. *J Am Acad Dermatol* 2011 Sep; 65 (3): 537-45.
- Yaar M, Gilchrist BA: Ageing and photoageing of keratinocytes and melanocytes. *Clin Exp Dermatol* 2001; 26: 583-91.
- Manaka L, Kadono S, Kawashima M et al. The mechanism of hyperpigmentation in seborrhoeic keratosis involves the high expression of endothelin-converting enzyme-1 α and TNF- α , which stimulate secretion of endothelin 1. *Br J Dermatol* 2001 Dec; 145 (6): 895-903.
- Goukassian D. Mechanisms and implications of the age-associated decrease in DNA repair capacity. *The FASEB Journal* 2000; 14 (10): 1325-34.
- Morris BT, Sober AJ. Cutaneous malignant melanoma in the older patient. In: Gilchrist BA, ed. *Clinics in Geriatric Medicine*, vol. 5. Philadelphia: WB Saunders, 1989: 171.
- Schowalter RM, Buck CB. The merkel cell polyomavirus minor capsid protein. *PLoS Pathog* 2013 Aug; 9 (8): e1003558.
- Tokuyama W, Mikami T, Masuzawa M, Okayasu I. Autocrine and paracrine roles of VEGF/VEGFR-2 and VEGFC/VEGFR-3 signaling in angiosarcomas of the scalp and face. *Hum Pathology* 2010; 41 (3): 407-14.