

A Cross-Sectional Observational Study of Geriatric Dermatoses in a Tertiary Care Hospital of Northern India

Abstract

Introduction: Geriatric dermatoses are one of the most common reasons for day-to-day consultation in the elderly. Over the past few years, understanding of the pathophysiology of skin changes in the geriatric age group has improved and has paved the way for better therapeutic options. There are only a few studies conducted in India about the geriatric dermatoses. This article reviews the various physiological and pathological changes of aging, dwelling on the role of intrinsic and extrinsic factors in the pathogenesis of aging skin thus better understanding of this emerging branch in dermatology leading to enhance resource management for elderly population. **Materials and Methods:** This is a cross-sectional observational study carried out on 500 consecutive patients aged 60 years and above in Department of Dermatology of a Tertiary care hospital of Northern India after meeting the inclusion and exclusion criteria. **Results:** Out of 500 patients studied with male to female ratio of 1.4, wrinkles followed by cherry angiomas were the most common physiological cutaneous manifestations, and infective dermatoses followed by allergic contact dermatitis were the most common pathological conditions seen. Few rare cases were also seen during the study such as cutis marmorata, delusion of parasitosis, and sweet syndrome in case of acute myeloid leukemia. **Conclusion:** Geriatric dermatology is an emerging branch in dermatology, and an update on this, will go a long way to effectively manage these patients. A thorough knowledge of the epidemiology as well as gender distribution of dermatological diseases in geriatric population in the tertiary care hospital will help in assessing health status and health care needs related to skin for better allocation of resources, distribution of material and manpower, and help health care providers in better decision-making resulting in higher clientele satisfaction.

Keywords: *Cutaneous malignancy, extrinsic aging, geriatric dermatoses, infections, intrinsic aging*

Introduction

Aging is a biological reality in which there is progressive functional decline due to a series of molecular changes over time. Human skin like all other organs, undergoes chronological aging and is susceptible to skin disorders due to the structural and physiological changes in response to intrinsic and extrinsic aging.^[1] There is decline in the normal functioning of skin with aging; predominantly, its capacity to repair DNA changes, healing, and immune response. With aging, the dermoepidermal junction flattens, number of interdigitations decrease, the number of melanocytes decrease by 20% giving the pale appearance to the skin and hair.^[2] There is a reduction in bulk of dermis and accumulation of a brown colored pigment lipofuscin, which is a marker of cell damage.^[3] With the increase in life expectancy, diseases

among the elderly population are becoming increasingly common. The process of skin aging generally gives rise to trivial dermatoses such pruritus, eczema, xerosis, etc.^[4] However, many dermatological conditions are fatal like skin malignancy and lead to significant morbidity and impairment of quality of life.^[5]

India as a developing nation has entered the group of aging countries in 2001 with the population of person aged 60 years and above exceeding 7%. Further, the geriatric population is expected to double by 2026. The reasons proposed for this are increase in life expectancy as well as a decline in birth rates.^[6] Geriatric population is an increasing segment of Indian population and has become a worldwide concern. It is thereby important that effective health care is provided to these patients in terms of health services. There are only few studies

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about the skin problems of the elderly in India.^[7,8] However, many studies have been carried out in the West on geriatric patients.^[9] The greatest challenge faced while evaluating the skin of an old person is to decide between normal versus abnormal and physiological versus pathological. Many skin changes and resulting lesions are considered normal, except that they vary in degree and number.^[10,11]

This study is undertaken to evaluate the spectrum of skin changes both physiological and pathological in the elderly population of a tertiary care hospital of northern India. A thorough knowledge of the epidemiology as well as gender distribution of dermatological diseases in geriatric population in this tertiary care hospital will help in assessing health status and health care needs related to skin for better allocation of resources, distribution of material and manpower, and help health care providers in better decision-making resulting in higher clientele satisfaction.

Materials and Methods

The study is a cross-sectional observational study carried out on 500 patients aged 60 years and above within wards and out-patient of Department of Dermatology, Venereology, and Leprosy at a Tertiary care hospital after meeting the inclusion criteria of age 60 years and above and any comorbidity of less than 5 years. The exclusion criteria taken in the account were any comorbidity of more than 5 years and patients with genodermatoses, photosensitivity, albinism, premature aging, and inherited disorders of DNA stability, which are likely to interfere with the changes of aging in skin. A detailed cutaneous and systemic examination was carried out after obtaining informed consent. Relevant routine investigations such as hematology, biochemistry, and specific investigations such as skin biopsy, cytology, immunofluorescence, immunohistochemistry, dermoscopy, etc., have been performed wherever required. The study has been duly approved by the Hospital Ethics Committee.

Analysis

Data have been collected and tabulated in Microsoft Excel Worksheet and analyzed using descriptive statistics with SPSS software.

In the present study, most of the patients belonged to 60–69 years age group (342 cases) comprising 68.4%.

Out of 500 patients, 58.4% (292 patients) were males and 41.6% (208 patients) were females. The ratio of males to females in our study was 1.4.

Among systemic diseases, hypertension (61.0%) was found to have the highest incidence followed by diabetes mellitus (51.4%). One male patient was found to have a thyroid disorder (0.3%) as against 29 females (13.9%) with a significant “*p*” value of < 0.001.

Wrinkles (97.8%) were the most common physiological cutaneous manifestation seen in our study followed by cherry angiomas (91.8%) [Table 1].

Infection and infestations were the most common dermatoses studied followed by eczemas (76.2%). The most common infective dermatosis being bacterial infection in 146 cases (29.2%) with significant *P* value as shown in Table 2, however, the other less common infections and infestations studied were 45 cases (9%) of scabies, 26 cases (5.2%) of postherpetic neuralgia, 10 cases (2%) of Hansen’s disease [Figure 1], and 8 cases (1.6%) of candida infection. The prevalence of various eczemas in our study was highest seen with significant *P* value in allergic contact dermatitis (30.6%) followed by irritant contact dermatitis (11.2%) [Table 2].

A total of 20 cases (4%) were found to have immunobullous disorder in our study with 7 females and 13 males. Ten cases (2%) of bullous pemphigoid followed by 4 cases (0.8%) of pemphigus vulgaris, 3 cases (0.6%) of dermatitis herpetiformis, and 1 case each of paraneoplastic pemphigus, subcorneal pustular dermatosis, and epidermolysis bullosa simplex were studied.

Table 1: Physiological changes in geriatric population

Physiological changes in elderly	Total cases	Percentage
Canitis	447	89.4%
Seborrheic keratosis	200	40.0%
Cherry angioma	459	91.8%
Idiopathic guttate hypomelanosis	259	51.8%
Wrinkle	489	97.8%
Senile comedo	66	13.2%
Lentigo	70	14.0%
Senile purpura	15	3.0%
Callosity	60	12.0%
Acrochordon	109	21.8%
Xerosis	170	34.0%
Favre-racouchot syndrome	11	2.2%
Fissured soles	150	30.0%



Figure 1: Lepromatous leprosy

Table 2: Prevalance of geriatric dermatoses

Disorders	Sex				Total %	P
	F (n=208 Patients)		M (n=292 Patients)			
	Frequency	Percentage	Frequency	Percentage		
Infections and Infestation						
Viral exanthem	7	3.4%	16	5.5%	4.6%	0.289
Herpes zoster	10	4.8%	17	5.8%	5.4%	0.691
Bacterial	73	35.1%	73	25.0%	29.2%	0.014
Onychomycosis	40	19.2%	72	24.7%	22.4%	0.159
Dermatophytosis	70	33.7%	81	27.7%	30.2%	0.156
Eczemas						
Allergic contact	82	39.4%	71	24.3%	30.6%	<0.001
Irritant contact	34	16.3%	22	7.5%	11.2%	0.002
Asteatotic	27	13.0%	27	9.2%	10.8%	0.185
Stasis	2	1.0%	6	2.1%	1.6%	0.479
Atopic	3	1.4%	6	2.1%	1.8%	0.741
Nummular	4	1.9%	9	3.1%	2.6%	0.003
Hyperkeratotic hand eczema	1	0.5%	15	5.1%	3.2%	0.003
Immunobullous and Acantholytic Ds						
Bullous pemphigoid	3	1.4%	7	2.4%	2%	0.533
Pemphigus vulgaris	1	0.5%	3	1.0%	0.8%	0.645
Dermatitis herpiformis	1	0.5%	2	0.7%	0.6%	1.000
Connective tissue Ds						
DLE	3	1.4%	4	1.4%	1.4%	1.000
Systemic sclerosis	2	1%	4	1.4%	1.2%	1.000
SLE	3	1.4%	1	0.3%	0.8%	0.313
Vitiligo	16	7.7%	17	5.8%	6.6%	0.406
Drug-related disorders						
Drug rash	3	1.4%	5	1.7%	1.6%	1.000
Fixed drug eruption	8	3.8%	10	3.4%	3.6%	0.803
Steven-Johnson syndrome	1	0.5%	2	0.7%	0.6%	1.000
Toxic epidermal necrolysis	1	0.5%	0	0.0%	0.2%	0.416
Vasculitis	5	2.4%	8	2.7%	2.6%	1.000
Keloid	16	7.7%	15	5.1%	6.2%	0.243
Pruritus	162	77.9%	120	41.1%	56.4%	<0.001
Acanthosis nigricans	43	20.7%	38	13.0%	16.2%	0.026

A total of 18 patients (3.6%) were found to have connective tissue disorder in our study. Seven cases (1.4%) of discoid lupus erythematosus, 6 cases (1.2%) of systemic sclerosis, 4 cases (0.8%) of systemic lupus erythematosus, and 1 case (0.2%) of dermatomyositis were recorded.

A total of 178 patients (35.6%) were found to have papulosquamous disorders in our study. Hundred cases (20%) of Psoriasis vulgaris, 24 cases (4.4%) of genital lichen sclerosus atrophicus, 12 cases (2.4%) of cutaneous lichen sclerosus atrophicus, 15 cases (3.0%) of Pityriasis versicolor, 9 cases (1.8%) each of cutaneous and oral lichen planus were seen in our study.

In this study, erythroderma prevalence was studied and found that among total of 10 patients of erythroderma, 8 patients had Psoriasis vulgaris as the underlying disorder [Figure 2] with a significant *P* value of less than 0.001.

Nail thinning in 180 cases (36%) was the most common change, followed by an equal incidence of nail dystrophy and nail pitting (20%).

A total of 12 patients (2.4%) were found to have malignant disorders in our study. Three cases (0.6%) each of squamous cell carcinoma [Figure 3], Basal cell carcinoma and mycosis fungoides, 2 cases (0.4%) of chronic actinic reticuloid, and 1 case (0.2%) of leukemia cutis were seen in our study.

Among miscellaneous conditions [Table 2], a total of 33 cases (6.6%) of vitiligo and 31 cases (6.2%) of keloid were seen in our study. Other conditions observed were one case of scrotal tongue in a patient of atopic dermatitis. Two patients were found to have erythema ab igne [Figure 4] over the lateral aspect of lower limbs as a result of close contact with a heat source near to the skin. One case was found to have cutis marmorata over the inner aspect of both thighs. This was attributable to cold-induced changes in the skin during winter months. Two patients were found of



Figure 2: Psoriatic erythroderma



Figure 3: Squamous cell carcinoma

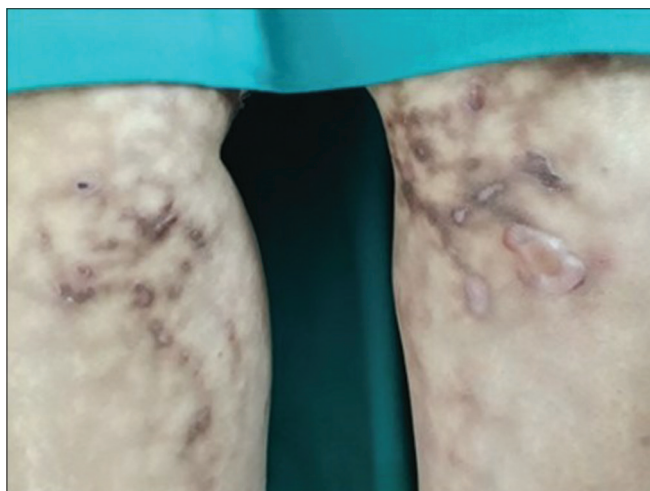


Figure 4: Erythema ab igne

have delusion of parasitosis and folie a deux. One patient was found to have Sweet syndrome having association was malignancy as the person was suffering from acute myelocytic leukemia.

Discussion

In our study, various physiological signs of aging were studied, which is an inescapable process. The skin findings were suggestive of changes that were result of cumulative sun exposure during the entire lifespan. These changes of photo aging were superimposed with intrinsic aging. Although most of the changes studied were harmless to elderly, few have an adverse impact like chronic actinic dermatitis and cutaneous malignancy. A lower age limit of 60 years was taken as the inclusion criterion in our study, which was similar to the study done by Chopra *et al.*^[11] and Nair *et al.*^[12] The age group of patients with a majority of cutaneous manifestations in our study is comparable to the study conducted by Leena Raveendra *et al.*^[10]

The study conducted on 500 patients aged 60 years and above by Ankur Ghosh *et al.* in Jharkhand revealed that skin problems were quite common among the elderly. In their study, geriatric patients accounted for 4.2% of OPD attendance with a male preponderance [M: F: 2.2:1] as compared to in our study [M: F: 1.4:1].^[13]

The incidence of cherry angiomas (91.8%) in our study is much higher compared to the study by Patange^[9] and Leena Ravendra^[10](37%). Xerosis was found in 48% of the elderly in study B. Rathore *et al.*^[14] It was more commonly seen over legs, hands, and trunk. The incidence of xerosis observed in the present study (40%) is comparable with that reported by Chopra A, *et al.* (50.8%).^[11]

Nail thinning was seen in 120 males (41.1%) and 60 females (28.8%) with a significant “*p*” value of 0.005. In study by Durai *et al.*^[11] the most common nail finding observed was the loss of luster present in 254 (50.8%) individuals.

Pruritus was the most common symptom seen in this study (56.4%) which was lower than the study by Patange and Fernandez^[9] who noted pruritus in 78.5% of patients, of which 3.8% had senile pruritus and the rest were associated with cutaneous dermatoses (91.1%).

The most commonly seen eczema in our study was of exogenous type. The “*p*” value for irritant contact dermatitis and hyperkeratotic hand eczema <0.001 and 0.003, respectively was found to be significant in our study.

In our study, a higher incidence of vesicobullous condition seen as compared to the study by B. Rathore.^[14] The study of Durai PC, *et al.*^[11] showed a lower incidence of dermatitis herpetiformis and a higher incidence of bullous pemphigoid compared to our study.

A total of 18 patients were found to have connective tissue disorder in our study, 4 (0.8%) cases of systemic lupus erythematosus, 6 (1.2%) of systemic sclerosis, 7 (1.4%) of discoid lupus erythematosus, and 1 (0.2%) of dermatomyositis. In study by Sanjiv Grover,^[15] a total of 7 cases were reported, which were 3.5% of the total

population. The incidence of Psoriasis in the present study is 15% in lower that of the study by Patange and Fernandez^[9] and Sahoo Singh *et al.*^[16]

In comparison to our study, no malignant skin conditions were noted in study by Leena Raveendra.^[10] The statistically significant differences in gender and the cutaneous disorders were observed when compared with Chi-square test ($P < 0.05$).

There are very few studies showing the association of dermatoses with specific systemic diseases like diabetes or cardiovascular conditions in the general population but not specifically in the geriatric age group. In the study conducted by Nair and Vora^[12] on systemic diseases and their cutaneous manifestations in elderly showed that of the 66 patients of diabetes mellitus, 22 (33.33%) had generalized pruritus followed by superficial fungal infections in 15 (22.72%). Study conducted by Syed Ali *et al.*^[17] among geriatric population in Telangana district showed associated systemic ailments were observed in 133 (66.5%) patients. In their study, diabetes mellitus was most common with 69 (34.5%), followed by hypertension in 46 (23%), 18 cases (9%) had both diabetes and hypertension. Other systemic disorders observed in their study were anemia in 31 (15.5%), asthma in 19 (9.5%), and ischemic heart disease in 6 (3%). Hypertension (16.4%) was most common followed by diabetes mellitus (6.8%), which was much lower than the findings observed by Nair *et al.* In study by Najdawi^[18] on 60 elderly patients with diabetes, pruritus was seen in 13 (21.66%) patients and superficial fungal infections in 16 (26.66%) patients. Other manifestations in study by Nair and Vora were eczema 15 cases (22.7%), drug reaction 3 cases (4.5%), candidial infection 3 cases (4.5%), and prurigo nodularis 2 cases (3.0%). In our study, 56.4% patients had pruritus, and fungal infection was seen in 30.2% cases, which was on a higher side. The cause of the intense itching experienced by diabetic patients is unclear, but it may be related to secondary conditions such as xerosis or infection. Higher prevalence of dermatophyte infection could be because of poor hygienic conditions and long hot and humid climate in the area. Other contributory factors are poor glycemic control, poor microcirculation, peripheral vascular disease, peripheral neuropathy, and decreased immune response which have been implicated in increased susceptibility to infections among elderly. However, candidial infection (1.6%) was on a lower side in our study. Several case studies have identified generalized pruritus as a symptom of thyroid disease due to the presence of antithyroid antibodies.^[19] Among nine patients of thyroid disorders in study by Nair and Vora, three had xerosis with eczema, whereas three had lichen planus. In our study only one patient had associated lichen planus. The association of thyroid disease with lichen planus seems to be because of their common autoimmune etiology, whereas in patients with hypothyroidism, pruritus is usually due to xerosis.^[1]

In elderly individuals, pruritus is associated with dry skin as a result of which there is altered skin pigmentation and overall increase in skin fragility.^[19] Systemic diseases tend to lower the threshold for itch. Even a mild stimulus can also trigger an exaggerated pruritic response in some patients. Xerosis results from decrease in overall skin hydration. It may exacerbate pruritus in geriatric patients with systemic diseases. This is true for geriatric patients who are institutionalized or for individuals who are suffering with dementia whose sedentary lifestyle and general inactivity distracts them by pruritic stimuli.^[20]

Conclusion

In our study, various physiological signs of aging were studied, which is an inescapable process along with the pathological changes. The skin findings were suggestive of changes that were result of cumulative sun exposure during the entire lifespan. These changes of photo aging were superimposed with intrinsic aging. Although most of the changes studied were harmless to elderly, few have an adverse impact on the lives, which included chronic actinic dermatitis and conditions such as malignancy. The limitations observed in our study could be because of bias in referral because the population was obtained from the tertiary center for armed forces. In addition, our study does not bring out the differences on the grounds of regional and ethnic variations as people from all over the country are referred to the premium skin center of this tertiary care hospital.

Another important issue left untouched is the emergence of drug resistance among elderly as a result of indiscriminate use of antibiotics and polypharmacy. Several factors are responsible for increase in the emerging resistance pattern among the elderly. It is mostly seen among institutionalized patients. A dermatologist must be aware of the resistance patterns prevailing in a geographical area. This issue needs to be addressed to at various levels to discourage over-the-counter drug use of various medicines. The drug-resistant infections are not only difficult to treat but the use of antibiotics for a long time adversely affects the functioning of various body systems such as liver and kidney, which are already vulnerable to injury due to effects of aging. Hence, further studies need to be carried out touching this aspect of geriatric health.

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Conflicts of interest

There are no conflicts of interest.

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