

To Study the Impact of Hypertension and Diabetes on Physiological Skin Changes Among the Geriatric Population**Arpita Mishra¹**¹Assistant Professor, Department of Dermatology, Venereology, and Leprosy, Chirayu Medical College and Hospital, Bhopal, MP, India

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Corresponding Author:

Conflict of interest: Nil

Abstract:

Background: The skin changes among the elderly may be physiological or pathological. Physiological skin changes include Asteatotic dermatitis, Xerosis, seborrheic keratitis, dermatoheliosis (photoaging), degenerative changes such as wrinkling, Senile lentigines, Senile comedones, etc. Advancing age is also an independent risk for non-communicable diseases such as diabetes, cardiovascular diseases, hypertension, vascular insufficiency, etc. which may also have cutaneous manifestations leading to dermatoses associated with old age.

Material & Methods: The present cross-sectional, prospective study was carried out at the Department of Dermatology, Pacific Institute of Medical Sciences, Umarda, Udaipur, Rajasthan, from 31 March 2021 to 30 September 2022. In this perspective, we enrolled all patients aged more than 60 years and above attending the outpatient clinic with newly onset skin diseases until a sample size of 300 was reached.

Results: In the present study, the most common physiological skin change observed in our study population was skin wrinkling (67%), followed by Xerosis (63%). Senile lentigines and comedones were documented in 12% of cases each. Cherry angioma was the least common physiological change in the skin, seen in 2% elderly population. Wrinkles as well as Senile comedones in significantly higher proportions of normotensive elderly individuals as compared to hypertensive individuals ($p < 0.05$). Xerosis was documented in significantly higher proportions of diabetic elderly patients ($p < 0.05$).

Conclusion: We concluded from the present study that the Wrinkling and Xerosis are common physiological manifestations. Wrinkles as well as Senile comedones in significantly higher proportions of normotensive elderly individuals as compared to hypertensive individuals. Xerosis was documented in significantly higher proportions of diabetic elderly patients.

Keywords: Senile Dermatoses, Geriatric Age, Skin Changes.

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Introduction

According to "National Policy on Older Persons (1999)" the "Geriatric" or "elderly" population refers to individuals belonging to the age range of 60 years or above [1]. With advancing age, the normal functioning of the skin declines, and the most predominant feature of this functional decline is a reduction in its capacity to regenerate, reduced capacity to repair DNA changes, reduced healing, and poor immune response [2]. As the age advances, there occurs flattening of the dermo-epidermal junction, a decrease in the number of inter-digitation, reduction in melanocytes by almost 20%. Also, the bulk of the dermis reduces with advancing age, and a brown color pigment called lipofuscin, a marker of cell damage begins to accumulate [3].

Skin ageing with advancing age may be attributed to both intrinsic as well as extrinsic factors.

Intrinsic ageing is associated with physiological changes in the body characterized by dryness, fine wrinkles, thinning of the skin, and gradual dermal atrophy [4]. The skin changes among the elderly may be physiological or pathological. Physiological skin changes include Asteatotic dermatitis, Xerosis, seborrheic keratitis, dermatoheliosis (photoaging), degenerative changes such as wrinkling, Senile lentigines, Senile comedones, etc [5].

Advancing age is also an independent risk for non-communicable diseases such as diabetes, cardiovascular diseases, hypertension, vascular insufficiency, etc. which may also have cutaneous manifestations leading to dermatoses associated with old age [6]. Thus, various dermatoses among the elderly are not only due to the physical and structural changes associated with ageing but may be due to the impact of hypertension and diabetes

mellitus. The exact data depicting the pattern of geriatric dermatoses, especially in the Indian context is scarce [7]. The present study was thus conducted at tertiary care Centre to know the impact of hypertension and diabetes mellitus on pattern of skin diseases in this age group to plan the preventive as well as therapeutic health care services.

Materials & Methods

The present cross-sectional, prospective study was carried out at the Department of Dermatology, at Pacific Institute of Medical Sciences, Umarda, Udaipur Rajasthan, during the study period of 31st March 2021 to 30th September 2022. A sample size of 300 was calculated based on prevalence by the Cochran formula. In this perspective, we enrolled all patients aged more than 60 years and above attending the outpatient clinic with newly onset (after the age of 60 years) skin diseases till the sample size was reached. Only those patients who matched the inclusion and exclusion criteria were enrolled in the present study. Institutional Ethics Committee Clearance was obtained before the start of the study and written and informed consent for the procedure was obtained from all the patients. Strict confidentiality was maintained with patient identity and data and not revealed, at any point in time.

Further, all the patients were subjected to detailed general as well as systemic examinations. Their vitals including heart rate, blood pressure, respiratory rate, etc. were obtained. Blood pressure was obtained in a sitting position once the patient was comfortable and an average of 3 readings were taken as actual readings. Fasting blood sugar and HbA1c were recorded. All the participants were screened for the presence of skin disease. The

lesion was described in terms of the type of skin lesions (primary/secondary/ special lesions), localization of lesions (localized/generalized), distribution of lesion (symmetrical or asymmetrical), Site of lesion- on exposed or covered part, and pattern of lesions (Scattered/ Linear/Grouped/ Zosteriform). All data were entered in the MS Office 2010 spreadsheet and Epi Info v7. Data analysis was carried out using SPSS v22. Qualitative data was expressed as a percentage (%) and Pearson's chi-square test was used to find out statistical differences between the study groups and sensitivity, specificity, positive predictive value, and negative predictive value were calculated. If the expected cell count was < 5 in more than 20% of the cells then Fisher's exact test was used. All tests were done at an alpha (level significance) of 5%; which means a significant association was present if the p-value was less than 0.05 and highly significant if p was less than 0.01.

Results

The present study was conducted on a total of 300 cases belonging to more than 60 years of age. Only those patients who matched the inclusion and exclusion criteria were enrolled in the present study. The mean age of patients enrolled in our study was 66.4 ± 4.6 years and the majority of patients belonged to the age range of 61 to 70 years (87%), followed by 10.67% of cases belonging to 71 to 80 years. Only 2.33% of cases belonged to more than 80 years of age. We reported male predominance in our study with a male-to-female ratio of 1.8:1 and about 64% of the cases were males. Most of the cases had hypertension (37.3%), whereas 34.3% of cases had diabetes. (Table 1)

Table 1: Distribution of study participants according to study parameters.

Parameters	No. of patients
Mean age	66.4±4.6 years
Age group (years)	
60-70	261 (87%)
70-80	32 (10.67%)
>80	7 (2.33%)
Male	192 (64%)
Female	108 (36%)
Hypertension	112 (37.3%)
Diabetes mellitus	103 (34.3%)

In the present study, the most common physiological skin change observed in our study population was skin wrinkling (67%), followed by Xerosis (63%). Senile lentigines and comedones

were documented in 12% of cases each. Cherry angioma was the least common physiological change in the skin, seen in 2% elderly population. (Table 2)

Table 2: Distribution of study participants according to physiological dermatological changes.

Physiological skin changes	No. of patients (n=300)	Percentage (%)
Xerosis	189	63
Wrinkles	201	67
Idiopathic guttate hypo melanosis	18	6
Senile lentigines	36	12
Senile comedones	36	12
Seborrheic keratosis	24	8
Cherry angioma	6	2
Dermatosis papulosa nigra	18	6
Acrochordons	12	4

In the present study, we reported wrinkles as well as Senile comedones in significantly higher proportions of normotensive elderly individuals as compared to hypertensive individuals ($p < 0.05$). All

other physiological skin changes were found to be statistically non-significant in association with hypertension as comorbidity ($p > 0.05$). (Table 3)

Table 3: Association of hypertension with physiological skin changes

Physiological skin changes	Hypertension		χ^2	P value
	Absent	Present		
	N (%)	N (%)		
Xerosis	120(63.8)	69(61.6)	0.149	0.700
Wrinkles	134(71.3)	67(59.8)	4.166	0.041
Idiopathic guttate hypomelanosis	11(5.9)	7(6.2)	0.020	0.88
Senile lentigines	20(10.6)	16(14.3)	0.884	0.347
Senile comedones	29(15.4)	7(6.2)	5.596	0.018
Seborrheic keratosis	16(8.5)	8(7.1)	0.178	0.673
Cherry angioma	5(2.7)	1(0.9)	1.118	0.290
Dermatosis papulosanigra	9(4.8)	9(8.0)	1.313	0.252
Acrochordons	7(3.7)	5(4.5)	0.100	0.751

In the present study, we reported Xerosis was documented in significantly higher proportions of diabetic elderly patients ($p < 0.05$). All other physiological skin changes were found to be

statistically non-significant in association with diabetes mellitus as comorbidity ($p > 0.05$). (Table 4)

Table 4: Association of diabetes mellitus with physiological skin changes

Physiological skin changes	Diabetes Mellitus		χ^2	P value
	Absent	Present		
	N (%)	N (%)		
Xerosis	113(57.4)	76(73.8)	7.829	0.005
Wrinkles	132(67.0)	69(67.0)	0.001	0.998
Idiopathic guttate hypomelanosis	11(5.6)	7(6.8)	0.176	0.675
Senile lentigines	28(14.2)	8(7.8)	2.662	0.103
Senile comedones	20(10.2)	16(15.5)	1.855	0.173
Seborrheic keratosis	12(6.1)	12(11.7)	2.840	0.092
Cherry angioma	5(2.5)	1(1.0)	0.848	0.357
Dermatosis papulosanigra	16(1)	2(1.9)	4.580	0.032
Acrochordons	9(4.6)	3(2.9)	0.483	0.487

Discussion

The present study was conducted on a total of 300 cases belonging to more than 60 years of age. Only those patients who matched the inclusion and exclusion criteria were enrolled in the present study. The mean age of patients enrolled in our study was 66.4 ± 4.6 years and the majority of patients belonged to the age range of 61 to 70 years

(87%), followed by 10.67% of cases belonging to 71 to 80 years. Only 2.33% of cases belonged to more than 80 years of age. We reported male predominance in our study with a male-to-female ratio of 1.8:1 and about 64% of the cases were males. Similar findings were documented by Raghvendra BN et al (2020), in which, the majority of patients presented in the age range of 61 to 70

years (60.6%), and about 61.6% and 51.8% were males and farmers respectively [8]. Meena P et al (2021) observed male predominance for geriatric dermatoses (59%), supporting our study findings [9].

In the present study, based on comorbid conditions and study variables of our study it was found that most of the cases had hypertension (37.3%), whereas 34.3% cases had diabetes. Our study findings were also supported by the findings of Simim NK et al (2021) observed hypertension in 36% of cases, followed by diabetes mellitus in 26% of cases presenting with various dermatological conditions [10]. Our study findings were also supported by the findings of Kumar D et al (2021), in which the most common comorbidities in the geriatric population presenting with dermatosis was hypertension (23.2%), followed by diabetes mellitus (19.6%) [7].

In the present study, the most common physiological skin change observed in our study population was skin wrinkling (67%), followed by Xerosis (63%). Senile lentigines and comedones were documented in 12% of cases each. Cherry angioma was the least common physiological change in the skin, seen in 2% elderly population. The findings of the present study were also supported by Mendiratta V et al (2019) senile pruritus, wrinkling, skin tags, lentigines, freckles, xerosis, etc. were common dermatological manifestations observed in elderly patients seeking care [11]. Bains P et al. (2019) also observed xerosis as the most common physiological dermatoses among geriatric patients whereas few patients had solar lentigines, skin tags, and seborrheic keratosis [12].

In the present study, we reported wrinkles as well as Senile comedones in significantly higher proportions of normotensive elderly individuals as compared to hypertensive individuals ($p < 0.05$). All other physiological skin changes were found to be statistically non-significant in association with hypertension as comorbidity ($p > 0.05$). In the present study, we reported Xerosis was documented in significantly higher proportions of diabetic elderly patients ($p < 0.05$). All other physiological skin changes were found to be statistically non-significant in association with diabetes mellitus as comorbidity ($p > 0.05$). Our study findings were concordant with the findings of Paliwal G et al (2019) [13].

Conclusion

We concluded from the present study that the Wrinkling and Xerosis are common physiological manifestations. Wrinkles as well as Senile comedones in significantly higher proportions of normotensive elderly individuals as compared to

hypertensive individuals. Xerosis was documented in significantly higher proportions of diabetic elderly patients. These patterns may help in building health policies for the elderly, so that their overall health can be improved.

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