

# Association of Systemic Diseases with Cutaneous Dermatoses in Elderly Population: Preliminary Observation at a Rural Tertiary Care Centre

Pragya A. Nair, Rita Vora<sup>1</sup>

Departments of Dermatology and <sup>1</sup>Venereology, Pramukhswami Medical College, Karamsad, Gujarat, India

## ABSTRACT

**Introduction:** Aging population is susceptible to many cutaneous and systemic diseases, simultaneously leading to impairment of quality of life in them. **Aim:** To know the association of dermatosis and systemic diseases in geriatric age group. **Materials and Methods:** A retrospective study was carried on patients above 60 years of age who visited the Dermatology OPD at rural tertiary care centre from June 2009 to May 2010. Patients were assessed on a prescribed 30 point proforma. **Results:** Total 457 geriatric patients with dermatosis were registered under the study, of these 203 patients had one or more systemic diseases. Hypertension (70.9%) was the commonest disease, followed by diabetes (32.5%). Eczema was commonest dermatosis in patients with hypertension and generalized pruritus in diabetes. **Conclusion:** Skin diseases cause considerable morbidity in elderly, particularly if associated with other comorbid conditions, so health promotion and education can do much to reduce the risk.

**Keywords:** Dermatoses, eczema, geriatric, hypertension

## Introduction

Ageing, continuous, and irreversible process also affect skin like other organs. Government of India adopted “National Policy on Older Persons” in January, 1999. The policy defines “senior citizen” or “elderly” as a person who is of 60 years of age or above. The elderly population has increased tremendously in the past few decades all over the world.<sup>[1]</sup> The number of people aged 65 or older is projected to grow from an estimated 524 million in 2010 to nearly 1.5 billion in 2050, with most of the increase in developing countries.<sup>[2]</sup> The 2011, United Nations population division reports that “the share of India’s population ages 60 and older is projected to climb from 8 percent in 2010 to 19 percent in 2050.”<sup>[3]</sup> About 75% of persons of age 60 and above reside in rural areas.<sup>[1]</sup> Enhanced survival into old age is the result of changes in the socioeconomical development within societies and will inevitably affect the pattern of disease.

In geriatric patients, chronic diseases such as hypertension (HT), Diabetes Mellitus (DM), thyroid disorders etc., are commonly

seen, at the same time geriatric skin is more prone to skin diseases. ICMR study of 1984–1985 showed that 13.3% of skin problems were seen in elderly persons over 60 years of age.<sup>[4]</sup> A progressive degenerative change, which is intrinsic to aging skin and with susceptibility to many cutaneous and systemic diseases, significantly impairs the quality of life in geriatric population. This retrospective study aimed to know the association of dermatosis and systemic diseases in geriatric age group. By knowing the association we can detect, counsel, treat, and protect them at earliest, helping them to grow old gracefully.

## Materials and Methods

This is a retrospective analysis of the study of dermatosis in rural geriatric population. This retrospective cross-sectional study aimed at finding association of systemic diseases with dermatosis in geriatric population. Study was carried out on all patients of both genders with 60 years and above who attended skin out-patient department of rural tertiary care centre, Shree Krishna Hospital, Karamsad, Gujarat, between June 2009 to May 2010 having any dermatosis. The study was approved by Human Research Ethics Committee of the institute. Patients who were seropositive for HIV were excluded from the study. A detailed history was taken with general, systemic, and cutaneous examination after prior

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**Address for correspondence:** Dr. Pragya A. Nair,  
Department of Dermatology, Pramukhswami Medical College,  
Karamsad - 388 325, Gujarat, India.  
E-mail: drpragash2000@yahoo.com

consent. All patients were assessed on a prescribed 30 points proforma. Routine and systemic investigations were done wherever required. Investigations such as KOH smear, Tzanck smear, and skin biopsy were done in relevant cases.

**Statistics**

Data were entered into Excel 2010. Statistical Calculation were done in Excel 2010 and using Statgraphics Centurion XVII. The descriptive statistics was done. Data were expressed as frequencies and percentages. Chi square test, P-value determined.

**Results**

Total 457 geriatric patients with dermatosis were enrolled in the study, all above 60 years of age. Of the total, males were 282 (61.7%) and females were 175 (38.3%) [Table 1]. Systemic diseases such as HT, DM, Asthma, thyroid disease etc., were seen in 203 patients (44.43%) [Figure 1], while 254 patients had only cutaneous disorders. Among 203 patients, 112 were males (55.1%) and 91 were females (44.8%). Different form of addictions such as smoking, betel chewing, tobacco, and alcohol was observed in 100 patients (while 103 patients had no addictions). Only 50 patients among them were routinely doing some kind of exercise or yoga. More than one systemic disease was seen in many patients.

Hypertension was the most common systemic disease seen in the study, that is, 144 patients with cutaneous disease. Commonest dermatosis seen in hypertension was eczema, that is, 33 patients (22.92%) followed by senile pruritus and dermatophytes in 10 patients (6.9%) each [Table 2]. Dermatitis seen in minority were Atrophic Vaginitis, Leprosy, BCC, Photolichenoid Rashes, Drug reaction, Purpura, Insect Bite, PHN, Pruritus Vulva, IGH, Neurofibromatosis, Skin Tags, Vitiligo, Nodular Scabies, Pellagra, Oral Pemphigus, PIH, Miliria, PPK, Candidiasis, Pyoderma, Alopecia aerata, Senile Comedones, Lichen Amyloidosis and Schamberg's disease.

**Table 1: Systemic disease in geriatric patients with dermatosis**

Patients	Total (N)	Systemic disease	Chi-square statistic	P
Total	457	203	112.827	0.0
Male	282	112	67.517	0.0
Females	157	91	43.68	0.0

**Table 2: Major dermatosis in patients with hypertension**

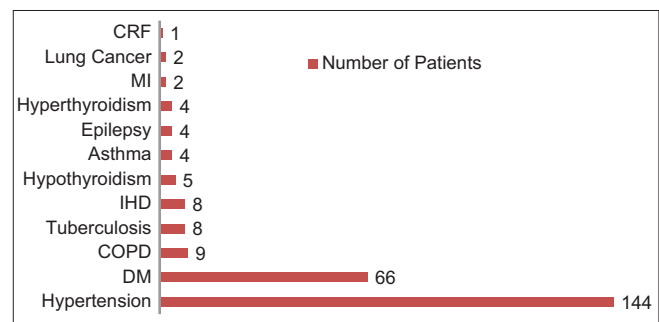
Dermatosis in patients of hypertension	Number of patients (%) (n=144)
Eczema	33 (22.9)
Senile pruritus	10 (6.9)
Dermatophytes	10 (6.9)
HZ	8 (5.5)
Lichen planus	8 (5.5)
Xerosis	5 (3.4)
Furuncles	5 (3.4)

Among 66 patients of diabetes mellitus, 22 (33.33%) had generalized pruritus which was commonest dermatological problem seen followed by superficial fungal infections and eczema in 15 each [Table 3], PHN, Xerosis, Scabies, Vitiligo, Urticaria, Lichen Amyloidosis were seen in few patients.

Other systemic diseases seen associated with cutaneous dermatosis are shown in Table 4.

**Discussion**

WHO reports that the most significant emerging demographic phenomenon in the world would be that it will have more older people than children and more people at extreme old age than ever before.<sup>[2]</sup> With the projected exponential ageing of almost all industrialized societies, a greater commitment



**Figure 1: Systemic disease observed with cutaneous disorders in geriatric population**

**Table 3: Major dermatosis in patients of DM**

Dermatosis in patients of DM	Number of patients (%) (n=66)
Generalised pruritus	22 (33.3)
Fungal infections	15 (22.7)
Eczema	15 (22.7)
Drug reaction	3 (4.5)
Candidialinfection	3 (4.5)
Prurigonodularis	2 (3.0)

DM: Diabetes mellitus

**Table 4: Dermatitis observed in other systemic diseases**

Systemic diseases	No of patients	Dermatosis
COPD	9	HZ (3), Eczema (2), Xerosis (1), Psoriasis (1), Tineacorporis (1), Ecchymotic patch (1)
Tuberculosis	8	Eczema (5), Urticaria (1), Senile pruritus (1), Acne form eruptions (1)
IHD	8	Planter dyskeratosis (2), Petechia (1), Senile Pruritus (2), Xanthalesma Palpebrum (1), Stasis dermatosis (1), Psoriasis (1),
Hypothyroidism	5	Eczema (2), LP (1), Furuncle (1), Vitiligo (1)
Hyperthyroidism	5	LP (2), Xerosis (2), Senile purpura (1)
Asthma	4	Eczema (2), Xerosis (1), Psoriasis (1)
Epilepsy	4	Eczema (2), Dermatophytes (2)
Lung cancer	2	Pigmentation over face
MI	2	Eczema

COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease; MI: Myocardial infarction

should now be directed toward the burgeoning subdiscipline of clinical medicine.<sup>[5]</sup> Many studies focus on dermatosis in geriatric population.<sup>[6-9]</sup> There are studies showing association of dermatosis with specific systemic diseases like diabetes or cardiovascular conditions in general population, but not specifically in the geriatric age group.<sup>[10-16]</sup> This study focuses only on the geriatric age group, studies on them showing the association of dermatosis with systemic diseases is lacking.

In this study, systemic diseases associated with cutaneous disorders was found to be higher in 203 patients (44.42%) compared to study by Patange<sup>[17]</sup> (35%) and lower than Grover<sup>[18]</sup> (64.5%).

Among 203 patients of dermatosis associated with various systemic diseases 112 (55.1%) were males and 91 (44.8%) were females. Males out-numbered females. The reason may be under reporting of female population at skin clinic or awareness of health issues among females in general is less.

Hypertension was the commonest systemic disease seen in 144 patients (70.9%), which is higher than studies by Radhakrishnan (59%).<sup>[19]</sup> In patients with hypertension, the most common dermatosis was eczema 33 (22.91%). In general population with hypertension it was found to be 27.1%.<sup>[12]</sup> Ivanov and Fedotov<sup>[20]</sup> study has shown that 24.8% of eczema patients had hypertension, which is comparable with our study. He emphasized that the detected specificities of eczema course in the presence of hypertension indicate a certain relationship between these diseases involving manifest abnormalities in the skin microcirculatory bed. Diseases such as hyperlipidemia and hypertension decreases blood flow to skin decreasing the ability of the elderly to fight the infection, decreased blood flow slows wound healing, increases xerosis and allows pathogens to enter the broken skin.<sup>[21]</sup>

Diabetes was seen in 66 patients (14.44%) which is quite lower than other studies by Radhakrishnan<sup>[19]</sup> (36%), Najdawi<sup>[22]</sup> (25.9%) but higher than in Sahoo<sup>[23]</sup> (10.5%), and Patange<sup>[17]</sup> (9%). It may be due to difference in lifestyle of population.

Of the 66 patients of DM, 22 (33.33%) had generalized pruritus followed by superficial fungal infections in 15 (22.72%). In study by Najdawi<sup>[22]</sup> on 60 elderly patients with diabetes, pruritus was seen in 13 (21.66%) patients and superficial fungal infections in 16 (26.66%) patients, which is comparable with our study.

Diabetes is one of the most common metabolic disorders predisposing to skin and soft tissue infection. Bacterial and fungal infection are most common skin diseases associated with DM in elderly leading to increased morbidity. Candidal infection can be an early sign of undiagnosed DM. Poor glycemic control, poor microcirculation, peripheral vascular disease, peripheral neuropathy, and decreased immune response have been implicated in increased susceptibility to infection. The presence of pruritus is one of the four diagnostic hallmarks of diabetes

mellitus (i.e. polyuria, polydipsia, polyphagia, and pruritus), although early studies found that itching was present in only 7% of patients with diabetes. The cause of the intense itching experienced by diabetic patients is unclear, but it may be related to secondary conditions such as xerosis or infections.<sup>[24]</sup>

Several case studies have identified generalized pruritus as a symptom of thyroid disease due to the presence of antithyroid antibodies.<sup>[25]</sup> Pruritus in patients with hyperthyroidism may be caused by the warm, moist skin that accompanies this disorder, although the exact cause is unknown but it can also be due to cholestatic jaundice while in patients with hypothyroidism, pruritus is usually due to xerosis.<sup>[26]</sup> Among nine patients of thyroid disorders in our study three had xerosis with eczema while three had lichen planus. Association of thyroid disease with lichen planus seems to be due to their common autoimmune aetiology.

Xerosis with pruritus is seen in 60% patients of chronic renal failure (CRF) by Falodun.<sup>[27]</sup> Pruritus occurs in up to 90% of patients with renal failure or uremia who are receiving maintenance dialysis.<sup>[28]</sup> In a study by Peres<sup>[14]</sup> on CRF the main dermatologic manifestations observed were: Xerosis 75.2% and pruritus in 53.8%. The most common cause of Xerosis, secondary to dialysis, is due to imbalance of calcium, magnesium, and phosphorus. In addition, the patient's uremic condition acts as a chronic inflammatory process, causing the release of proinflammatory cytokines and histamine.<sup>[29]</sup> We had a single patient of patient CRF who presented with xerosis.

Systemic inflammation and dysregulated immune function in COPD is hypothesized to predispose patients to herpes zoster. The risk of HZ is greatest in patients using oral steroids than inhaled steroids according to the study by Yang.<sup>[30]</sup> In this study, three patients of COPD on steroids developed herpes zoster.

Two patients with lung cancer had pigmentation of face. Marked increase in the level of ACTH levels in a small-cell lung cancer leads to pigmentation of face.<sup>[31]</sup>

In this study, Eczema was found to be the most common dermatosis, that is, in 63 patients (31.03%) followed by senile pruritus in 35 (17.2%) patients. Aging skin is susceptible to pruritic disorders because of the cumulative effects of environment. Loss of skin hydration, loss of collagen, impaired immune system responses, impaired function of the skin as a barrier to pathogens, impaired blood circulation all plays the role. The presence of co-morbid conditions, the lack of mobility, and the increased use of medications may also contribute to the prevalence of pruritus in elderly individuals.<sup>[32]</sup>

In older people, pruritus is often associated with dry skin resulting in altered skin pigmentation and increased skin fragility.<sup>[33]</sup> Systemic diseases often lower the itch threshold. In this setting, a mild stimulus can trigger an exaggerated pruritic response in some patients. Co-morbid xerosis resulting from decreased skin hydration may exacerbate pruritus in older patients with

systemic diseases. This is especially true for institutionalized geriatric patients or for individuals with dementia whose general inactivity allows them to be distracted by pruritic stimuli.<sup>[34]</sup> As skin ages, the vasculature progressively atrophies, supporting dermis deteriorates, and collagen and elastin fibers become sparse making skin susceptible to vascular disorders as stasis dermatitis and pressure ulcers, with a steadily decreasing ability to repair.

## Conclusion

Skin diseases cause considerable morbidity in elderly, particularly if associated with other comorbid conditions, so health promotion and education can do much to reduce the risk.

Further studies in the field are needed to help reduce the burden in elderly population who are at greater risk of disorders with advanced age, general health issues, drug therapy and chronic diseases. As the proportion of the world's population in the older ages continues to increase, the need for more knowledge of this group becomes essential to assist policy makers in their role to define, formulate programs, and also to raise public awareness.

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