

Retrospective Analysis of Dermatological Diseases in Geriatric Patients During Dermatology Outpatient Department Visits

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ABSTRACT **Introduction:** The elderly population is vulnerable to experience a great number of dermatological diseases thanks to the intrinsic and extrinsic process of aging.

Objectives: The aim of this study is to retrospectively investigate the prevalence of dermatological diseases in geriatric patients, their distribution by age and gender, and to provide a reference for studies on aging and skin problems.

Methods: In the present study, patients who reported to the dermatology outpatient clinic between January 1 2019, and January 1 2021, were evaluated retrospectively. As a result of examining the records of patients, 887 patients over the age of 65 who met the study protocol were included.

Results: The three most common diseases in all geriatric patients were fungal infections, eczematous dermatitis, and pruritus. Fungal infections were frequent in males and the 65-74 age group. In the males, the more frequent were precancerous lesions and malignant neoplasms, whereas in the females it was urticaria and adverse drug reactions. In the logistic regression model, the risk of fungal infection in geriatric patients was increased by being male (odds ratio 1.55, $P = 0.006$) and being in the range of 65-74 years old (odds ratio 1.46, $P = 0.025$). Male patients were at significantly higher risk for precancerous and malignant lesions (OR:2.81 $P < 0.001$) and actinic keratosis (odds ratio 3.26, $P < 0.001$) in this disease group.

Conclusions: Men are more vulnerable to life-threatening skin diseases. It is important to determine risk factors for individuals who are more sensitive to environmental factors in terms of increasing the quality of life and protection from diseases.

Introduction

Due to technological advancements and improved living conditions/standards, life expectancy in Turkey as in other parts of the world is increasing on a daily basis. According to the Turkish Statistical Institute, life expectancy at birth increased from 78.0 for the 2013-2015 period to 78.6 for the 2017-2019 period. Similarly, life expectancy at age 65 for both sexes was 17.8 years in the 2013-2015 period, while it was 18 years in the 2017-2019 period [1]. In the last five years, the proportion of the elderly population, which includes individuals aged 65 and over, increased from 8.2% to 9.5%. It is estimated that the proportion of the elderly population will increase to 11% in 2025, 12.9% in 2030, and 16.3% in 2040[2].

The geriatric population consists of individuals aged 65 and over. Aging is a continuous biological process. During the aging process, many functions such as regeneration capacity, chemical cleaning capacity, DNA repair capacity, sensory perception, mechanical protection and immune response of cells forming organs, and tissues decline. Due to the effect of these changing cellular functions, the skin structure is adversely affected as in all other organs and systems. The effects of aging on the skin are evaluated under two different pathways as intrinsic and extrinsic pathways. Intrinsic aging is considered the unavoidable and unstoppable physiological regression of the functions of cells and tissues. Extrinsic aging on the other hand, is both preventable and avoidable. It occurs as a result of exposure to environmental influences such as sunlight and ultraviolet radiation. The effects of extrinsic aging on the skin include not only physiological but also morphological changes. As a result of these aging mechanisms, there is dryness, wrinkles, flabbiness, and loss of flexibility of the skin and many benign neoplasms also occur in the skin due to aging [3].

Objectives

Due to the physiological and morphological effects of aging on the skin and the increase in the number of the elderly in the population over time, dermatological diseases associated with aging have become an important field of study. The aim of this study is to retrospectively investigate the prevalence of dermatological diseases in geriatric patients, their distribution by age and gender, and to provide a reference for studies on aging and skin problems.

Methods

In this study, patients who reported to the dermatology outpatient clinic between January 1 2019, and January 1 2021, were evaluated retrospectively. The records of 887 patients over the age of 65 were examined; 485 (54.7%) of them were females and 402 (45.3%) of them were males.

The participants were grouped by gender and by age groups of 65-74 years and 75 years or older. According to the diagnoses, skin diseases and disorders were categorized into 12 groups viral infections, bacterial infections, fungal infections, eczematous dermatitis, papulosquamous diseases, vesiculobullous diseases, precancerous lesions and malignant neoplasms, benign neoplasms, xerosis cutis, pruritus, urticaria and adverse drug reactions and other diseases (cutaneous lymphomas, pigmentation disorders, connective tissue diseases, vascular diseases, metabolic skin diseases, acne and related diseases, hair disorders, nail disorders, skin ulcers).

Data analysis was performed using SPSS 23.0 statistical program. Descriptive statistical parameters were used for the prevalence of skin diseases. Chi-square analysis was used to determine whether there was a significant difference in the prevalence of skin diseases according to gender and age group. A logistic regression model was established for each of the diseases that were significant in the chi-square analysis. A value of $P < 0.05$ was accepted as significant in the entire analysis. Ethics committee approval was obtained from the university ethics committee.

Results

All the 887 patients whose records were examined were geriatric patients aged 65 and over. Of these patients, 485 (54.7%) were females and 402 (45.3%) were males. The mean age was 73.34 ± 7.24 (65-101) for women, 73.75 ± 7.08 (65-94) for men, and 73.53 ± 7.16 (65-101) years for all participants. Five hundred and thirty-nine (60.8%) of the participants were in the age group of 65-74 years and 348 (39.2%) were in the age group of 75 years and over. Of the individuals in the 65-74 age group, 304 (56.4%) were females and 235 (43.6%) were males. One hundred and eighty-one (52.0%) of the individuals in the 75 years and over age group were females and 167 (48%) were males.

Diseases seen during the entire study period are recorded as; fungal infections (23.0%), eczematous dermatitis (17.1%), pruritus (10.8%), papulosquamous diseases

(8.1%), viral infections (7.8%), precancerous lesions and malignant neoplasms (7.2%), benign neoplasms (5.3%), xerosis cutis (4.7%), urticaria and adverse drug reactions (3.2%), bacterial infections (2.5%), vesiculobullous diseases (0.9%) and other diseases (9.1%) (Tables 1 and 2).

Fungal infections were most common in men and women between the ages of 65 and 74, and the incidence in this age range was between 72.6% and 62.4%. Fungal infections in both sexes; tinea unguium (63.7%), tinea pedis (23.5%), tinea cruris (5.9%), tinea corporis (5.4%) and candida stomatitis (1.5%).

Eczematous dermatitis, which is the second most common dermatologic disease in the geriatric population, was most common in men and women between the ages of 65 and 74, with a prevalence of 64.4% and 54.8% in this age

range. Eczematous dermatitis was seen in both sexes; allergic contact dermatitis (27.0%), irritant contact dermatitis (9.9%), nummular dermatitis (6.6%), lichen simplex chronicus (6.6%), and erythema intertrigo (3.9%).

Papulosquamous diseases were most common in women (60.5%) and men (52.9%) in the 65-74 years group. Papulosquamous diseases seen in both sexes; psoriasis Vulgaris (44.4%), seborrheic dermatitis (37.5%), lichen planus (11.1%), prurigo nodularis (2.8%), lichen sclerosis et atrophicus (2.8%), and parapsoriasis (1.4%).

Viral infections were more common in women (52.5%) aged 75 and over, and in men (69.0%) in the 65-74 years age group. Viral infections seen in both sexes; zona zoster (94.3%), molluscum contagiosum (4.3%) and anogenital warts caused by human papilloma virus (1.4%).

Table 1. Distribution of diagnosed skin diseases by gender and results of chi-square analysis

Dermatologic Diseases	Females N = 495 (%)	Males N = 402 (%)	Total N = 887 (%)	P value	X ²
Fungal infections	95 (19.6)	109 (27.1)	204 (23.0)	0.008	7.032
Eczematous dermatitis	90 (18.6)	62 (15.4)	152 (17.1)	0.218	1.520
Pruritus	52 (10.7)	44 (10.9)	96 (10.8)	0.915	0.011
Papulosquamous diseases	38 (7.8)	34 (8.5)	72 (8.1)	0.735	0.114
Viral infections	40 (8.2)	29 (7.2)	69 (7.8)	0.567	0.327
Precancerous lesions and malignant neoplasms	20 (4.1)	44 (10.9)	64 (7.2)	< 0.001	15.278
Benign neoplasms	26 (5.4)	21 (5.2)	47 (5.3)	0.928	0.008
Xerosis cutis	28 (5.8)	14 (3.5)	42 (4.7)	0.110	2.557
Urticaria and Adverse drug reactions	24 (4.9)	4 (1.0)	28 (3.2)	0.001	11.238
Bacterial infections	11 (2.3)	11 (2.7)	22 (2.5)	0.655	0.199
Vesiculobullous diseases	5 (1.0)	3 (0.7)	8 (0.9)	0.655	0.199

Table 2. Distribution of diagnosed skin diseases by age groups and results of chi-square analysis

Dermatologic Diseases	65-74 years N = 539 (%)	75 years and over N = 348 (%)	Total N = 887 (%)	P value	X ²
Fungal infections	137 (25.4)	67 (19.3)	204 (23.0)	0.033	4.538
Eczematous dermatitis	92 (17.1)	60 (17.2)	152 (17.1)	0.947	0.004
Pruritus	53 (9.8)	43 (12.4)	96 (10.8)	0.238	1.395
Papulosquamous diseases	41 (7.6)	31 (8.9)	72 (8.1)	0.488	0.480
Viral infections	39 (7.2)	30 (8.6)	69 (7.8)	0.452	0.565
Precancerous lesions and malignant neoplasms	33 (6.1)	31 (8.9)	64 (7.2)	0.117	2.451
Benign neoplasms	34 (6.3)	13 (3.7)	47 (5.3)	0.095	2.789
Xerosis cutis	20 (3.7)	22 (6.3)	42 (4.7)	0.074	3.197
Urticaria and Adverse drug reactions	20 (3.7)	8 (2.3)	28 (3.2)	0.240	1.379
Bacterial infections	11 (2.0)	11 (3.2)	22 (2.5)	0.295	1.097
Vesiculobullous diseases	4 (0.7)	4 (1.1)	8 (0.9)	0.531	0.393

Precancerous and malignant lesions were most common in women (55%) aged 75 years and above, while in men (54.5%) they were most common in the group of 65-74 years. Precancerous and malignant neoplasms seen in both sexes; actinoid keratosis (78.1%), squamous cell carcinoma (10.9%), mycosis fungoides (6.3%), basal cell carcinoma (3.1%), and lentigo maligna (1.6%).

Benign neoplasms were most common in women (69.2%) and men (76.2%) in the 65-74 years age group. Benign neoplasms were seen in both sexes; seborrheic keratosis (27.7%), skin tag (23.4%), epidermal cyst (14.9%), melanocytic nevus (14.9%) and keloid scar (4.3%).

When the prevalence of skin diseases was analyzed by gender; fungal infections ($p=0.008$) and precancerous and malignant neoplasms ($P < 0.001$) were more common in males than females. Among the precancerous and malignant neoplasms, actinic keratosis ($P < 0.001$) was more common in males than females. When skin diseases were considered according to the distribution among age groups; Fungal infections were seen more frequently in the 65-74 age group ($P = 0.033$, significant) compared to the other age group. Tinea corporis ($P = 0.039$, significant) among fungal infections and allergic contact dermatitis among eczematous dermatitis ($P = 0.046$, is significant) were seen more frequently in the 65-74 age group compared to the other age group (Tables 1 and 2).

A logistic regression model was established to analyze the extent to which the parameters with significant differences in the chi-square test increased the risk of developing skin diseases. According to the established logistic regression model, the risk of fungal infection in geriatric patients was increased by being male (odds ratio [OR] 1.55, $P = 0.006$) and being in the range of 65-74 years old (OR 1.46, $P = 0.025$). Male patients were at significantly higher risk for precancerous and malignant lesions (OR 2.81, $P < 0.001$) and actinic keratosis in this disease group (OR 3.26, $P < 0.001$) (Table 3).

Conclusions

While the average life expectancy in the world increases on one hand, on the other hand, efforts to take preventive measures on the health problems of geriatric patients, provide early diagnosis and necessary medical treatment not only improve their living conditions, but also reduce costs for

countries [4,5]. According to 2020 data, 9.5% of Turkey's population consists of individuals aged 65 and over [6]. In our study, 15% of the total number of patients who reported to the outpatient clinic were over 65 years old.

In this study, fungal infections, eczematous dermatitis, pruritus, papulosquamous diseases, and viral infections in order of the most prevalent to the least, constitute the first five most common dermatological diseases groups in the geriatric population. Bilgili et al. In a study conducted in an Eastern city in Turkey where winter conditions are severe, it is stated that in order of prevalence, the most common dermatological diseases are eczematous dermatitis, fungal infections, pruritus, urticaria-angioedema and bacterial infections. It is stated that viral infections and papulosquamous diseases are seen less frequently [7]. In another study conducted in Turkey, eczematous dermatitis, pruritus, fungal infections, precancerous and malignant lesions, and bacterial infections are listed as the most common dermatological diseases [8]. When we look at the studies conducted in Turkey related to the subject of the study, it is seen that the order of the most common dermatological disease groups changes according to geographical and climatic differences, but it is seen that eczematous dermatitis, fungal infections, pruritus disease group generally ranks high in the studies and maintains its significance.

In this study, fungal infections constitute the most common disease group in the geriatric population. In addition, fungal infections were 1.55 times more common in men and 1.46 times more common in the 65-74 age group. Similarly, in a study conducted by Yalçın et al in Turkey, fungal infections were reported to be more common in males (18%) and in the 65-74 years age group (16.7%) [9]. Age, gender, personal care, epidermal turn-over and decreased immunological functions may be responsible in the frequent occurrence of fungal infections in the geriatric population [10]. It is widely accepted that the fact that men are exposed to physical causal factors more than women and that they do not consider skin care as important as women, results in fungal infections being more common in men. This may be the reason why the prevalence of this disease was higher in males in our study too [9].

In this study, eczematous dermatitis constituted the second most common disease group in the geriatric population.

Table 3. Logistic regression model established for the estimation of risk factors leading to skin diseases

Dermatologic Diseases	Risk Factor	B	P value	Odds Ratio	95% Confidence Interval
Fungal infection	Male	0.442	0.006	1.555	1.134 - 2.132
	65-74 years	0.380	0.025	1.462	1.050- 2.036
Precancerous and malignant lesion	Male	1.036	< 0.001	2.819	1.631 - 4.871
Actinic keratosis	Male	1.184	< 0.001	3.267	1.735 -6.152

Eczematous dermatitis is more common in the 65-74 years age group in both men and women. In addition, among eczematous dermatitis, contact dermatitis is the most common disorder. Similarly, in the study conducted by Yaldız et al, it is stated that allergic contact dermatitis (44.5%) and irritant contact dermatitis (33.2%) are the most common diseases among eczematous dermatitis [4]. The fact that eczematous dermatitis is more common in early geriatric ages and contact dermatitis is more common than others can be explained by the increased exposure to many environmental and physical extrinsic factors in the development of eczematous dermatitis. It is thought that it will continue to be seen more frequently in the coming years due to the changing climatic conditions, increasing exposure to sunlight and increasing chemical exposure.

In this study, pruritus was the third most common dermatological disease. Although it is seen at the same rate in women and men, it is of significance that it is seen at a higher rate in the 75 and over age group. Similarly, in a study conducted in Turkey, pruritus (12.8%) was the third most common disease and it was seen to increase from a rate of 12.2% in the 65-74 age group, to 14.3% in the 75-84 age group, and 16.9% in the 85 and over age group [11]. In a study conducted with 46 people staying in a nursing home in Denmark, the pruritus rate was reported as 28.9% [12]. It is acknowledged that the incidence of pruritus increases with age. Dry skin, nervous degeneration and weakening of immunity due to aging predispose the aged to pruritus [13]. Among the causes of diseases such as pruritus, it is important to have preventable or intervening measures in order to reduce this very common disease in later ages. For this reason, it can be said that patient information activities to be carried out in dermatology outpatient clinics and the study of preventive medicine by health professionals will be beneficial in reducing these diseases.

In this study, papulosquamous diseases was the fourth most common dermatological disease group. In this group of diseases, psoriasis vulgaris, seborrheic dermatitis and lichen planus, in order of prevalence, are the three most common diseases. In a study by Darjani et al in Iran, it was reported that papulosquamosis patients were seen in 31.6% of geriatric patients, and seborrheic dermatitis (15.4%) and psoriasis (7.3%) were the first two in this group [14]. In a study by Kandwal et al in India, it was reported that papulosquamous diseases (40%) and psoriasis (9.4%) as a constituent of this group were most common in individuals over 60 years of age [15].

In this study, precancerous and malignant lesions were seen in 7.2% of the geriatric population. Similar to our study, the prevalence of precancerous and malignant lesions was reported as 5.2% by Yalçın et al, 9.6% by Polat et al, and 9.7% by Yaldız et al [4,8,9]. Among these lesions, actinic keratosis,

squamous cell carcinoma and mycosis fungoides in decreasing order of prevalence constitute the three most common lesions. When evaluated as a group, these lesions are 2.81 times more frequent in male subjects compared to female subjects. In this study, the prevalence of actinic keratosis was 5.6%. In addition, the risk of developing actinic keratosis, which is a common premalignant lesion, is 3.26 times higher in men. Prevalence of actinic keratosis has been reported as 29.3% by Kılıç et al, 22.3% by Cvitanovic et al, and 21.1% by Akdeniz et al [16-18]. Likewise, in the study of Akdeniz et al., it was emphasized that actinic keratosis was significantly more common in men [18]. Actinic keratosis usually presents as red or brown papules 3-6 mm in diameter on sun-exposed body parts in fair-skinned individuals [19]. The fact that men are exposed to sunlight more frequently in working and social life is acknowledged as one of the important factors that cause it to be more common in men.

The average life expectancy in most of the world is getting to continue to increase due to preventive approaches and improving treatment options. As depend on this condition, geriatric patients take part in the focus of given medical services higher. An important part of the skin problems seen in geriatric patients are diseases that can be prevented by protecting individuals against adverse environmental conditions. These diseases cause life-threatening conditions albeit at a low rate. It is very important to determine the risk levels of individuals in the geriatric population for dermatological diseases that adversely affect the quality of life. It can supply to improve the medical services given by dermatologists to geriatrics. We believe that this epidemiological study will contribute to the dermatologists and clinicians in assessment and improving preventive approaches to the most seen skin diseases in geriatric.

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