

**ORIGINAL RESEARCH**

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**Prevalence of benign, precancerous and malignant skin tumors in the elderly population in Mugla**Asude Kara Polat<sup>1</sup>, Emine Tugba Alatas<sup>2</sup>, Asli Akin Belli<sup>3</sup>, Gursoy Dogan<sup>2</sup>, Metin Picakciefe<sup>4</sup><sup>1</sup> *Istanbul Training and Research Hospital, Department of Dermatology, Istanbul, Turkey*<sup>2</sup> *Mugla Sitki Kocman University Faculty of Medicine, Department of Dermatology, Mugla, Turkey*<sup>3</sup> *Mugla Sitki Kocman University Training and Research Hospital, Department of Dermatology, Mugla, Turkey*<sup>4</sup> *Mugla Sitki Kocman University Faculty of Medicine, Department of Public Health, Mugla, Turkey*

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**Abstract**

We sought to investigate the prevalence of skin tumors in Muğla, which has a Mediterranean climate and a high population of elderly people. This was a cross-sectional study conducted on patients, 65 years old and older, who consulted at our dermatology outpatient clinics between January 2014 and January 2015. Diagnoses of the patients were obtained and retrospectively evaluated from the electronic medical records of the hospital. Of 2297 geriatric patients, 50.8% were females and 49.2% were males. Of these patients, 12% had actinic keratosis, 5.4% had seborrheic keratosis, 2.1% had basal cell carcinoma, 0.8% had squamous cell carcinoma, and 0.1% had malignant melanoma. In patients <80 years old, the probability of actinic keratosis was 1.7 times more than that in patients ≥80 years old ( $p = 0.006$ ). In addition, the probability of actinic keratosis was 1.7 times more in women than in men ( $p < 0.001$ ). Among precancerous, benign and malignant skin tumors, actinic keratosis was the most common, followed by seborrheic keratosis, basal cell carcinoma, squamous cell carcinoma, and malignant melanoma. Moreover, squamous cell carcinoma and basal cell carcinoma were more frequently observed in the advanced geriatric age group and early geriatric age group, respectively.

**Introduction**

The birth rates are decreasing, people are living longer, and geriatric population is gradually increasing worldwide [1]. It is estimated to rise of the elderly population from 11% to 22% between the years 2000-2050 according to the data of the World Health Organization. The population over 65 years is expected to be ~2 billion [2]. In Turkey, the geriatric population comprised 8% of the total population with ~6 million individuals in 2014 [3].

Patients who are ≥65 years old, or the geriatric age group, have decreased functions in cell regeneration, immune response, and DNA repair [4]. Geriatric patients comprise a special group in dermatology. The increased rate of skin malignancies with chronic ultraviolet (UV) exposure is frequently observed in this special group [5].

In literature, there are a few studies on skin malignancies and their prevalence in Turkey, especially in the geriatric population [4,6,7].

We sought to investigate the prevalence and risk factors for skin cancer in Muğla, Turkey, which has a Mediterranean climate and a

high population of elderly people. The results of the current study may contribute to the existing epidemiologic data and improvement of preventive health care services for the elderly.

**Material and Methods**

This was a cross-sectional study conducted on patients, ≥65 years old, who visited the dermatology outpatient clinics of between January 2014 and January 2015. Diagnoses of the patients were obtained and retrospectively evaluated from the electronic medical records of the hospital. Patients with one or more diagnoses of seborrheic keratosis (SK), actinic keratosis (AK), basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and malignant melanoma (MM) were included in the study. Whereas the diagnoses of SK and AK were based on clinical and dermoscopic findings, the diagnoses of BCC, SCC, and MM were based on clinical, dermoscopic, and histopathological findings. The skin tumors were classified into benign (SK), pre-cancerous (AK), and malignant (BCC, SCC, and MM) subgroups [8,9]. In addition, the patients were divided into the early geriatric (65- 79 years old) and advanced geriatric (≥80 years) age groups; the type and frequency of malignancy were evaluated according to the age groups. Ethic Committee approval was obtained for this study from the Muğla Sitki Koçman University Ethic Committee.

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### Statistical analysis

The SPSS 20.0 software was used for statistical analysis. Normality of data contribution was evaluated by the Kolmogorov-Smirnov and Lilliefors tests. Fisher's exact test, Pearson chi-square test, and logistic regression analysis were performed for the comparison of qualitative data. A value of  $P < 0.05$  was considered statistically significant.

## Results

### Demographics

Of 2297 geriatric patients with a mean age of  $73.49 \pm 6.39$  years, 1666 (50.8%) were females and 1131 (49.2%) were males; 1838 (80.01%) were between 65–79 years old, 459 (19.99%) were  $\geq 80$  years old; 125 (5.4%) had SK, 276 (12%) had AK, 48 (2.1%) had BCC, 19 (0.8%) had SCC, and 2 (0.1%) had MM. The overall prevalence of skin tumors was 20.4%; of this, 5.4% were benign (SK), 12% were pre-cancerous (AK), and 3% were malignant (BCC, SCC, and MM).

### Evaluation according to gender

Equal gender distributions were observed in patients with SK [68 (54.4%) females vs. 57 (45.6%) males,  $P > 0.05$ ]; patients with BCC [24 (50%) females vs. 24 (50%) males,  $P > 0.05$ ]; and patients

with SCC [9 (47.4%) females vs. 10 (52.6%) males,  $P > 0.05$ ]. In patients with AK, the number of female patients was significantly higher than that of male patients [172 (62.3%) vs. 104 (37.7%),  $P < 0.001$ ]. All patients with MM ( $n=2$ ) were males.

### Evaluation according to age groups (Table 1)

The early and advanced geriatric age groups had similar incidences of SK [98 (78.4%) in the early geriatric vs. 27 (15.7%) in the advanced geriatric,  $P = 0.646$ ] and MM [1 (50.0%) in the early geriatric vs. 1 (50.0%) in the advanced geriatric,  $P = 0.360$ ]. AK was significantly more frequent in the early geriatric group than in the advanced geriatric group [204 (73.9%) vs. 72 (29.1%),  $P = 0.010$ ], whereas SCC was significantly more frequent in the advanced geriatric group than in the early geriatric group [14 (73.7%) vs. 5 (26.3%),  $P = 0.010$ ].

According to logistic regression analysis (Table 2), the odds ratio for AK in patients  $<80$  years old was 1.7 times more than that in patients  $\geq 80$  years old ( $P = 0.006$ ). Women were 1.7 times more likely to have AK than men ( $P < 0.001$ ). The odds ratio for BCC in patients  $<80$  years old were 2.2 times more than that in patients  $\geq 80$  years old ( $P = 0.009$ ). The odds ratio for SCC in patients  $\geq 80$  years old were 11.5 times more than that of patients  $<80$  years old ( $P < 0.001$ ).

**Table 1.** Evaluation of the patients according to the gender and age groups

|        | SK (n=125)<br>n (%) P |       | AK (n=276)<br>n (%) P |        | BCC (n=48)<br>n (%) P |       | SCC (n=19)<br>n (%) P |        | MM (n=2)<br>n (%) P |       |
|--------|-----------------------|-------|-----------------------|--------|-----------------------|-------|-----------------------|--------|---------------------|-------|
| Gender |                       |       |                       |        |                       |       |                       |        |                     |       |
| Female | 68 (54.4)             | 0.409 | 172 (62.3)            | <0.001 | 24 (50)               | 1.000 | 9 (47.4)              | 0.821  | 0 (0)               | -     |
| Male   | 57 (45.6)             |       | 104 (37.7)            |        | 24 (50)               |       | 10 (52.6)             |        | 2 (100)             |       |
| Age    |                       |       |                       |        |                       |       |                       |        |                     |       |
| 65-79  | 98 (78.4)             | 0.646 | 204 (73.9)            | 0.010  | 31 (64.6)             | 0.010 | 5 (26.3)              | <0.001 | 1 (50)              | 0.360 |
| ≥80    | 27 (15.7)             |       | 72 (26.1)             |        | 17 (35.4)             |       | 14 (73.7)             |        | 1 (50)              |       |

Chi-square test. SK: Seborrheic keratosis, AK: Actinic keratosis, BCC: Basal cell carcinoma, SCC: Squamous cell carcinoma, MM: Malignant melanoma

**Table 2.** Logistic regression analysis results according to gender and age

| Risk factors              | B        | P value | OR     | 95% CI         |
|---------------------------|----------|---------|--------|----------------|
| <b>SK</b>                 |          |         |        |                |
| Gender (female)           | .155     | .401    | .856   | .715 – 1.719   |
| Age (years) ( $< 80$ )    | .103     | .645    | 1.109  | .596 – 1.230   |
| Constant                  | -2.803   | .001    |        |                |
| <b>AK</b>                 |          |         |        |                |
| Gender (female)           | .541     | $<.001$ | 1.718  | 1.326 – 2.226  |
| Age (years) ( $< 80$ )    | -.406    | .006    | 1.667  | .498 - .893    |
| Constant                  | -1.979   | .000    |        |                |
| <b>BCC</b>                |          |         |        |                |
| Gender (female)           | .223     | .938    | 1.23   | .577 – 1.814   |
| Age (years) ( $< 80$ )    | .806     | .009    | 2.239  | 1.228 – 4.082  |
| Constant                  | -4.075   | .000    |        |                |
| <b>SCC</b>                |          |         |        |                |
| Gender (female)           | .119     | .814    | 1.115  | .448 – 2.774   |
| Age (years) ( $\geq 80$ ) | 2.443    | $<.001$ | 11.505 | 4.122 - 12.111 |
| Constant                  | Constant | -5.958  | .000   |                |

SK: Seborrheic keratosis; AK: Actinic keratosis; BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma; OR: Odds ratio; CI: Confidence interval

## Discussion

The geriatric population is gradually increasing worldwide. In Turkey, it comprises 7.7% of the total population, i.e., ~6million, according to the 2013 data of the Turkish Statistical Institute [10]. The frequency of skin tumors is high in the elderly and with chronic UV exposure, the chance of developing skin cancers increase [5]. Muğla is one of the cities of Turkey that has the highest annual sunlight and an above-average proportion of elderly individuals (10.39%) [10,11]. In this regard, we aimed to investigate the frequency of skin tumors in the geriatric population of this region.

In recent years, the frequency of skin cancers has progressively increased [5]. Although SK, which is a benign skin tumor, is widely seen, there were only a few studies on its frequency [8]. In diverse studies, the prevalence of SK varied from 0.4% to 8% [4,12,15]. SK was reported to equally affect both genders and is more common in Caucasians [8]. In our study, the SK prevalence (5.4%) and equal gender distribution were similar to those of other reports.

Among pre-cancerous skin tumors, AK is quite common worldwide, occurring in 11%–25% of adults in the United States and in 40%–50% of individuals >40 years old in Australia [16]. In a study involving 2100 elderly patients, Rubegni et al [17] found the prevalence of AK to be 9.1%. Ozyurt et al [12] reported a 2.2% prevalence of AK in 720 geriatric patients. Others reported an AK prevalence ranging from 2.4% to 19% [4,13,18]. Darjani et al [14] noted that AK was the most common pre-cancerous disease. In our study, AK was the most common disease with 12% prevalence. This result was attributed to the fact that the patients had Fitzpatrick skin types 1 and 2 and excess UV exposure in the region. The higher prevalence of AK in men than in women was attributed to an increased total UV exposure in men [16]. In contrast, the present study showed that AK was significantly more prevalent in women than in men; in fact, women were 1.7 times more likely to have AK than men. Further studies are needed in this regard.

BCC, the most common skin cancer in Caucasians, develops from the outer sheath of a hair follicle root. BCC comprises 75%–80% of all skin cancers worldwide, with higher incidence in regions with excess sunlight [16]. It is widely seen in subjects >60 years old and in European countries with large elderly population. In addition, BCC is more common in men than in women [6]. Several studies have reported BCC prevalence ranging from 0.1% to 8.8% [12,14,18]. In our study, BCC prevalence was 2.1%, and it affected both genders in equal measure.

SCC is the second most common skin cancer after BCC, but existing data on incidence are quite few [16]. The pathogenesis of SCC is multifactorial, but excess UV exposure and having less skin pigmentation are the main factors [6]. In a study performed in İzmir, Turkey, the prevalence of SCC was found to be 26.6% among skin cancers other than MM [7]. In a study by Darjani et al [14] the SCC prevalence was reported to be 3.8%. In addition, SCC was 2–3 times more common in men than in women [19]. From our data, the prevalence of SCC was found to be 0.8% and with equal gender distribution.

The incidence of MM of the skin has been gradually increasing [6,9]. It is the third most common malignant skin tumor [6]. In a study reported by Yalcin et al [6] MM was detected in 5 (1.4%) of

338 patients >60 years old with skin cancer. In the current study, the MM prevalence (0.1%) was lower than previously reported. According to gender, skin MM was found to be more common in men, findings that were consistent with ours [9,16].

In the present study, AK and BCC were common in 65–79-year-old patients; whereas the frequency of SCC was increased in patients >80 years old. We consider that the prevalence of skin cancer was affected by the occupations of the patients. Majority of the study population were in the agriculture and animal husbandry industries. Besides agriculture, tobacco production was especially common in this elderly population.

## Conclusion

We reported the prevalence of benign, pre-cancerous, and malignant skin tumors in geriatric patients. Pre-malignant and malignant tumors in the elderly may alter mortality, morbidity, quality of life, and life expectancy. In addition, because these tumors develop with UV exposure, the residents of Muğla, Turkey, should be informed of these possible deleterious effects. Moreover, we want to emphasize that education programs in dermatology outpatient clinics for increasing awareness of geriatric patients should be conducted to help decrease the risk of skin tumors. Moreover, the geriatric population should be recorded and followed up.

## Conflict of Interest

No conflict of interest was declared by the authors.

## Financial Disclosure

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## References

1. Sahin NE, Emiroglu ON. Quality of life and related factors of older people in nursing home. *Journal of Hacettepe University Faculty of Nursing*. 2014;1(1):57-66.
2. Mental health and older adults. <http://www.who.int/mediacentre/factsheets/fs381/en/> access date 10.09.2015.
3. İstatistiklerle yaşlılar, 2014. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=18620> access date 10.09.2015.
4. Sacar T, Sacar H. Prevalence of dermatosis in the geriatric population in Izmir region. *Turk J Geriatri*. 2011;14(3):231-7.
5. Soyer HP, Rigel DS, Wurm EMT. Actinic keratosis, basal cell carcinoma and squamous cell carcinoma. In: Bologna JL, Jorizzo JL, Rapini RP, eds, *Dermatology*. Philadelphia: Elsevier Saunders. 2012;1773-93e1.
6. Bas Y, Kalkan G, Pancar GS, Yıldız Seckin H, Müslehiddinoglu A. Skin cancer cases admitted to Tokat State Hospital between years 2007 and 2011. *Turk J Dermatol*. 2014;8(2):84-7.
7. Ceylan C, Ozturk G, Alper S. Non-melanoma skin cancers between the years of 1990 and 1999 in Izmir, Turkey: Demographic and clinicopathological characteristics. *J Dermatol*. 2003;30(2):123-31.
8. Requena L, Requena C, Cockerell CJ. Benign Epidermal Tumors and Proliferations. In: Bologna JL, Jorizzo JL, Rapini RP, eds, *Dermatology*. 3rd Edition. Philadelphia: Elsevier Saunders. 2012;1795-815.
9. Garbe C, Bauer J. Melanoma. In: Bologna JL, Jorizzo JL, Rapini RP, eds, *Dermatology*. 3rd Edition. Philadelphia: Elsevier Saunders. 2012;1885-914.
10. Adrese dayalı nüfus kayıt sistemi sonuçları 2013. [http://www.tuik.gov.tr/Kitap.do?metod=KitapDetay&KT\\_ID=11&KITAP\\_ID=139](http://www.tuik.gov.tr/Kitap.do?metod=KitapDetay&KT_ID=11&KITAP_ID=139) access date 10.09.2015.

11. İllere ait mevsim normalleri (1981-2010). <http://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=MUGLA> access date 10.09.2015.
12. Ozyurt K, Avcı A, Cınar SL, Silay E. Dermatological disorders in geriatric patients. *Turk J Dermatol*. 2014;8(4):206-9.
13. Baykal Y, Karaduman A, Bukulmez G. Skin problems in geriatric patients. *Turk J Geriatri*. 1999;2(4):156-9.
14. Darjani A, Mohtasham-Amiri Z, MohammadAmini K, Golchai J, Sadre-Eshkevari S, Alizade N. Skin disorders among elder patients in a referral center in Northern Iran (2011). *Dermatol Res Pract*. 2013;2013:193205.
15. Kacar N, Ergin S, Yıldız N. The distribution of skin diseases in elderly: The 5 years' experience of Pamukkale University clinic of dermatology composed of 1623 patients. *Yaşlı Sorunları Araştırma Dergisi*. 2009;2(1):24-9.
16. Gurur MA. Deri tümörleri ve nevuslar. In: Tuzun Y, Gurur MA, Serdaroglu S, Oguz O, Aksungur V, eds, *Dermatoloji*. 3. baskı. İstanbul: Nobel tıp kitabevi. 2008;1759-962.
17. Rubegni P, Poggiali S, Nami N, Rubegni M, Fimiani M. Skin diseases in geriatric patients: our experience from a public skin outpatient clinic in Siena. *G Ital Dermatol Venereol*. 2012;147(6):631-6.
18. Demirseren DD, Emre S, Ateskan U, Metin A. Prospective analysis of skin findings of patients admitted to a geriatric outpatient clinic. *Turk J Geriatri*. 2010;13(2):87-91.
19. Baykal C. *Dermatoloji Atlası*. 3. baskı. Nobel Tıp Kitapevi, İstanbul, 2012;950-8.