ORIGINAL ARTICLE

DOI: 10.4274/nkmj.galenos.2023.28199
Nam Kem Med J 2023;11(3):214-218

Retrospective Analysis of Patients with Basal Cell Carcinoma Diagnosed in Our Clinic

Kliniğimizde Tanı Koyulan Bazal Hücreli Karsinom Olgularının Retrospektif İncelenmesi

Hülya ALBAYRAK[1], Onur RAİMOĞLU[2]

[1]Tekirdağ Namık Kemal University Faculty of Medicine, Department of Dermatology, Tekirdağ, Turkey
[2]Çorlu State Hospital, Clinic of Dermatology, Tekirdağ, Turkey

ABSTRACT

Aim: Basal cell carcinoma (BCC) is the most common malignancy of the skin and its incidence is steadily increasing. The aim of our study was to reveal the clinical and demographic characteristics of BCC.

Materials and Methods: The study included 273 BCC that were histopathologically diagnosed in 256 patients who admitted the Dermatology Clinic of Tekirdağ Namık Kemal University between January 2014 and January 2019. The patients' age, gender, tumor histological subtype, tumor localization, and co-morbid conditions were all assessed retrospectively in the study.

Results: The mean age of the 256 patients included in the study with BCC was statistically 67.67, with the youngest patient being 32 and the oldest patient being 104 years old. Of the patients, 137 were male (56.5%), and 119 were female (46.5%). The most common histopathological subtype observed was the nodular type, accounting for 61.5% (n=168), and the most frequent localization was the head and neck region, accounting for 88.3% (n=241).

Conclusion: BCC is the most common epidermal malignancy of the skin, characterized by a slow growth pattern and a locally invasive nature. It often occurs in individuals aged 50 and above, particularly in the head and neck region where there is intense exposure to ultraviolet radiation. In our study, we also observed that BCC was most frequently seen in the 70-80 age range, primarily in the head and neck region, and predominantly in the nodular subtype. The superficial type was more commonly observed on the trunk. Although the incidence of BCC is similar between males and females, it tends to occur more frequently in females at younger ages.

Keywords: Basal cell carcinoma, histopathological subtype, head-neck, nodular type basal cell carcinoma

ÖZ

Amaç: Bazal hücreli karsinom (BHK) derinin en sık görülen malignitesidir ve görülme sıklığı giderek artmaktadır. Çalışmamızın amacı bölgemizde sık olarak görülen BHK'nın klinik ve demografik özelliklerini ortaya koymaktır.

Gereç ve Yöntem: Tekirdağ Namık Kemal Üniversitesi Dermatoloji Polikliniği'ne Ocak 2014-Ocak 2019 tarihleri arasında başvuran 256 hastada histopatolojik olarak tanısı konulan 273 BHK çalışmaya dahil edildi. Hastaların yaş, cinsiyet, tümör histopatolojik alt tipi, tümör lokalizasyonu, hastaların eşlik eden komorbiditeleri belirlenerek retrospektif olarak incelendi.

Bulgular: Çalışmaya alınan 256 BHK hastasının yaş ortalaması istatistiksel olarak 67,67 idi ve en genç hasta 32, en yaşlı hasta 104 yaşındaydı. Hastaların 137'si erkek (%56,5), 119'u kadındı (%46,5). En sık görülen histopatolojik alt tip %61,5 oranında (n=168) nodüler tip ve en sık görülen lokalizasyon %88,3 oranında (n=241) baş-boyun bölgesiydi.

Sonuç: BHK yavaş büyüme paternine sahip olan, lokal invaziv karakterde en sık görülen epidermal malign kutanöz tümördür. Sıklıkla 50 yaş üzerinde, ultraviyole maruziyetinin yoğun olduğu baş-boyun bölgesinde görülmektedir. Bizim çalışmamızda da; BHK'nın en sık 70-80 yaş aralığında, baş-boyun bölgesinde ve en sık nodüler tipte olduğu görüldü. Gövdede yüzeyel tip daha fazla görülmekteydi. Erkek ve kadınlarda görülme sıklığı aynı olmasına rağmen erken yaşlarda kadınlarda daha sık görülmekteydi.

Anahtar Kelimeler: Bazal hücreli karsinom, histopatolojik alt tipler, baş-boyun, nodüler tip bazal hücreli karsinom

Address for Correspondence: Hülya ALBAYRAK MD, Tekirdağ Namık Kemal University Faculty of Medicine, Department of Dermatology, Tekirdağ, Turkey
Phone: +90 506 715 50 65 **E-mail:** halbayrak@nku.edu.tr **ORCID ID:** orcid.org/0000-0002-2022-578X
Received: 09.11.2022 **Accepted:** 24.05.2023

INTRODUCTION

Basal cell carcinoma (BCC) is the most common type of non-melanoma skin cancer and accounts for 75% of all skin cancers[1]. It originates from the undifferentiated cells in the basal cell layer of the epidermis or the outer root sheath of the hair follicle[2]. The logarithmic relationship between age and the risk of BCC development has been proven[3]. Although it can be seen anywhere on the skin, more than 80% occurs in sun-exposed areas such as the head and neck[4]. With the prolongation of the average lifespan, a further increase in the incidence of BCC is expected in the near future[5]. In general, these slowly growing and rarely metastasizing tumors can cause significant morbidity due to their mostly facial involvement, tendency to recur, and the possibility of local invasion and destruction in the tissue[6]. Chronic sun damage is one of the most important risk factors for the development of BCC, there is approximately 15-20 years between ultraviolet B (UVB) damage and the onset of BCC[7]. In our study, it was aimed to create our own clinical data about BCC, which is the most common skin tumor, and compare it with the literature.

MATERIALS AND METHODS

This study, which was planned retrospectively, included 256 patients who applied to Tekirdağ Namık Kemal University Dermatology Clinic between January 2014 and January 2019 and were diagnosed with BCC after clinical evaluation and histopathological examination. Ethical approval was obtained from Tekirdağ Namık Kemal University Ethics Committee with protocol number 2019.67.04.14 and date 23.03.2020.

The patients included in the study were examined in detail. For the patients who were considered to have BCC and exposed to biopsy or excision and then histopathologically diagnosed with BCC, the age, gender, tumor histopathological subtype, tumor localization, and other accompanying diseases were evaluated.

Statistical Analysis

The Shapiro-Wilk test was used to evaluate the conformity of the measured data to normal distribution. Continuous variables were given as mean, standard deviation, median, minimum and maximum values, and categorical variables were presented as n and percentage values. In comparisons between the groups, the Student's t-test was used for the analysis of normally distributed data, and the Kruskal-Wallis test was used for data that did not show normal distribution. The Friedman test was employed to compare repeated measurements. In the presence of a difference between the measurements, the Wilcoxon test was used for pairwise comparisons. For all statistics, the value of $p<0.05$ was considered significant.

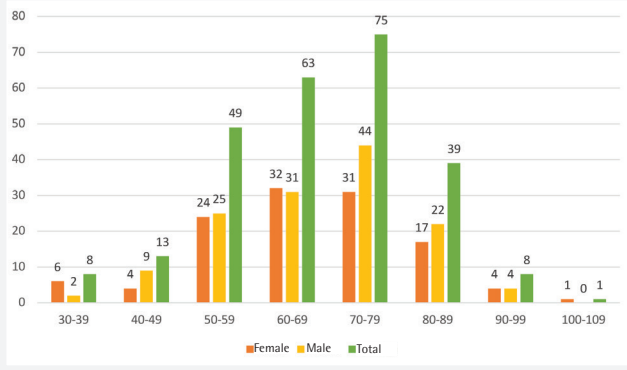
RESULTS

Of the 256 patients included in the study, 137 (53.5%) were male and 119 (46.5%) were female. The youngest patient was 32 years old and the oldest patient was 104 years old. The mean age of the patients was 67.67±13.45 years. The mean age of men was 68.24±12.81 years, and the mean age of women was 67.02±14.18 years. In both sexes, there was no significant difference between the age of the onset of BCC and gender ($p>0.05$). The distribution of patients by age and gender is shown in Graphic 1.

There were 273 BCCs in 256 patients in the study. 94.9% (n=243) of the patients presented with a single lesion. Other patients had multiple lesions.

The most common histopathological subtype was the nodular type with a rate of 61.5% (n=168). Superficial type was the second most common type (n=38) with a rate of 13.9%, and the least common type was keratotic type with a rate of 0.4% (n=1). The most common region of BCC was the head and neck region with a rate of 88.3% (n=241), the following region was the trunk with a rate of 8.1% (n=22), and the least common region was the upper extremity. The most commonly involved area on the face was the nose with a rate of 24.5% (n=67), followed by the cheek area with 14.7% (n=40). 12.1% (n=33) were on the scalp. In the head and neck region, the least lesion was detected in the postauricular region, and the least lesion in all body regions was in the upper extremity. The histopathological types of tumors and their distribution according to 4 main anatomical body regions are given in Table 1.

When we evaluated the histopathological types of tumors according to their frequency in body anatomical localizations, the nodular type was seen most frequently in the head and neck region with a rate of 94% (n=158). Although the superficial type was mostly seen in the head and neck region with a rate of 57.9% (n=22), it was not seen in the upper



Graphic 1. Distribution ranges of patients by age and gender

extremity. Morpheiform type (n=14), infiltrative type (n=9), adenoid type (n=4), keratotic type (n=1), micronodular type (n=2) lesions were in the head and neck region at the rate of 100%. Basosquamous type was most common in the head and neck region with a rate of 85.7% (n=6), while mixed type and pigmented type were most common in the head and neck region with a rate of 90.9% (n=10) and 78.9% (n=15), respectively. When tumor histopathological subgroups were compared within themselves, the tendency of superficial BCC to localize on the trunk and extremities was found to be significantly higher than other histopathological subtypes (p=0.001). The prevalence of tumor histopathological subtypes according to body anatomical localization is given in Table 1.

Tumors of the trunk and lower extremities were more common in males. Considering the distribution of tumor histopathological subtypes by gender in the study, nodular, superficial, morpheiform, keratotic and infiltrative types were seen more frequently in men than in women. While adenoid type was at the same rate in men and women, basosquamous, pigmented, micronodular and mixed types were more common in women. The distribution of tumors in anatomical regions by gender is shown in Table 2.

Considering the accompanying diseases of the patients, the most common comorbidities were hypertension in 68.4% (n=175), chronic obstructive pulmonary disease in 17.5% (n=45) and gonarthrosis in 16% (n=41). When the non-cutaneous malignancies accompanying the patients were evaluated in the study, 8 of 256 patients were accompanied by malignancies other than BCC. For the accompanying malignancy other than BCC, there were lung cancer in 3 patients, breast cancer in 2 patients, chronic lymphocytic leukemia in 1 patient, and rectal cancer in 1 patient. According to the histopathological subtypes, only nodular and basosquamous type BCC were accompanied by non-cutaneous malignancy.

DISCUSSION

Although BCC is mostly seen in the elderly population, it can also be seen in younger age groups. The largest majority of BCC patients in our study were in the age range of 70-80 years, followed by the age range of 60-70 years. In a retrospective study on 797 patients, which was performed by Devine et al.[8], 81% of the patients were reported to be over 65 years of age. The mean age and gender distribution of the patients in our study were found to be consistent with the study of Devine et al.[8]. When the patients in our study were examined according to age groups, 75% (n=6) of the patients under the age of 40 years were seen to be women. The fact that habits such as solarium and sunbathing are more common in the female population suggests that it may be the reason for the increased incidence in female patients at younger ages.

Considering the number of tumors in the patients in the study, 94.9% (n=243) of the patients had 1 tumor and others had more than one tumor at the time of diagnosis. Although most BCCs are a single lesion at diagnosis, more than one tumor may occur simultaneously. In the case report by Kim et al.[9], they stated that BCCs could also be seen multiple in a non-syndromic manner.

Table 1. Histopathological types of tumors and their distribution according to 4 main anatomical body regions

Histopathological type	Head-neck	Trunk	Lower extremity	Upper extremity	Total
Nodular	158 (65.6%)	4 (18.2%)	5 (62.5%)	1 (50%)	168
Superficial	22 (9.1%)	14 (63.6%)	2 (25%)	0 (0%)	38
Morpheiform	14 (5.8%)	0 (0%)	0 (0%)	0 (0%)	14
Infiltrative	9 (3.7%)	0 (0%)	0 (0%)	0 (0%)	9
Adenoid	4 (1.7%)	0 (0%)	0 (0%)	0 (0%)	4
Basosquamous	6 (2.4%)	1 (4.5%)	0 (0%)	0 (0%)	7
Keratotic	1 (0.4%)	0 (0%)	0 (0%)	0 (0%)	1
Mixed	10 (4.1%)	1(4.5%)	0 (0%)	0 (0%)	11
Pigmented	15 (6.2%)	2 (9.1%)	1 (12.5%)	1 (50%)	19
Micronodular	2 (0.8%)	0 (0%)	0 (0%)	0 (0%)	2
Total	241	22	8	2	

Table 2. Distribution of tumors in anatomical regions according to gender

Anatomical region	Male	Female	Total
Head and neck	126 (52.3%)	115 (47.7%)	241 (100%)
Trunk	14 (63.6%)	8 (36.4%)	22 (100%)
Lower extremity	7 (87.5%)	1 (12.5%)	8 (100%)
Upper extremity	1 (50%)	1 (50%)	2 (100%)

In our study, the nodular type was the most common one among BCC tumors, with a rate of 61.2% (n=167). In order of frequency, the others were superficial at the rate of 13.9% (n=38), pigmented at the rate of 7.3% (n=20), and morpheiform at the rate of 5.1% (n=14). Betti et al.[10] conducted a study with 693 patients in Italy, and they reported that the most common type of BCC was the nodular type with a rate of 64.8%, and the second most common type was the superficial type with a rate of 17.5%, as in our study. In the study conducted by Scrivener et al.[11] with 13,457 BCC patients in France in 2002, the most common types were reported to be nodular type (78.7%), superficial type (15.1%) and morpheiform type (78.7%), respectively. The distribution of tumors in our study according to their histopathological subtypes was found to be consistent with these two studies in the literature.

When the lesions were grouped according to their anatomical regions, they were mostly in the head and neck region with a rate of 88.3%, and then on the trunk with a rate of 8.1%. In another retrospective study performed by Souza et al.[12] on 1,042 lesions in Brazil, it was reported that 79% of the tumors were located in the head and neck region and 13% were in the trunk. In the study of Subramaniam et al.[13] in Australia in 2017, they reported that the lesions were mostly located in the head and neck region with a rate of 40.2% according to the body anatomical regions. The head and neck region was followed by the trunk with the rate of 33.9%. The results of our study according to the anatomical distribution were also compatible with the literature. In the study of Subramaniam et al.[13], the reason for the higher rate of lesions on the trunk compared to our study may be due to the different phenotypic characteristics of the patients and sun exposure due to the different geographical characteristics of the regions where the study was conducted. In this study, 27.8% of the lesions in the head and neck region were on the nose, 16.5% on the forehead, and 13.6% on the scalp. When the lesions in different anatomical regions in the head and neck region were examined, it was reported in the study of Souza et al.[12] that they were mostly seen on the nose with a rate of 39.1%, on the chin with a rate of 14.3% and on the forehead with a rate of 12%. As in our study, the nose was the localization where tumor was most commonly seen in the head and neck region. The reason why BCC is mostly seen in the nose in the head and neck region may be that the nose is more exposed to UVB rays due to its anatomical structure. Its high incidence in an anatomically and functionally important organ such as the nose also shows the importance of early diagnosis and treatment without local invasion.

Considering the frequency of tumor histopathological subtypes in different anatomical regions in our study, the most common type in head-neck, lower and upper extremities was nodular type. The most common type was superficial BCC on the trunk, especially on the posterior aspect of the trunk, with a higher incidence. Bastiaens et al.[14] also reported in their study that the most common superficial type was seen on the trunk and extremities.

In our study, when tumors in the anatomical regions of the body were examined, the incidence of lesions in the upper extremity in men and women was equal, and the incidence in other regions was higher in men than in women. In the study of Souza et al.[12], unlike our study, the incidence of lower extremity lesions in women was significantly higher, and the results in other regions were similar to our study.

The rate of non-cutaneous malignancy in the patients was 3%. In the study of Reinau et al.[15], the rate of comorbid malignancy in BCC was found to be 9.2% and it was found to be significant compared to the control group. This rate was found to be low in our study. The fact that the number of our patients is less and the incidence of cancer in the countries where the studies are conducted can change these rates. It is natural that the coexistence of BCC and malignancy is high in patients with the age of occurrence of BCC. However, prospective studies with a larger number of patients are needed to determine the relationship between various malignancies and BCC.

Study Limitations

The limitations of our study are that it is single-centered, retrospective, and the sample size is relatively small.

CONCLUSION

BCC is the most common malignancy in men and women, and there was no significant difference in the age of onset of BCC between the male and female groups. Considering the histopathological subtypes, the most common one was nodular type BCC. Most tumors appeared as a single tumor at the time of diagnosis. Syndromes with multiple BCC have not been identified among tumors that occur simultaneously. There is an increased incidence of BCC tumors seen at early ages, especially in women aged 30-40 years. When we examined the frequency of BCC subtypes according to body anatomical localizations, the most common histopathological subgroup was nodular type in most anatomical regions, while the frequency of superficial BCC in the trunk posterior (back) region was significantly higher than other types. BCC is most commonly found in the head and neck region, and on the nose, cheeks and scalp in the head and neck region, respectively. The fact that it is more common especially in sun-exposed anatomical regions shows that cumulative sun damage plays an important role in its pathogenesis. All individuals should try to protect themselves from BCC by taking precautions such as using sun-protective hats and clothing, especially those living in areas with high sun exposure and working in jobs

that are more exposed to the sun. It is important for the early diagnosis of BCC and other melanocytic and non-melanocytic skin cancers, especially in individuals over 50 years of age and those with risk factors for BCC, to have a skin examination at least once a year at an earlier age.

Ethics

Ethics Committee Approval: Ethical approval was obtained from Tekirdağ Namık Kemal University Ethics Committee with protocol number 2019.67.04.14 and date 23.03.2020.

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: H.A., O.R., Concept: H.A., O.R., Design: H.A., Data Collection or Processing: O.R., Analysis or Interpretation: H.A., O.R., Literature Search: H.A., O.R., Writing: H.A., O.R.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

REFERENCES

1. Goto M, Kai Y, Arakawa S, Oishi M, Ishikawa K, Anzai S, et al. Analysis of 256 cases of basal cell carcinoma after either one-step or two-step surgery in a Japanese institution. J Dermatol. 2012;39:68-71.
2. Soyer HP, Rigel DS, Wurm EMT. Actinic keratosis Basal cell carcinoma and squamous cell carcinoma. In: Callen JP, Cerroni L, Heymann WR, Hruza GJ, Mancini AJ, Patterson JW, Röcken M, Schwarz T, eds. Dermatology. 3th ed. Elsevıer Saunders; Press: 2012;1784-92.
3. Holm AS, Nissen CV, Wulf HC. Basal Cell Carcinoma is as Common as the Sum of all Other Cancers: Implications for Treatment Capacity. Acta Derm Venereol. 2016;96:505-9.
4. Handa Y, Kato Y, Ishikawa H, Tomita Y. Giant superficial basal cell carcinoma of the scrotum. Eur J Dermatol. 2005;15:186-8.
5. Lomas A, Leonardi-Bee J, Bath-Hextall F. A systematic review of worldwide incidence of nonmelanoma skin cancer. Br J Dermatol. 2012;166:1069-80.
6. Verduzco-Martínez AP, Quiñones-Venegas R, Guevara-Gutiérrez E, Tlacuilo-Parra A. Correlation of dermoscopic findings with histopathologic variants of basal cell carcinoma. Int J Dermatol. 2013;52:718-21.
7. Skoda AM, Simovic D, Karin V, Kardum V, Vranic S, Serman L. The role of the Hedgehog signaling pathway in cancer: A comprehensive review. Bosn J Basic Med Sci. 2018;18:8-20.
8. Devine C, Srinivasan B, Sayan A, Ilankovan V. Epidemiology of basal cell carcinoma: a 10-year comparative study. Br J Oral Maxillofac Surg. 2018;56:101-6.
9. Kim DH, Ko HS, Jun YJ. Nonsyndromic Multiple Basal Cell Carcinomas. Arch Craniofac Surg. 2017;18:191-6.
10. Betti R, Inselvini E, Carducci M, Crosti C. Age and site prevalence of histologic subtypes of basal cell carcinomas. Int J Dermatol. 1995;34:174-6.
11. Scrivener Y, Grosshans E, Cribier B. Variations of basal cell carcinomas according to gender, age, location and histopathological subtype. Br J Dermatol. 2002;147:41-7.
12. Souza CF, Thomé EP, Menegotto PF, Schmitt JV, Shibue JR, Tarlé RG. Topography of basal cell carcinoma and their correlations with gender, age and histologic pattern: a retrospective study of 1042 lesions. An Bras Dermatol. 2011;86:272-7.
13. Subramaniam P, Olsen CM, Thompson BS, Whiteman DC, Neale RE; QSkin Sun and Health Study Investigators. Anatomical Distributions of Basal Cell Carcinoma and Squamous Cell Carcinoma in a Population-Based Study in Queensland, Australia. JAMA Dermatol. 2017;153:175-82.
14. Bastiaens MT, Hoefnagel JJ, Bruijn JA, Westendorp RG, Vermeer BJ, Bouwes Bavinck JN. Differences in age, site distribution, and sex between nodular and superficial basal cell carcinoma indicate different types of tumors. J Invest Dermatol. 1998;110:880-4.
15. Reinau D, Surber C, Jick SS, Meier CR. Epidemiology of basal cell carcinoma in the United Kingdom: incidence, lifestyle factors, and comorbidities. Br J Cancer. 2014;111:203-6.