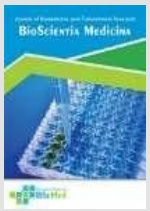
eISSN (Online): 2598-0580



**Bioscientia Medicina: Journal of Biomedicine & Translational Research**

Journal Homepage: www.bioscmed.com

# Palpebral Basal Cell Carcinoma Profile at Dr. M. Djamil General Hospital Padang, Indonesia

**Rikha Erina[1*], Ardizal Rahman[1], Mardijas Efendi[1]**

[1]Department of Ophthalmology, Faculty of Medicine, Universitas Andalas, Padang, Indonesia

**ARTICLE INFO**

**Keywords:**
Basal cell carcinoma
Palpebral
Profile

***Corresponding author:**
Rikha Erina

**E-mail address:**
*rikhaerina@yahoo.com*

All authors have reviewed and approved the final version of the manuscript.

*https://doi.org/10.37275/bsm.v6i13.652*

**A B S T R A C T**

**Background:** Basal cell carcinoma (BCC) or basalioma is the world's most common type of non-melanoma skin cancer. 80% of BCC occurs in the head and neck area, and 20% occurs in the palpebrals. BCC contributes to 90-95% of malignancies that occur in the palpebrals, is more common in males, and the incidence is higher in those over 60 years of age. BCC grows slowly (slow-growing) and rarely metastasizes but can cause local destruction of surrounding structures. This study aims to explore the profile of palpebral basal cell carcinoma at Dr. M. Djamil General Hospital Padang, Indonesia. **Methods:** This study is a descriptive observational study. A total of 36 research subjects participated in this study. Data analysis was performed using SPSS univariately. **Results:** Palpebral basal cell carcinoma most often occurs in the age group of 61-70 years. Gender predilection is more common in men than women and generally occurs unilaterally. More people work outdoors than indoors. The inferior palpebral is the predilection for most tumor sites, and tumor invasion is found in the orbital area in 30.56% of cases. Wide excision and palpebral reconstruction are the most common treatment options. **Conclusion:** Basal cell carcinoma of the lids most often occurs in the age group of 61-70 years, gender of male, unilateral, more working outdoors, the most predilection in the inferior palpebral and tumor invasion is found in the orbital area in 30.56% of cases, The most common treatments are wide excision and palpebral reconstruction.

## 1. Introduction

Basal cell carcinoma (BCC) or basalioma is the most common type of non-melanoma skin cancer in the world, 80% of BCC occurs in the head and neck area, and 20% occurs in the palpebral. BCC contributes to 90-95% of malignancies that occur in the palpebral, is more common in males, and the incidence is higher in those over 60 years of age. BCC grows slowly (slow-growing) and rarely metastasizes but can cause local destruction of surrounding structures.[1-5] The prevalence of BCC in the United States is estimated at 226-343 people per 100,000 population per year. One of the most important risk factors for BCC is exposure to ultraviolet (UV) light, especially UVB radiation. Besides that, genetic factors can also play a role, especially if there is a family history of other skin cancers. BCC can also affect younger ages, especially in immunocompromised patients, such as in patients with xeroderma pigmentosum or Gorlin syndrome. More than 50% of BCCs occur in the inferior lids, and tumors in the medial canthus tend to invade deeper, involving the orbit and sinuses. The incidence of orbital invasion is reported to be 2-4%, and risk factors include large primary tumor size, infiltrative or morpheaform histopathological type, perineural spread, tumor recurrence, location in the middle canthus, and age more than 70 years.[3,6,7,8]

BCC on the palpebral has a high risk for recurrence. Delayed diagnosis can lead to functional and cosmetic defects. Early diagnosis and proper selection of surgery can give better results. The goal of therapy is to eradicate the tumor with good functional

and cosmetic properties. In general, the available therapies for BCC can be divided into surgical therapy and non-surgical therapy. Surgical therapy consists of excision, Mohs micrographic surgery, and cryotherapy. While non-surgical therapy consists of radiotherapy, vismodegib, and imiquimod.[3,4,9,10] This study aims to provide basic data and profiles of palpebral basal cell carcinoma to be the basis for further research and studies as well as a reference for determining strategies for the management of palpebral basal cell carcinoma.

## 2. Methods

This research is a descriptive observational study to describe the profile of palpebral basal cell carcinoma in Dr. M. Djamil General Hospital Padang, Indonesia. This study uses secondary data in the form of patient medical record data. A total of 36 research subjects were included in this study, where the research subjects had met the inclusion criteria, namely patients with palpebral basal cell carcinoma who had been diagnosed based on histopathological features at the eye polyclinic, tumor subsection, Dr. M. Djamil General Hospital Padang from January 2016 to December 2020 and patients with palpebral basal cell carcinoma who have complete medical record data. This study has been approved by the medical and health research ethics committee of Dr. M. Djamil General Hospital Padang, Indonesia.

This study explores and collects sociodemographic data in the form of age, gender, and occupation. In addition, this study collected data on the tendency of lateralization (i.e., the tendency of the diseased body part, whether unilateral or bilateral), tumor location, tumor invasion, and management. Data analysis was carried out with the help of SPSS version 25 software. Univariate analysis was carried out to present the frequency distribution of each data variable.

## 3. Results

Based on gender, male palpebral BCC patients (51.28%) were more than female patients (48.72%) with a ratio of 1/0.95, and the highest age group was in the age range of 61 - 70 years. With a percentage of 44.44%, Table 1. Based on the distribution according to occupation, palpebral BCC is more common in patients with outdoor (75%) than indoor (25%), Table 2. Based on the distribution according to laterality, palpebral BCC is most common unilateral (91.67%), compared to bilateral (8.33%), Table 3. Based on the distribution according to tumor location, the inferior palpebrae was the most common tumor location (58.33%), while the lateral canthus was the least tumor location. (8.33%), Table 4. Most cases of BCC on the palpebral did not invade the orbit (69.44%), but in some cases, BCC could invade the orbit, as many as 11 cases (30.56%). Table 5 All cases of KSB were managed by surgery. Wide excision and palpebral reconstruction are the preferred treatment in this study (69.44%), whereas in cases with orbital invasion, 22.22 % were treated with exenteration and radiotherapy, and 8.33% of patients underwent wide excision, exenteration, and reconstruction. Palpebral and radiotherapy, Table 6.

Table 1. Distribution of study subjects by age group and gender.

| **Age group (years)** | **Gender** | | **Total** |
|---|---|---|---|
| | **Male (person)** | **Female (person)** | |
| 11-20 | 1 (2.78%) | 0 (0%) | 1 (2.78%) |
| 21-30 | 0 (0%) | 0 (0%) | 0 (0%) |
| 31-40 | 3 (8.33%) | 0 (0%) | 3 (8.33%) |
| 41-50 | 2 (5.56%) | 2 (5.56%) | 4 (11.11%) |
| 51-60 | 1 (2.78%) | 3 (8.33%) | 4 (11.11%) |
| 61-70 | 8 (22.22%) | 8 (22.22%) | 16 (44.44%) |
| 71-80 | 2 (5.56%) | 4 (11.11%) | 6 (16.67%) |
| 81-90 | 2 (5, 56%) | 0 (0%) | 2 (5.56%) |
| **Total** | **19 (52.78%)** | **17 (47.22%)** | **36 (100%)** |

Table 2. Distribution of study subjects by occupation.

| Occupation | Number (people) | Percentage |
|---|---|---|
| Outdoor | 27 | 75.00% |
| Indoor | 9 | 25.00% |
| **Total** | **36** | **100%** |

Table 3. Distribution of study subjects by laterality.

| Laterality | Total (person) | Percentage |
|---|---|---|
| Unilateral | 33 | 91,67 % |
| Bilateral | 3 | 8,33% |
| **Total** | **36** | **100 %** |

Table 4. Distribution of study subjects by tumor location.

| Tumor location | Number (person) | Percentage |
|---|---|---|
| Inferior palpebral | 21 | 58,33% |
| Superior palpebral | 6 | 16, 67% |
| Medial canthus | 16 | 44.44 % |
| Lateral canthus | 3 | 8.33% |

Table 5. Distribution of study subjects according to the invasion of tumors into the orbital.

| Tumor invasion | Number (persons) | Percentage |
|---|---|---|
| Invasion of orbital | 11 | 30.56 % |
| No invasion of orbital | 25 | 69, 44 % |
| **Total** | **36** | **100 %** |

Table 6. Distribution according to management.

| Management | Number (persons) | Percentage |
|---|---|---|
| Wide excision + palpebral reconstruction | 25 | 69.44 % |
| Exenteration + radiotherapy | 8 | 22.22 % |
| Wide excision + exenteration + palpebral reconstruction + radiotherapy | 3 | 8.33% |
| **Total** | **36** | **100%** |

**4. Discussion**

BCC is the most common malignancy in the palpebral, estimated at 90-95% of all cases of malignancy in the palpebral. BCC originates from the stratum basalis or stratum germinativum epidermis and the outer root sheath of hair follicles and occurs only in hair-bearing tissues. BCC is a tumor with slow growth and rarely metastasizes. Usually, tumor growth is limited to the area of origin of the tumor. However, some forms of BCC can infiltrate surrounding structures. If left untreated, the tumor can expand and destroy periocular tissue.[1-4] BCC is often found in the 60-80-year-old decade. This is in accordance with the results of this study, where BCC was most commonly found in the 61-70 year age group of 44.44% cases and the 71-80 year age group of 16.67% cases. Research conducted by Vijay et al. also found that the average age of BCC patients was 63±12.5 years. Almost the same results were also obtained by Goldenberg et al. through a retrospective study for 1 year, which found the mean age of BCC patients was 64.9 ± 13.8 years. Meanwhile, research conducted by Ho et al. found that the average age of older BCC patients was 73.7 ± 12.5 years.[22-26]

In this study, there was 1 patient in the age range of 11-20 years. This patient also had xeroderma

pigmentosum and was 19 years old when he came to the eye polyclinic of Dr. M. Djamil General Hospital Padang, where both palpebral have palpebral BCC. Xeroderma pigmentosum (XP) is an inherited skin disorder, usually autosomal recessive. Patients with XP will be sensitive to sunlight (UV radiation), where UV light will induce DNA damage in skin cells. It is estimated that in the United States, there are 100,000 people experiencing XP. The average age reported for XP accompanied by non-melanoma skin cancer was ± 9 years, with an age range of 1-32 years. The risk for developing non-melanoma skin cancer is estimated to be more than 10,000 times and tends to occur at a younger age. It is estimated that 10% of XP patients will develop cancer of the ocular surface.[1,27]

In this study, the sex predilection of males (52.78%) was slightly more than females (47.22%). This result is almost the same as the study obtained by Vijay et al., which also found a not-too-large difference in results, namely 51% men and 49% women. Malhotra et al. also found that BCC was more common in men (52%) than women (48%), and similarly, Goldenberg et al. found men (54%) more often than women (46%). However, different results were obtained by Kale et al. and Pfeiffer et al. They reported that women were more affected by BCC than men, by 57.14% and 64.5%, respectively. Likewise, a retrospective study conducted by Saleh et al. for 11 years (2000-2011) in England found that the incidence of BCC was more in women (53.99) than in men (46.01%). Meanwhile, a study conducted by Gasiorowski et al. on 158 periocular BCC patients found that the incidence of BCC in men was the same as that in women.[10,12,23,25,26]

Saleh et al. found a higher incidence of palpebral BCC in the male population with an older age, which is more than 75 years. On the other hand, at a younger age, the incidence of palpebral BCC is more common in the female population than in the male population. De Vries et al. predict that the incidence of palpebral BCC will increase in women compared to men in the Netherlands in the future. One logical explanation for the increased incidence of BCC at a younger age is the increasing public awareness of non-melanoma skin cancer (NMSC) and increased surveillance, especially in younger women who tend to pay more attention to skin health and aesthetics and seek immediate attention to medical than men.[12]

Patients with BCC in this study mostly worked outdoors (75%) compared to indoors (25%). This is associated with the pathogenesis of BCC, which is more common in patients who are frequently exposed to the sun for a long time, mainly due to UV-B. UV-B has more energy, usually damages the outer layer of skin (epidermis), and causes DNA damage.[3,4] Based on the laterality of the tumor, most cases of unilateral tumors occurred in palpebral BCC, namely in 91.67% of cases compared to bilateral cases (8.33%). One case of bilateral palpebral BCC had a risk factor for XP that occurred at a young age, and the other 2 bilateral cases occurred at the age of more than 70 years.

The inferior palpebral was the most common tumor site (58.33%) in this study, followed by the medial canthus (44.44%), the superior lid (16.67%), and the lateral canthus (8.33%). %). Infrequent involvement of the superior lids is thought to be due to protection by the eyebrows. In contrast, frequent involvement of the inferior palpebral is associated with the reflection of light by the cornea onto the inferior lid margin. The same results were obtained by Vijay et al. They reported that the inferior palpebral was most frequently affected (51%), followed by the inferior palpebral (13.5%), the middle canthus (8%), and the lateral canthus (5%). Cook et al. also reported the inferior lid (43%) as the most frequently affected tumor site. However, the study conducted by Malhotra et al. found the median canthus area as the most frequently affected site (48.3%), as well as the study conducted by Juliano et al. found that the tumor site was the most common in the middle canthus (53.6%).[13,22,26]

BCC rarely metastasizes but can cause local destruction of surrounding structures. In this study, most of the BCC did not invade the orbit or surrounding tissue (69,44,78%), but in some cases, invasion of the orbital region (30,56%). Studies conducted by Madge et al. reported that orbital invasion of BCC was rare. They found the incidence

was only 1.6-2.5%. Meanwhile, research conducted by Juliano et al. and Vijay et al. found that the BCC orbital invasion rate was 5.5% and 11% of cases, respectively. While the research conducted by Malhotra et al. found that the orbital invasion rate of BCC was only about 0.002%, but in this study, only cases with palpebral BCC were studied, which would only undergo MMS (Mohs Micrographic Surgery) surgery. Meanwhile, MMS is contraindicated in patients with orbital invasion. 2 orbital invasion patients were found out of 1295 patients, discovered by accident intraoperatively.[13,22,26]

All cases of BCC in this study underwent surgery. Operations performed include wide excision surgery and reconstruction of the palpebral (69.44%), extraction and continued adjuvant radiotherapy (22.22%), and in patients with bilateral BCC in this study, wide excision, palpebral reconstruction, extraction, and adjuvant radiotherapy were performed (8,33%). Radiotherapy was administered to all patients undergoing exenteration because, in cases of palpebral BCC with orbital invasion, it was difficult to define tumor-free margins due to deeper infiltration. Extraction and radiotherapy were also performed by Vijay et al. on 4 of their patients who had an orbital invasion. In a study conducted by Juliando et al., BCC patients with orbital invasion were treated with various therapies, including exenteration (21.4%), exenteration + radiotherapy (7.2%), excision + exenteration (50%), and excision, exenteration, radiotherapy (21.4%).[20]

## 5. Conclusion

Palpebral basal cell carcinoma most often occurs in the 61-70 year age group. Gender predilection is more common in males than females and generally occurs unilaterally. More people work outdoors than indoors. The inferior palpebral is the predilection for most tumor sites, and tumor invasion is found in the orbital area in 30.56% of cases. Wide excision and palpebral reconstruction are the most common treatment options.

## 6. References


1. Cantor L, Stout JC, McCannel C. Classification of palpebral disorders. In: Oculofacial plastic and orbital surgery. American Academy of Ophthalmology. 2020-2021; 261-7.
2. Cantor L, Stout JC, McCannel C. Palpebral. In: Ophthalmic pathology and intraocular tumor. American Academy of Ophthalmology. 2020-2021; 288-90.
3. Furdova A, Kapitanova K, Kollarova A, Sekac J. Periocular basal cell carcinoma-clinical perspectives. Oncol Rev. 2020; 420-31.
4. Shi Y, Jia R, Fan X. Ocular basal cell carcinoma: a brief literature review of clinical diagnosis and treatment. Onco Targets and Therapy. 2017; 2483-9.
5. JF Salmon. Palpebrals. In: Kanski's clinical ophthalmology a systemic approach. 9th ed. Elsevier. 2020; 50-1.
6. Shetlar DJ, Saomil MA, Kurba RS, Westfall CT, Mihm C. Pathology of the lids. In: Alberts principles and practice of ophthalmology Vol III. 2008; 3742-3.
7. Costa J, Ponces F. Palpebral tumors. In: Manual of ophthalmic plastic and reconstructive surgery. 1st ed. Sociedade Portuguesa de Oftalmologia. 2016; 141-2.
8. Welkoborsky HJ, Wichens B, Hinni ML. Disease of the palpebrals and the eye. In: Interdisciplinary management of orbital disease textbook and atlas. Neuro-ophthalmology. 2017; 68-9.
9. Sun M, Wu A, Figueira E, Hullgol S, Selva D. Management of periorbital basal cell carcinoma with orbital invasion. Future Oncology. 2015; 1-8.
10. Ho SF, Brown L, Bamford M, et al. 5 Years review of periocular basal cell carcinoma and proposed follow-up protocol. Eye. 2013; 78-83.
11. Yu S, Zhao Y, Zhao H, Lin J, Tang X. A retrospective study of 2228 cases with

palpebral tumors. Int J Ophthalmology. 2018; 11(11): 1835-8.
12. Saleh G, Desai P, Collin J, Ives A, Jones T. Incidence of palpebral basal cell carcinoma in England 2000-2010. Br J Ophthalmol. 2017; 209-12.
13. Juliano A, Strianese D, Uccello G, et al. Risk factors for orbital exenteration in periocular basal cell carcinoma. American Journal of Ophthalmology. 2012; 153(2); 238-41.
14. Lim LT, Agarwal PK, Young D, et al. The effect of socio-economic status on severity of periocular basal cell carcinoma at presentation. Ophthal Plast Reconstr Surgery. 2015; 31(36): 456-8.
15. Totir M, Alexanderscu C, Pirvulescu R, Gradinaru S, Costache M. Clinical, histopathological and therapeutical analysis of inferior palpebral basal cell carcinomas. J Med Life. 2014; 18-22.
16. Chadha V, Wright M. Small margin excision of periocular basal cell carcinomas. Br J Ophthalmol. 2015; 803-6.
17. Litwin AS, Rytina E, Rene C, Woodruff SA. Management of periocular basal cell carcinoma by Mohn micrographic surgery. Journal of Dermatological Treatment. 2013; 232-4.
18. Sekulic A, Migden MR, Basset-Seguin N, et al. Long-term safety and efficacy of vismodegib in patients with advanced basal cell carcinoma: final update of the pivotal ERIVANCE BCC study. BMC Cancer. 2017; 317-32.
19. Wong KY, Fife K, Lear JT, Prise RD, Durrani AJ. Vismodegib for locally advanced periocular and orbital basal cell carcinoma: a review of 15 consecutive cases. PRS Global Open; 2017; 1-6.
20. Karabulut GO, Kaynak P, Ozturker C, et al. Imiquimod 5% cream for the treatment of large nodular basal cell carcinoma at the medial canthal area. Indian J Ophthalmol. 2017; 65:48.
21. de Macedo EMS, Carneiro RC, de Lima PP, et al. Imiquimod cream efficacy in the treatment of periocular nodular basal cell carcinoma: a non-randomized trial. BMC Ophthalmol. 2015; 15:35.
22. Vijay V, Alam M, Subramanian N, et al. Periocular basal cell carcinoma: 20-years experience at a tertiary eye care center of south India. Oman J Ophthalmol. 2020; 123-35.
23. Goldenberg G, Karagiannis T, Palmer J, Lotya J, et al. Incidence and prevalence of basal cell carcinoma (BCC) and locally advanced BCC (LABCC) in a large commercially insured population in the United States a retrospective study. J Am Acad Dermatol. 2016; 1-4.
24. Ho S, Brown M, Sampath R, Burns J. 5 years review of periocular basal cell carcinoma and proposed follow-up protocol. Eye; 2013; 78-83.
25. Gasiorowski K, Iwulska K, Zapala J, Pawelec W. Periocular basal cell carcinoma: recurrence risk factors/when to reoperate. Postepy Dermatol Allergy. 2020; 927-31.
26. Malhotra R, Huigol SC, Huynh NT, Selva D. The Australian Mohs database, part 1: periocular BCC experience over 7 years. Ophthalmology. 2004; 111(4): 624-30.
27. Black JO. Xeroderma pigmentosum. Head Neck Pathol. 2016; 10(2): 139-44.