



CLINICOPATHOLOGICAL PROFILE OF BASAL CELL CARCINOMA AT M. DJAMIL GENERAL HOSPITAL PADANG FROM 2017 TO 2021

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Abstract: Background: A type of skin cancer, basal cell carcinoma (BCC), develops when cells in the basal layer of the epidermis divide abnormally. This illness has a high incidence rate and has been getting worse during the last ten years. This lesion has a significant morbidity rate because of its capacity to destroy the surrounding tissues. The most typical site is the face, and patients frequently experience pain and itching in addition to discomfort. **Methods:** This research employed a cross-sectional, retrospective descriptive design. The study's participants comprised all basal cell carcinoma patients at RSUP Dr. M. Djamil Padang Hospital from 2017 to 2021. Data were gathered from patients' medical records at M. Djamil General Hospital in Padang, Indonesia. **Results:** The findings revealed that basal cell carcinoma was more common in people over the age of 65 (43.2%) and in women (51.4%). In this study, the majority of patients (87.8%) are outdoor workers and do not have a family history of skin cancer (89.2%). The majority of lesions were in the periorbital region (23.1%), measuring more than 2 cm (44.9%), having a nodular type (79.5%), and having a period ranging from 0 to 24 months (70.3%). Histopathologically, nodular form accounts for 33.3% of cases. Surgical excision was the most often used therapy (87.7%). **Conclusion:** People with long-term sun exposure were more likely to develop basal cell carcinoma. Nodular type is the most prevalent both clinically and histopathologically. For most of the patients, the course of treatment involved surgical excision.

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INTRODUCTION

One of the cutaneous cancers that arises from cells in the basal layer of the epidermis is basal cell carcinoma (BCC), also referred to as basalioma.¹ This type of skin cancer is highly prevalent worldwide and has been more common over the past ten years. According to a longitudinal study carried out by the Global Burden of Disease Study (GBD), the incidence of BCC increased by 77% between 1990 and 2017.²

The development of this disease is influenced by a number of factors. One of the main risk factors for this malignancy, which mostly causes tumors to form in the head and neck area, is direct sun exposure.³ Due to the effects of prolonged sun exposure, the majority of the patients were older. Although there is no sex preference, certain studies show that

women are slightly more prone to experience it. It is rare for the lesion to spread, but because it can cause extensive tissue damage, there is a high likelihood of morbidity.⁴

BCC treatment options include both surgical and non-surgical methods. Risk stratification influences therapy selection. The National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines for basal cell skin cancer were the most often utilized guidelines for BCC risk stratification.⁵ Tumor size, location, margins, and pathological subtype all played a role in the risk categorization process. BCC risk categorization is divided into high and low-risk groups. Treatment options for BCC include radiation therapy, superficial therapy, Mohs surgery, curettage and electrodesiccation, standard excision, and systemic therapy. Patients who have metastatic or advanced BCC are treated with systemic treatment.⁶

THEORETICAL BASIS

Basal cell carcinoma (BCC), also known as basalioma, is a non-melanoma skin cancer that derived from basal cell of epidermal basal layer. It has a slow progressivity and rarely metastasizes.⁷ BCC lesion tends to destructs and invades surrounding tissues that leads to a high morbidity rates if left untreated. This disease is the most common skin cancer worldwide. Retrospective study conducted in RSUPN Cipto Mangunkusomo Jakarta found that there is an increased new cases in the last two decades.⁸ Hispanic and Asian race tends to have BCC other than skin cancer type.

Individual and environmental factors plays a role in the development of BCC lesion. Several individual factors for BCC are age, skin type, family history of skin cancer, history of genodermatosis, and immunosuppressive conditions.⁹ Whereas environmental factor that plays an important role in this disease is UV exposure to the skin. UV radiation can induces keratinocyte DNA mutation and inhibits normal immune response to tumor cells. Other substances exposure such as arsenic and ionizing radiation were also other environmental factors.¹⁰

The pathogenesis of BCC is associated with interaction between genetic and environmental factors. The main environmental factor is Ultraviolet B (UVB) exposure to the skin with wave lengths 290—320 nm.¹⁰ UVB radiation induces pyrimidine photoproducts formation such as cyclobutane pyrimidine dimers that leads to DNA damage. Abnormality of sonic hedgehog (SHH) signaling pathway were found in familial and sporadic BCC. Sonic hedgehog protein will bound with tumor-suppressor protein patched homologue 1 (PTCH-1). This process causing induction of G-protein coupled receptor smoothened (SMO) to signal the GLI complex for the activation of target genes. Mutation of tumor-suppressor gene p53 was also found in BCC. p53 plays an important role in tumor supression by inhibiting abnormal cell proliferation and inhibits metastasis.³

METHODS

This study used a retrospective-descriptive design with a cross sectional approach. Data analysis was univariate analysis to attain the clinicopathological profile of basal cell carcinoma. The population in this study were patients diagnosed with basal cell carcinoma that admitted to M. Djamil General Hospital Padang, Indonesia from January 2017 to December 2021. The sample was collected using total sampling method. Medical records from patients at the M. Djamil General Hospital in Padang, Indonesia, were used to collect data. In this research, we present information on the following variables : age, sex, history of outdoor job, family history of skin cancer, size of lesion, duration of lesion, location, clinical type, histological type, and treatment modality. The research protocol for this study

was approved by the Health Research Ethics Committee of M. Djamil General Hospital Padang (No. LB.02.02/5.7/81/2022).

RESULTS AND DISCUSSIONS

Results

Seventy-four patients were included : 36 males (48.6%) and 38 females (51.4%), with the largest age group was more than 65 years (43.2%). Based on the history taking, most of the patients worked as an outdoor workers (87.8%) and do not have a family history of skin cancer (89.2%). We found that most of the lesions have a lesion duration between 0-24 months (70.3%).

In this study, there were 4 patients who had 2 lesions in different sites. The total of tumor sites that were included in this study is seventy eight lesions. Periorbital region is the common site for this tumor (23.1%), followed by nose area (21.8%).

Table 1. Clinical characteristics of BCC patients

Characteristics		Frequency	Percentage
Sites of tumor	Scalp	4	5.1
	Forehead	9	11.5
	Periorbital	18	23.1
	Cheeks	16	20.5
	Nose	17	21.8
	Lips	5	6.4
	Ear and Preauricular region	5	6.4
	Trunk	1	1.3
	Upper extremity	1	1.3
	Another site (unclassified)	2	2.6
Gender	Male	36	48.6
	Female	38	51.4
Age	17—25 years old	2	2.7
	26—35 years old	1	1.4
	36—45 years old	3	4.1
	46—55 years old	12	16.2
	56—65 years old	24	32.4
	> 65 years old	32	43.2
Family History of Skin Cancer	Yes	8	10.8
	No	66	89.2
Types of work	Indoor worker	9	12.2
	Outdoor worker	65	87.8
Duration of lesion	0—24 months	52	70.3
	25—48 months	7	9.5
	49—72 months	7	9.5
	73—96 months	3	4.1
	97—120 months	1	1.4
	> 120 months	4	5.4
Clinical types	Nodular	62	79.5
	Superficial	4	5.1
	Pigmented	9	11.5
	Not described	3	3.8
Size of tumors	< 2 cm	30	38.5
	>2 cm	35	44.9
	Not described	13	16.7

The tumors clinically can be classified as nodular, superficial, and pigmented type. Most of the tumors have a nodular clinical type (79.5%), followed by pigmented type (11.5%) and superficial type (5.1%). The clinical type data of 3 lesions were not recorded in the medical record (3.8%). Based on its size, most of the tumor were more than 2 centimeters in size (44.9%). As many as 13 lesions have no data of tumor size in the medical records.

The most common histopathological type was nodular type (33.3%). The fewest type were keratotic, pigmented and mixed type (1.3%). In this study, there was 1 patient with 2 different histopathological type.

Table 2. Histopathological type

Characteristics	Frequency	Percentage
Nodular	25	33.3
Superficial	3	4.0
Basosquamous	13	17.3
Keratotic	1	1.3
Pigmented	1	1.3
Mixed type	1	1.3
No histopathological data	31	41.3

The treatment modalities that were used for BCC in our centre including surgical excision, radiotherapy, and chemotherapy. The most common modality was surgical excision (87.7%). In this study we also found that there were several patients that got a combination therapy of surgical excision and radiotherapy or chemotherapy.

Table 3. Treatment Modalities of BCC

Management	Frequency	Percentage
Surgical excision	71	87.7
Radiotherapy	5	6.2
Chemotherapy	2	2.5
Not described	3	3.7

Discussions

The classification of patient's age in this study was based on Indonesian Ministry of Health. This study found that the elderly group, people with age > 65 years, is the largest age group of BCC patients with total 32 patients (43.2%). This age group is followed by group age 56—65 years old with 24 patients (32.4%), 12 patients from group of age 46—55 years old (16.2%), 3 patients from group of age 36—45 years old (4.1%), and 2 patients from group of age 17—25 years old (2.7%). The least age group in this study was 26—35 years with only 1 patient (1.4%). This results is in accordance with a similar study that was held in Prof. Dr. Kandou Manado.¹¹ Several risk factors can induced the development of BCC especially in elderly populations. The main risk factor is the accumulation of sun exposure to the skin. Others including the decreased ability of DNA repair and cell regeneration in elderly.¹²

Based on gender classification, women was the largest group with 38 patients (51.4%). There is no basic theory about gender preferences in BCC patients. High incidence in women may be caused by thinner skin structures and lower collagen density of women's skin.¹³ These conditions can interfere with how skin responses with physical stress such as

UV rays. Estrogen also plays a role in wound healing. The decreased of estrogen hormone in elderly women can be one of risk factors of BCC.¹³

Family history of skin cancer is one of unmodifiable risk factors of basal cell carcinoma. This study found that most of patients have no family history of skin cancer (89.2%). A person who has a family history of skin cancer has a higher risk to suffer this disease. Other individual risk factors that also plays a role in the disease development were age, phenotype characteristics, and immunocompromised conditions. People with type 1 and 2 Fitzpatrick skin phenotype were prone to sunburns.¹⁴ Sunburns history since childhood is another risk factors of this disease.

The skin exposure to the UV rays is the main environment risk factors of the BCC development. Outdoor workers such as farmers were more directly exposed to the UV rays. Environment conditions also had an impact on sun radiation intensity. People who lived in coastal area have a higher risk than people living in the mountains because of a higher UV radiation intensity. Most of the patients in this study were outdoor workers (87.8%). UV radiation can directly causes mutation of cytosine to thymine transition that can lead to DNA damage and carcinogenesis.¹⁵

The duration of lesion in this study refers to a period since the first time lesion appeared until it gets treated. 52 patients had a duration of lesion ranging from 0—24 months. BCC tumors mostly appeared as a small lump on the skin. This condition also accompanied by other symptoms such as pain and itchy that may causes the patient to scratch the lump. Eventually, this condition can lead to the changes of lesion efflorescence from a small lump into an ulcer. BCC often appeared on areas that frequently exposed to the sunlight such as the face.¹⁰ This theory is in accordance with our findings, where the lesions mostly found in periorbital region (23.1%).

There are several clinical types of basalioma such as nodular type, pigmented, morpheaform, and superficial type.⁸ The nodular type is the most common clinical type found in our study (79.5%). Chronic accumulation of UV exposure is related to the development of nodular type BCC, causing its dominancy among other types. It is consistent with our other findings that nodular type (33.3%) is the most common histopathological type of BCC. Based on risk stratification, BCC histopathological types can be classified into 2 types, low-risk or non-aggressive types and high-risk or aggressive types. Low-risk subtypes are nodular, superficial, and infundibulocystic, whereas high-risk subtypes including infiltrative, basosquamous, and morpheaform.⁵ It is concluded that non-aggressive types was the most common type found in this study.

In this study we found that most of the lesion measured more than 2 centimeters diameter (44.9%). This finding is different from the previous research conducted by Iwona Chlebicka et al. that most lesions have a diameter less than 2 centimeters.⁷ Based on this study, most patients come to the dermatologist with a quite large lesion. This condition can be caused by lack of knowledge and awareness of the patients about skin cancer characteristics. The first appearance of the lesion can be a nodule that resembles other acnes or moles, so patients often ignore it and assume that the lesion is not a malignancy. In Indonesia, there is a self-detection examination of skin cancer called SAKURI (Periksa Kulit Sendiri). This is a simple physical examination that is done by the person itself every month to detect any skin abnormality. Early detection of skin cancer can lower the morbidity rate of BCC.

There are several treatment modalities for BCC based on NCCN guidelines for BCC including standard surgical excision, curettage and electrodesiccation, radiation therapy, Mohs surgery, superficial therapy, and systemic therapy.⁵ The best decision

making for patient's treatment is based on its effectiveness, efficiency, cosmetic aspects, and patient's preferences. Most of our patients in this study were treated by standard surgical excision (87.7%). Mohs surgery is the best modality for high-risk BCC because there is a tumor margin assessment that is done intraoperatively and has a lower recurrency rate than surgical excision. This technique has a longer operating time and more procedures than surgical excision.⁵ Standard surgical excision is the most preferred treatment especially in Indonesia because of its cost-effectiveness.

CONCLUSION

This descriptive study showed that basal cell carcinoma are highest in the female population with an age more than 65 years. Most of the patients worked as an outdoor workers and have no family history of skin cancer. The duration of lesion mostly ranged from 0-24 months. The common clinical characteristics of the lesions are found in the periorbital region, with nodular type, and measured more than 2 centimeters. The nodular type is the most common histopathological finding in this study. The most widely used therapy for BCC patients in M. Djamil General Hospital Padang were surgical excision.

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