The epidemiology of skin cancer at Dr. Cipto Mangunkusumo National Central General Hospital from 2014 to 2017

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Abstract

Background: The incidence of skin cancer has been increasing over the past decades globally. At present, there is no valid national cancer data in Indonesia. The purpose of this study is to evaluate the increment of skin cancer cases at Dr. Cipto Mangunkusumo National Central General Hospital, Jakarta.

Methods: In this retrospective descriptive study, we evaluated all pigmented skin tumor cases from June 2014 to June 2017. Data were obtained from the Department of Anatomical Pathology and medical records at Dr. Cipto Mangunkusumo National Central General Hospital. Data were compared with previous reports.

Results: From 263 skin cancer cases, the most frequent skin cancer was basal cell carcinoma (BCC; 66.9%), followed by squamous cell carcinoma (SCC; 27.4%), and malignant melanoma (MM; 5.7%). Most of the skin cancer were predominantly in the female population. In BCC and SCC, most of the patients were within the age group above 60 years (n = 106 and 18, respectively). In MM, the incidence is greater in age group of 41–50 years (n = 5). For BCC and SCC, the distribution sites of lesions were mostly in sun-exposed areas, whereas the distribution sites of MM were mostly in non-sun-exposed areas. Median diameters of BCC, SCC, and MM were 2, 4, and 6.5 cm, respectively. There was an increase of BCC incidence from 1996 to 2017.

Conclusion: In comparison with other types, the incidence of BCC in Dr. Cipto Mangunkusumo National Central General Hospital is increasing. A well-documented skin cancer registry is required to establish national data of skin cancer in Indonesia.

Keywords: epidemiology, incidence, basal cell carcinoma, malignant melanoma, squamous cell carcinoma

Background

The incidence of skin cancer has been increasing over the past decades globally. Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the most common skin cancers.¹ A total of 3.3 million people in the United States were diagnosed with BCC and SCC.² Nonrecurrent skin cancers have a high cure rate if treated early with the right treatment.¹

Malignant melanoma (MM) incidence has doubled since 1982.³ MM is a potentially fatal malignancy because of a high mortality rate.⁴ Although MM is less common than other skin cancers, it causes the majority of deaths (90%).⁵ The World Health Organization estimated that more than 65,000 people per year worldwide died because of MM.⁶ In the USA, it is estimated that about 91,270 new melanomas will be diagnosed.⁷⁻⁸

At present, there is no publication on national skin cancer data in Indonesia. In Dr. Cipto Mangunkusumo National Central General Hospital, Jakarta, skin cancer data from 1996 to 1998 were 91 (65.5%) BCC cases, 32 (23%) SCC cases, and
11 (7.9%) MM cases. From 2005 to 2009, the incidence of BCC was 171 (40.4%), SCC 196 (53.2%), and MM 28 (6.4%). The purpose of this study is to evaluate the increment of skin cancer cases at Dr. Cipto Mangunkusumo National Central General Hospital, Jakarta.

Methods

In this retrospective descriptive study, we evaluated BCC, SCC, and MM cases between June 2014 and June 2017. Data were obtained from the histopathological database at the Department of Anatomical Pathology and medical records at Dr. Cipto Mangunkusumo National Central General Hospital.

Data were collected using total sampling methods. Patients with duplicated histopathological data from the same lesions were excluded. Data were analyzed with IBM SPSS Statistics version 21. This research had been approved by the Ethics Committee of Faculty of Medicine Universitas Indonesia (number 0151/UN2.F1/ETIK/2018)

Results

From 263 skin cancer cases, the most frequent was BCC (66.9%), followed by SCC (27.4%) and MM (5.7%). BCC and SCC were predominant in female patients, whereas MM was slightly higher in male patients (Table 1). For BCC and SCC, most of the patients were within the age group above 60 years (n = 106 and 18, respectively). For MM, the incidence was higher in the age group of 41–50 years (n = 5; Figure 1). The most frequent site of BCC was on the nose, followed by the periorbital and cheek area. For SCC and MM, the most frequent site was on the lower extremities (Table 2). Both BCC and SCC were mostly in sun-exposed areas, whereas MM was mostly in non-sun-exposed areas. The median diameter of the lesion in MM was the biggest among other skin cancers, followed by SCC and BCC (Table 3).

| Gender | BCC  |  | SCC  |  | MM  |  |
|--------|------|---|------|---|------|---|
|        | n    | % | n    | % | n    | % |
| Female | 94   | 53.4 | 37   | 51.3 | 7   | 46.6 |
| Male   | 82   | 46.5 | 35   | 48.6 | 8   | 53.3 |
| Total  | 176  | 100 | 72   | 100 | 15  | 100 |

Figure 1. Distribution of Basal Cell Carcinoma (BCC), Squamous Cell Carcinoma (SCC), and Malignant Melanoma (MM) According to Age Groups (n = 263)
Table 2. Distribution of tumor sites of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and malignant melanoma (MM) at Dr. Cipto Mangunkusumo National Central General Hospital from 2014 to 2017

| Tumor Sites          | BCC (n = 176) | SCC (n = 72) | MM (n = 15) |
|----------------------|---------------|--------------|-------------|
| Exposed area         | 165           | 43           | 4           |
| Head non-facial      | 19            | 9            | 0           |
| Face                 | 13            | 3            | 0           |
| Periorbital          | 37            | 7            | 2           |
| Ear                  | 4             | 4            | 1           |
| Nose                 | 50            | 2            | 0           |
| Cheek                | 22            | 6            | 0           |
| Perioral             | 18            | 4            | 0           |
| Neck                 | 0             | 2            | 1           |
| Arm                  | 2             | 5            | 0           |
| Hand                 | 0             | 1            | 0           |
| Unexposed area       | 8             | 28           | 11          |
| Body                 | 6             | 6            | 0           |
| Buttocks and genital | 1             | 6            | 0           |
| Lower extremities    | 1             | 13           | 6           |
| Foot                 | 0             | 3            | 4           |
| Unspecified          | 3             | 1            | 1           |

Table 3. Median diameter of basal cell carcinoma, squamous cell carcinoma, and malignant melanoma at Dr. Cipto Mangunkusumo National Central General Hospital from 2014 to 2017 (n = 153)

| Tumor                | Lesion diameter (cm) |
|----------------------|----------------------|
| Basal cell carcinoma | 2.0 (0.2–15)         |
| Squamous cell carcinoma | 4.0 (0.5–20)       |
| Malignant melanoma   | 6.5 (2.5–10)         |

There was steady increment of BCC incidence since 1996-2017. The incidence of SCC was decreasing compared to the report from 2005-2009, and the incidence of MM was linear (Figure 2).

Discussion

From this study, it appears that nonmelanoma is the most common skin cancer, particularly BCC. A nationwide study in South Korea reported that the incidence rates of BCC, SCC, and MM were 2.45, 1.34, and 0.66 per 100,000 persons for men and 2.07, 1.04, and 0.58 per 100,000 persons for women, respectively. Thus, BCC is more common than SCC and MM. Based on Globocan 2018, the prediction of nonmelanoma skin cancer in Indonesia was higher (1.99%) compared with that of melanoma of the skin (0.75%). MM rarely affects non-Caucasians (Asian, Indian, Hispanic, or African) because greater concentrations of melanin in darker skin populations provide photoprotection against UV radiation. As one of the countries in Southeast Asia, Indonesian has Fitzpatrick skin type III–V. BCC and SCC were frequently higher in patients above 60 years old. This finding was similar to other studies. In this study, there were more female than male patients that had skin cancer, similar to a previous report in this hospital and South Korea data. Differences of trends in relation to gender may be due to different medical-seeking behaviors of male and female patients. However, other studies stated that nonmelanoma skin cancer (BCC and SCC) was predominantly found in the male population. This contradictive evidence needs further study.
For MM, the incidence was higher in the age group of 41–50 years and only a slight difference by gender. About 50% of newly diagnosed MM cases present in patients aged 35–65 years. The incidence rates of MM are higher in women than in men before age 50 years, but by age 65 years, rates in men are double those in women, and three times higher by age 80 years.

Ultraviolet radiation is one of the risk factors in the pathogenesis of BCC and SCC. Working outside the building has a tendency of high sunlight exposure and is considered one of the significant risk factors for the development of skin cancer (odds ratio = 5.29). Regarding the frequent site of skin cancer, in this study, BCCs were mostly located in sun-exposed areas, suggesting the role of sun exposure. Other studies also reported that most BCC appeared on the head and/or neck areas.

The distribution sites of SCC were also predominant in sun-exposed areas. This finding is similar to studies in South Korea and Australia, in which SCC commonly seen on the upper limbs, head, and/or neck. Even though SCC was distributed mainly in sun-exposed areas, the most common area was on the lower extremity. Hamzah et al. reported that SCCs were mostly distributed on the foot. Other risk factors for SCC in darker skin type populations are chronic scarring and areas of chronic inflammation. A meta-analysis study reported that SCCs were more likely to carry human papillomavirus than normal skin, but the study had a great degree of heterogeneity.

The frequent sites of MM in this study were lower extremities and foot. This finding was similar to a study in South Korea, in which cutaneous melanoma was mostly seen on the lower limbs. A study in Singapore also reported that the most common sites of primary lesion of MM were on the palms and soles and the most common histological subtype was acral lentiginous melanoma. In fair skin population, exposure to UV radiation is the most significant environmental risk factor, along with heredity, for development of MM. But melanoma in people of color most often arises on non-sun-exposed skin with less pigment, particularly lower extremities. The risk factors for MM in people of color include albinism, burn scars, trauma, radiation therapy, immunosuppression, and preexisting moles.

We found that the size range of the lesions varied. Most of the patients came to the hospital at a later stage because this study was conducted in a tertiary referral hospital. Data from the same hospital in 1996–1998 reported that the mean size of BCC was 7 cm (0.5–10 cm), SCC 7.5 cm (5–10 cm), and MM 3 cm (1–5 cm). Long duration and bigger existing tumor size at the time of consultation were the evidence that most of the patients came to the hospital at the very late stage. In this study, we did not obtain the duration of signs and symptoms because the data were not available. Intensive health promotion, screening, and early detection of skin cancer are necessary to prevent morbidity and mortality.

**Conclusion**

In comparison with other types of skin cancer, the incidence of BCC in Dr. Cipto Mangunkusumo National Central General Hospital is increasing. A well-documented skin cancer registry, especially...
for BCC, is required to establish national data of skin cancer in Indonesia.

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