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The Evaluation of Skin Cancer Profile in Fatmawati Hospital Centre

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CHAPTER I
PRELIMINARY

A. Background

Cancer is a group of diseases characterized by uncontrolled growth of abnormal cell.[1] Cancer is one of the highest causes of death in the world, about 13% of all deaths in 2008.[2] Skin cancer is one of the most common malignancies in humans.[3] One of the biggest risk factors for skin cancer is sunlight.[4,5] Skin cancers occur on every surface of the body, but most occur in sun-exposed.[3,5,6] such as the head and face area, limb and back[3,7], about 95% occur in sun-exposed location.[1]

Broadly, skin cancer is divided into two name, non-malignant and malignant skin cancer.[5,8] Non-melanoma skin cancer is divided into two, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC).[5,6,8] Basal cell carcinoma is the most common malignancy in Europe, USA, Australia, United States, and United Kingdom, followed by squamous cell carcinoma in Africa and Asia.[6,9,10]

Skin cancer is the most common type of cancer in United States[11], whereas in Indonesia skin cancer including 10 major cancers, the third rank after breast cancer and cervical.[12] This is because Indonesia is a tropical country that is passed by the equator and receives plenty of sunlight. Data on skin cancer in Indonesia is difficult to obtain because many patients with skin cancers are treated outside of the medical, so only partial can be registered where skin cancer is the highest malignancy in males with 17.4% of frequency, whereas in malignant groups in women and men, this disorder occupied the third highest incidence rate with 11.5% of occurrence. Most skin malignancies (89.5%) are basalioma and squamous cell carcinoma, while malignant melanoma ranks third with an 8.5% of all skin malignancies.[13]

With early diagnosis and adequate surgical treatment, it will have a good prognosis. Signs and symptoms of skin cancer are necessary to be popularized, so that general practitioners who are at the end of public service can recognize it well and can refer appropriately.[5]

Despite the facts, the authors are interested to conduct a research on the incidence of skin cancer in Indonesia, by collecting samples in Fatmawati Hospital Centre. It is chosen because it is one of the educated hospital reference type A in Indonesia, so it is expected to represent the population of skin cancer in Indonesia. In addition, this scientific work is one of the academic requirements to obtain a bachelor degree in medicine.

B. Objective

Knowing the incidence of skin cancer in Indonesia so that can be recognized early.

C. Advantages

1. Community Services

Through this study, the incidence of skin cancer at the Fatmawati Hospital Centre can be used as a reflection of the incidence of skin cancer throughout Indonesia (population), so that practitioners can perform early detection and management in skin cancer patients. Whereas earlier management can produce better prognosis and aesthetics.

2. Students

The results of the study can be used to increase knowledge about the incidence of skin cancer in Indonesia as well as the risk factors, so that it can be the subject of further research.

CHAPTER II
REVIEW

A. The Classification of Skin Cancer

Skin cancer is commonly divided into two types: Malignant Melanoma which is a malignancy of Melanocytes and skin cancer, and Non Melanoma derived from Basal cell (Basal cell cancer) or derived from Keratin cells (Squamous Cell Cancer). Mostly the factors that contribute to the development of Non Melanoma skin cancer is ultraviolet radiation.[5,6] In areas below the latitudes, such as Africa, Japan, and Indonesia, Squamous Cell Cancer is more common.

Basal cell Carcinoma or Basalioma is a neoplasm located in the basal layer of the epidermis and is the most common non-melanoma skin cancer[6,7], it usually appears in sun-exposed areas in the other hand closed areas also can be the risk. Nose or T region of the face is a predilection for basal cell carcinoma. Basal cell carcinoma grows slowly even in advanced circumstances it can invade surrounding tissues such as cartilage, bone and cause aesthetic disability. Basal cell carcinoma also rarely metastasizes, metastases occur in less than 0.05% cases.[7]

Squamous cell carninoma in USA is the second common malignancy after basal cell carnioma[5,7], more than a million cases found over the world.[5]

1. Non-melanoma Skin Cancer

Non-melanoma skin cancer is the most common skin.[14] BCC is more common in USA, Australia and Western Europe, whereas SCC is the second most common skin cancer found in the United States, more common in Asian countries including Indonesia and Africa.[7,9]

Most factors that contribute to the development of Non Melanoma skin cancer is ultraviolet radiation.[5,6,9] This is reinforced by the results of a study showing an increasing incidence of BCC and CSS by comparing both outdoor and indoor workers.[15] The Incidences in men are higher than women, which indicates a greater exposure to ultraviolet radiation in men.

a. Basal Cell Carcinoma

It is a non-melanoma skin cancer with the highest incidence. The main risk factor is due to ultraviolet light radiation.[7] Generally, it occurs in the elderly with the age of 50-70 years. The most common predilections are on the head and face which exposed to sunlight, most areas of the mouth, side of the nose, cheeks, forehead, eye angle, and nasolabial grooves.

Typical lesions are transparent nodules such as wax, with the size of a needle head to a soya bean. In the early stages, it occurs with a glossy spherical protrusion with raised edges such as pearls[16,17], the surface shapes varies, which is divided into[3]:

- Solitary skin lesion (nodulo-ulcerative) is commonly found. In the middle of the lesion, it often appears a talangiectasia that usually has ulcer.[7]
- Pigmentous lesions with nodulo-ulcerative features, but there is brown pigment deposition. Generally in men, predilection in the torso, especially in the back.
- Skin lesions in the form of pink or brownish yellow macules, borderless, irregular, the surface can be attached to skuama fragments. Lined or prominent edge lesions showed as embankment.
- A solitary lesion, a pink or light yellow macules, a rather hard but unclear consistency, resembling to scleroderma. At an advanced stage may rise ulcers, invade nerve tissue or even muscle.[3]

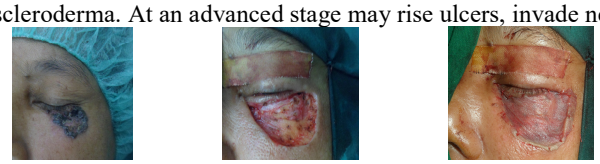

Figure 1. A 61 years old woman with BCC nodulo-ulcerativa, *rodent* ulcers below the eyes. First figure captured before surgery, the second after surgery, the third shown defect which reconstructed by *skin graft*
(Fatmawati Hospital Centre, Surgeon)

b. Squamous Cell Carcinoma

CSS is a malignant proliferation of epidermal keratinocyte cells.[18] The characteristics are anaplasia, grow quickly, infiltrate surrounding tissue, and potentially metastasize. It may be caused by ultraviolet, chemical, or virus (HPV).

Generally occurs in elderly[7], more common in men than women.[18] The predilection sites are on the scalp, face, neck, dorsum manus, and other exposed areas of white skin, and unexposed areas to the sun on blacks and Asia.[7] In addition, it often occurs in sites that have previous skin lesions, such as keratitis, actinics, chronic ulcer, scar tissue, radiation dermatitis, and many others.[18]

In early stages, CSS and BCC do not have a clear distinction. Initially, the induration is red, then gradually become verukoid[3,17,18], infiltrative, on the surface there is often ulcers and crust.

Sometimes it forms into nodular or papillary tumor. The fast-paced ulcers can form deep hollows. If secondary infection occurs, a foul-smelling purulent secretion develops. When metastasized, the corresponding lymph nodes may dilate[3].

Histopathologically, CSS is divided into three subtypes, *verrucous*, *adenoid squamous*, *spindle pleomorphic*[8].

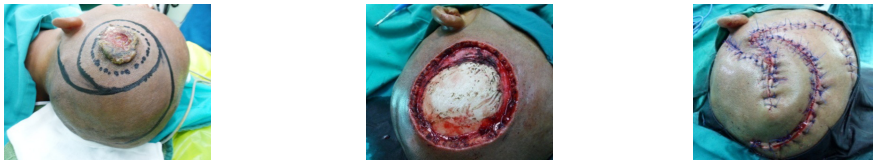

Figure 2. A 53 years old man with CSS adenoid squamous. The first shown before surgery, the second after surgery, the third shown defect which reconstructed by *skin flap*
(Fatmawati Hospital Centre, Surgeon)

2. Melanoma Malignant Skin Cancer

It is a solid tumor derived from skin melanocyte cells[19] and in the mucosa[7] with unpredictable biological behavior.[22] Half of the cases are coming from the pre-existing nevus.[19]

Malignant melanoma can occur at any ages. Incidence in men and women are approximately the same at under 50 years of age, and is higher at age> 50 years[7], but in Europe, incidence in women is higher than in men.[23]

The risk factors for melanoma are ultraviolet light exposure (both UV-A and UV-B), especially in white people experiencing severe-burning episodes[7,23] and genetic mutations[7], presence of melanocytic nevi, biologic factors such as irritation and decreased immunity.[22]

Clinical features of malignant melanoma are divided into 6:

- *Lentigo Malignant Melanoma*, rarely found, often occurs in the elderly, affected by sun damage.[19] The predilection is in sun-exposed areas. Blackish brown lesion, irregular edge, flat surface with bluish black spots. The prognosis depends on the depth of cell infiltration
- *Superficial Spreading Malignant Melanoma*, most often encountered and emerging from existing nevus. It occurs in adults. Predilection in men, often in the area of the body, while in women, often occurs in the extremities. It's not affected by sun damage.[19] Lesions grow radierly and horizontally, generally large, irregular edges, and different color variations (brown, black, blue).
- *Nodular Malignant Melanoma*, the second most common type after Superficial Spreading Malignant Melanoma. More invasive, but it has the same prognosis. Predilection in men often occurs in the back. The shape of half-ball with brown / reddish, black, bluish.
- *Acral Lentigenous Malignant Melanoma*, is the most common type of melanoma in Asians and dark people.[19] Its predilection is at the feet, soles of the feet, heels, palms, nail bed, and thumb. Often occurs in colored skin populations.
- *Amelanotic Melanoma*, rarely and difficult to diagnose because there is no pigmentation. Diagnosis based on irregular type, larger size. Predilection in the anal mucosa.
- *Desmoplastic Melanoma*, rarely encountered. Characteristics, the presence of spindle-shaped melanoma cells and fusiform-shaped melanocyte.[7]

B. Risk Factors of Skin Cancer

1. Ultraviolet Radiation

Ultraviolet radiation is divided into three; short wave (UV-C 200-290 nm), medium wave (UV-B 290-320 nm), and long wavelength (UV-A 320-400 nm). The ozone layer of the atmosphere absorbs all UV-C and some UV-B, so the spectrum reaches the earth comprises mostly (90-99%) UV-A and slightly UV-B.[22,24]

Exposure to ultraviolet radiation is the largest risk as the etiologic factor of skin cancer. Ozone depletion causes insufficient UV-B and UV-C absorption, and causes more UV-B to reach the earth. It can increase the incidence of skin cancer.[4,24,25] Ultraviolet radiation induces the occurrence of skin cancer with three mechanisms:

1. Destruct the DNA directly due to mutation
2. Producing reactive oxygen molecules destroys DNA and cell structure
3. Block local immunosuppression against cancer[20]

Ultraviolet radiation has a major influence on the incidence of CSS[17] and a smaller influence on BCC. Meanwhile, in malignant melanoma, the type and duration of the exposure to sunlight results in two different types of malignant melanoma. Long and persistent exposure can lead to *Lentigo Maligna Melanoma*, while short and intermittent exposure can lead to *Superficial Spreading* Melanoma.[21]

2. Races

Light-skinned people with blue colored eyes[18], and light-colored hair (especially red) are more at risk for skin cancer.[17]

3. Ages

Age is the second risk factor. Skin cancer tends to occur in old age rather than young age. The risk of developing skin cancer increases throughout the age.[19] Generally, skin cancer occurs at the age of 50 years and over.[3]

According to research conducted by Abdoljalal[26] in Iran, most men's skin cancer patients are in the range of 80-84 years. Skin cancer is not absolute only in old age.[20]

4. Sex

The incidences of non-melanoma skin cancer in men are 2 to 3 times more than women.[20] Whereas, in malignant melanoma skin cancer, the comparison of the men and women under 50 years are the same, and increased in men over 50 years.[7]

5. Family

Many familial disorders are very risky to cause skin cancer, including Xeroderma Pigmentosum, Gorlin syndrome, Familial Atypical Multiple Mole Melanoma Syndrome, and Albinism.[20]

5. Others

In addition, risk factors of skin cancer also consists of blood[27], history of organ transplants can cause immunosuppression (mosela).[54,7] genetic mutations[7], and race.[7,23]

C. Early Detection of Skin Cancer

Early detection of cancer is an attempt to find a cancer that can be cured, not long grown, small, local, and not causing significant damage.[28] Early detection is very important in relation for the therapy and prognosis of the patient. Knowing the types of lesions (discussed in previous points) can facilitate early detection of skin cancer. In general, symptoms of early onset malignant degeneration in skin cancer are.[22]

1. The growth of lesions is faster than previous
2. Color changes occur with various variations
3. The surface of the lesion becomes coarse
4. Painful and itchy
5. Easily bleeding
6. Bleeding occurs in the surface of the lesion

Early detection can be done easily and cheaply. This can be done after a bath standing in front of the mirror, where the entire body should be visible on the mirror. For areas that are difficult to see, can be done with one more mirror held in the hand. If there are symptoms of the onset of malignant degeneration in skin cancer, then immediately consults to a physician.[20]

1. Non-Melanoma Skin Cancer

a. Basal Cell Carcinoma

BCC usually grows slowly without significant expansion in the last 2 months.[4] Suspicious lesions are skin lesions such as 'moles' with different color, itchy, pain, bleeding, enlarged, or arising 'ulcers' or ulcers. Complained as ulcers that can't be healed. The classic description is known as Rodent ulcers, the ulcer with an uneven-shaped side accompanied by hyperpigmentation at the edge and ulcer in the middle.[7]

b. Squamous Cell Carcinoma

CSS appears as keratinization or crust that may turn into ulcers. Lesions are 1 cm or more and can't be healed. An induration that's located in sun-exposed areas, such as face, scalp, and dorsum manus.[4]

CSS is different from BCC or Malignant melanoma, because there is no association with familial disease.[20]

In CSS, it is important to note the presence of risk factors, history of solar burn, history of organ transplantation[4], immunosuppressive drug consumption, HIV, history of tumor growth, and possible multiple lesions. It is also important to note the morphology of primary tumors, the presence of odor, infiltration depth, metastasized.[7]

2. Melanoma Malignant Skin Cancer

The following instructions that shows alterations from benign lesions to precancerous or cancer in malignant melanoma, summarized in **ABCDEF**[7,22]:

Asymmetry of the lesion, asymmetrical type of the lesion
Border irregularity (or distinctiveness)
Color variation, colorless to black in one lesion
Diameter > 6 mm
Existing melanocytic nevi with recent change in color, size, shape (changes from pre-existing nevi)
Finding a new pigmented lesion, especially in person > 40 years

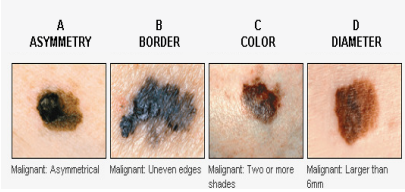

Figure 4. Signs of precancerous or cancer in malignant melanoma.
Cancer Network.The ABCDEs of Moles and Melanomas.Diunduh dari: http://www.cancernetwork.com/cancer-management/abcdes/article/10165/1414153.12 Desember 2011.

D. Therapy of Skin Cancer

1. Non Melanoma Skin Cancer

Determining the best treatment, many factors should be considered, including:

- Size of the lesion
- Anatomical location
- Depth of invasion
- Bone and cartilage involvement
- Previous care
- General condition of the patient
- Comfortability of patient

Surgical excision is an option for smaller lesion less than 3cm. The advantages of surgical excision are short times, and have pathological border for the edges of the resection area. However, after removal, tissue damage has to be repaired. For major damage, or in cases with deep infiltration, bone and cartilage involvement, skin transplantation or cosmetic reconstruction required.

Radiation therapy is administered to extensive skin cancer, with deep infiltration and / or invasion of other adjacent structures. Radiation is also given in multiple lesions cases and metastases in the lymph nodes. Radiation therapy provides better results both cosmetics and function.

Chemotherapy in non melanoma skin cancer is still investigated. There is a therapy that shown regretion on the lesion but can't heal.[10]

2. Melanoma Malignant Skin Cancer

Surgery is the primary choice for melanoma skin cancer, both for primary lesions, as well as for metastatic areas.[10] Early-stage melanoma surgical therapy for most patients is curative, but for advanced melanoma is usually unsuccessful, the only hope of avoiding dead caused of melanoma is early detection.[21]

Excision is not only done once. Initial excision with simple constraints is for histopathologic diagnosis. After the diagnosis confirmed, excision is re-done with 0.5 cm for in situ melanoma, and 1 cm for invasive melanoma with a thickness less than 1 mm, 2-3 cm for lesions of 1-4 mm thickness, and > 2 cm for lesions of > 4 mm.

Radiation therapy is not an alternative primary treatment for melanoma skin cancer, because elanoma cells are more radio resistant than other malignancies. However, it can be a palliative treatment of metastatic melanoma and used as a postoperative treatment for the head and neck.

Chemotherapy does not show effective results. Only a few drug regimens provide very low responses (20%).[10]

CHAPTER III

Discussion

The assessment of skin cancer patients profiles in this study were seen from the type of skin cancer with the highest incidence, the largest age range of skin cancer, the sex ratio, the location of the lesion, and the education level of the patient.

A. Results

TABLE 1:
NUMBER OF SKIN CANCER PATIENTS

Type of Skin Cancer	Total	Percent
Malignant melanoma	1	5.88%
Non Melanoma		
CSS	10	58.82%
BCC	5	29.41%
Basosquamous	1	5.88%
Total	17	100%

TABLE 2:
EDUCATION LEVEL OF SKIN CANCER PATIENTS

Types of Skin Cancer	Not Completed Elementary	Completed Elementary	Completed Junior High School	Completed High School	Others
Melanoma				1	
Non Melanoma					
CSS	1	3	2	3	1
BCC		4	1		
Basosquamous			1		
Total	1	7	4	4	1

TABLE 3:
AGES OF SKIN CANCER PATIENS

Types of Skin Cancer	10-19	20-39	40-59	60-79	80-89	Total
Melanoma			1			1
Non Melanoma						
CSS	1	2	4	3		9
BCC			2	3		4
Basosquamous			1			1
Total	1	2	8	6		17

TABLE 4:
SEX RATIO OF SKIN CANCER PATIENTS

Type of Skin Cancer	Men	Women
Melanoma		1
Non Melanoma		
CSS	8	2
BCC	2	3
Basosquamous	1	
Total	11	6

TABLE 5:
LOCATION OF SKIN LESIONS

Type of Skin Cancer	Lokasi	
	Exposed Sun	Unexposed Sun
Melanoma		1
Non Melanoma		
CSS	6	4
BCC	5	
Basosquamous	1	
Total	12	5

B. Discussion

Through this study, it was found that the most common type of skin cancer was CSS with an incidence of 58.82%. Followed sequentially by BCC, basosquamous, and malignant melanoma. This result is consistent with the incidence occurred in Indonesia[5-7], whereas the lowest is malignant melanoma, which generally occurs in the white population.[7,23]

Based on level of education, most patients completed their education at the primary school level, but many of them also completed education up to high school level. Meanwhile, the lowest are those who have not completed primary school level.

From this thing, the authors conclude that, the level of education is not so influential on the patient's knowledge of skin cancer. This is because there is no socialization of skin cancer in the community, so people do not know the risk factors of skin cancer29, lesions that can lead to skin cancer, and prevention of skin cancer. According to CDC, skin cancer can be prevented by[11]:

1. Be in sheltered place, especially in the afternoon
2. Wearing clothes that cover all skin
3. Wearing hat with wide edges to protect the face, head, ears, and neck
4. Wearing sunglasses that inhibit as close to 100% UV-A and UV-B as possible
5. Using protective cream with sun protection factor (SPF) of 15 or more and with a protective UV-A and UV-B
6. Avoid *indoor tanning*.

Based on age range, the most population who suffered malignancy is the 40-59 year ages. From the total score, the 40-59 year ages also occupies the most places in every type of skin cancer. This result corresponds to an incidence in Asia[3,7], different from the incidence in Iran.[26] This happens because of the differences in race, color, geography, community culture, and various other things.

In general, skin cancer is more common in men than women. These results can be understood from the fact male workers work at the outdoors, while the biggest risk factor for skin cancer is sunlight.[5]

As noted in the previous chapter, skin cancer mostly occurs in sun-exposed areas[3,5,6], results from Fatmawati Hospital Centre also show the same.

There are still many variables expected to be presented such as blood type and history of organs transplantation. Since not all patient's statuses have such data, the researcher can't present it.

CHAPTER IV
CONCLUSIONS

A. Kesimpulan

1. Highest incidence of Skin Cancer is CSS
2. Education level doesn't effect patient's knowledge of Skin Cancer
3. Highest incidence of Skin Cancer is at the range of ages 40-59 years old.
4. Skin cancer is most common in men than women.
5. The most common location of skin cancer is the areas easily exposed to sunlight.

B. Suggestions

1. Socializing skin cancer in ordinary people, especially about the risk factors, screening, early detection and also the prevention of skin cancer
2. Providing treatment for skin cancer based on the lesions, previous care, patients general conditions, and comfortability of the patients.

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