RESEARCH ARTICLE

Skin Cancer: Clinico-Pathological Study of 204 Patients in Southern Governorates of Yemen

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Abstract

Background: Skin cancer is a group of heterogeneous malignancies, in general classified into non-melanoma skin cancer (NMSC) and melanoma skin cancer (MSC). Incidences are high in many parts in the world with considerable geographical and racial variation. In the Yemen, there has been scarce information about skin cancer. The aim of this study was to evaluate the demographic characteristics and histological trend of skin cancer in Southern Governorates of Yemen. Materials and Methods: This retrospective study covered 204 cases of skin cancer at the Modern Histopathology Laboratory and Aden Cancer Registry and Research Center, Faculty of Medicine and Health Sciences, University of Aden, for the period 2006-2013. Data were classified regarding different demographic and tumor related variables and analyzed using CanReg-4 for cancer registry and SPSS (version 21). Results: The commonest encountered skin cancer was NMSC (93.1%). Generally, skin cancer appears slightly more frequently in females than males with a 1:1.06 male: female ratio, with a mean age of 62.9 years. Slightly higher than one-third (36.3%) were from Aden governorate. The head and neck proved to be the most common site in both males and females (58%). Basal cell carcinoma (BCC) is the most common histological type of skin cancer (50.5%). Conclusions: Skin cancer is a common cancer in patients living in southern governorates of Yemen. The pattern appears nearly similar to the international figures with a low incidence of MSC.

Keywords: Skin cancer - histopathology - melanoma - non-melanoma - Yemen Southern Governates

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Introduction

Skin cancer is a group of heterogeneous malignancies generally classified into non melanoma skin cancer (NMSC) which includes basal cell carcinoma (BCC) and squamous cell carcinoma (SqCC) arising from epidermal keratinocyts and melanoma skin cancer (MSC) arises from epidermal melanocytes (Jamal et al., 2008; Kavoussi et al., 2012). In many countries, the incidence of skin cancer is under-estimated and inaccurately reported despite the ease and accessibility of the skin to clinical examination and biopsy procedures. Melanoma, basal and squamous cell carcinoma represent the most common type of skin cancer in fair-skinned populations worldwide corresponding to around 75% of malignant skin tumors. The incidence rate of these types of tumor is dramatically increasing, whereas the mortality rate shows a stable or decreasing trend worldwide (Fabbrocini et al., 2010). In general, there is a considerable geographical and racial variation in the incidence of skin cancer. It is the most common form of cancer in the United States with over 1 million cases and approximately 10,850 deaths annually (William et al., 2008). It represents 35-45% of all neoplasms in Caucasians, 4-5% in Hispanics, 2-4% in Asians, and 1-2% in Blacks, and the incidence of skin cancer has been increasing among Caucasians, but remains relatively low in people of color (Bradford, 2009). MSC and NMSC are now the most common types of cancer in white populations. Both tumor entities show an increasing incidence rate worldwide but a stable or decreasing mortality rate (Mutti, 2012).

The etio-pathologenesis of skin cancer is divers; most of the epidemiological studies identify the importance of environmental and host factor interaction which determine the development and progression of the disease. Exposure to sun and ultraviolet radiation (UVR) is the most primary etiology (Leiter and Garbe, 2008; Mutti, 2012). BCC is undoubtedly the most common malignant skin cancer and generally it is a disorder of white individuals, especially those with fair skin. UVR is the most important risk factor in the development of BCC. In some families, BCC are genetically determined and appears in younger age and may be multiple and it is a feature of Gorlin-Gutiz, Bazex-Dupre-Christol and Rombo syndromes, and Xeroderma Pigmentosum, and relatively common but less specific of other genodemtoses and in general these

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lesions characterized by disorder of DNA replication / repair function (Castori et al., 2012) . The incidence of BCC increases in immunosuppressant patients (Reinau et al., 2014). Over 80% of BCC are diagnosed above age 55 years (Housman et al., 2003).

Cutaneous squamous cell carcinoma (cSCC) is the second most common form of skin cancer, after BCC. cSCC accounts for approximately 20% of all cutaneous malignancies. The incidence of cSCC has increased considerably over the past 20 years. Most cases of cSCC are localized and can be treated by surgical excision or other local procedures. The percentage of primary cSCCs that metastasize varies between case series but is usually under 5%. It occurs in all body areas, including mucosas and genitals, but it is more common in areas exposed to UV, such as the head, ears, neck and back of hands. Other causes include chronic exposure to chemical products like tar, arsenic-contaminated water, uses of herbicides, insecticides and tobacco. Severe burns, chronic ulcers and some types of HPV (human papillomavirus) are also considered carcinogenic (Howley and Pfister, 2015).

On the other hand, MSC is the most dangerous form of skin cancer and the sixth leading cause of malignancy in the United States. Non-Caucasians have a decreased overall incidence of MSC, but African Americans and other ethnic groups often have more advanced disease at initial diagnosis and higher mortality rates than Caucasian populations (Stubblefield and Kelly, 2014). Major risk factors for melanoma include intermittent high exposure to sunlight (ie -sunbathing) and chronic cumulative dosages of UVR (ie-outdoor workers). Host susceptibility factors include dysplastic nevi, increased number of nevi, freckling, family history of melanoma, fair complexion, light eyes, and blonde or red hair. Porcia (2009).

In Yemen, there is scarce information about skin cancer. The aim of this study was to evaluate the demographic characteristics and histological trend of skin cancer in Southern Governorates of Yemen.

Materials and Methods

A retrospective study was conducted on all skin cancer cases diagnosed during the period 2006-2013. Data were collected from Aden Cancer Registry and Modern Histopathology laboratory (A private laboratory). Aden Cancer registry is a population based-cancer registry covers four southern Yemeni governorates (Aden, Lahaj, Abyian, Al-Dhale with a population of around three million inhibtant or 11% of Yemeni population based on population and housing census of 2004. . Variables studied were, age, sex, residency, site and histology of the tumor. We exclude all records that did not include any of the above variables. The data were analyzed using CanReg-4 for cancer registry and SPSS (version 21).

Results

Two hundred and four skin cancer patients were studied during the period 2006-2013. One hundred and five (51.3%) were females and 99 (49.5 %) were males with 1:1.06 M:F ratio. The mean age of patients was 62.9 (Sd 16.3) years and the age range varied widely from age one up to 110 years. Slightly higher than one-third (36.3%) of skin cancer patients were from Aden governorate followed by IBB governorate (20.1%) as seen in Table 1.

Table 2 shows that majority of skin cancer was NMSC (93.1%) in comparison to MSC (6.9 %). BCC was the most common histological type of skin cancer (50.5%) followed by squamous cell carcinoma (34.8%) and MSC (6.9%). BCC was more common in females (59.6%),

Table 1. Demographic Characteristics of Skin Cancer in Yemen

Character	No (204)	%
Sex		
Male	99	48.5
Female	105	51.5
M:F 1.1.06		
Age		
≤ 30	8	3.9
30-60	89	48.6
≥60	107	52.6
Mean±S.d 62.9±16.3		
Residency		
Aden	74	36.3
Lahaj	32	15.7
Abyian	29	14.2
Al-Dhale	9	4.4
IBB	41	20.1
Others	19	9.3

Table 2. Distribution of Skin Cancers According to the Morphology

Character	N0	%
Morphology		
BCC	103	50.5
SqCC	71	34.8
Lymphomas	4	2
Melanoma	14	6.9
Malignant Adenexial Tumor	2	1
Kaposia sarcoma	1	0.5
MFH	6	2.9
Others	3	1.5
Melanoma Vs non melanoma		
Non Melanoma	190	93.1
Melanoma	14	6.9
Total	204	100

Table 3. Distribution of Skin Cancers According to the Histology and Gender

Morphology	Male n=99		Female n=105		Total
	No	%	No	%	
BCC	41	41.4	62	59.6	103
SqCC	42	42.4	29	27.6	71
Lymphomas	1	1	3	2.9	4
Malignant adenxial tumor	1	1	1	1	2
Kaposia sarcoma	0	0	1	1	1
Melanoma	9	9.1	5	4.8	14
MFH	3	3	3	2.9	6
Others	2	2	1	1	3
Total	99	48.5	105	51.5	204

Table 4. Distribution of Skin Cancers According to the Site and Gender

Skin cancer	Male (n=99)		Female (n=105)		Total	
	No	%	N0	%		%
Head and Neck	52		64		116	58
Face(NOS)	10	10.1	25	23.8	35	17.2
Eye lid	10	10.1	13	12.4	23	11.3
Nose	7	7.1	7	6.7	14	6.9
Ear	16	16.2	7	6.7	23	11.3
Cheeks	5	5.1	5	4.8	10	4.9
Lips	5	5.1	8	7.6	13	6.4
Truck and extremities	41	41.4	37	35.2	78	38.6
Skin (NOS)	5	5.1	3	2.9	8	3.9
Total	99	100	105	100	204	100

Table 5. Characteristics of Cutaneous Malignant Melanomas

Character	No	%
Site:		
Foot	11	78.6
Anogenital	2	14.3
Face	1	7.1
Sex:		
Male	10	71.4
Female	4	28.6
M;F ratio		
Age:		
≤50	0	0.00
≥50	14	100
3. Mean age		
Pattern of growth:		
Tumorous	11	21.4
Ulcerative	3	78.6
Metastasis :		
L.N Metastasis	1	7.1
Distance Metastasis	0	92.9
Clark's stage:		
Clarks I	1	7.1
Clarks II	12	85.8
Clarks III	1	7.1
Clarks VI	0	

whereas SqCC is more common in males (42.4%). Head and neck is the most common site of skin cancer (58%) and 38.6% involved the trunk and the extremities. In the head and neck, 17.2% of skin cancers were mostly located at the skin face which was not otherwise specified (NOS) as the most common site of skin cancer in both sexes. Skin of the eye lids was the most specified site (11.3%) as it is clear in Table 3.

Malignant melanoma was a rare skin cancer with only 14 cases (6.9%) of all skin cancer (Table 2). They were more common in males than females with 2.5:1 M:F ratio. In addition. MSC was more common in extremities with 11 out of 14 or 78.6% (Acral) and 12 (85.8%) were of Clarks' II stage (Table 3).

Discussion

Although the incidence rate of skin cancer increases, it is unlike many cancers can be prevented with a range of personal and environmental lifestyle factors, including the use of personal protective clothing, hats and sunglasses along with a sunscreen applied correctly and the use of environmental adaptations to the outdoor environment such as shade (Baldwin and Dunn, 2013). According to the third five-year cancer incidence report of Aden population- based cancer registry for the years 2007-2011, skin cancer represented 6.4% of all cancers in southern governorates in Yemen (Basaleem et al, 2013) . This study provides further baseline information about skin cancer in this region of Yemen.

In this study, skin cancer appears more in females and constitute. Opposite figures with higher M:F ratio of 1.6:1 in Egypt (Hussein, 2005) and 1.7:1 in Bahrain (Al-Hilli, 2005), as well as other earlier studies (Brash, 1998; Armstrong and Kricker, 2001; de Vries et al., 2004). In our country, women in rural areas and mountains are working outdoors in farming and animal herding. This might explain female's higher incidence of skin cancer. Furthermore, women in mountain are mostly fair skinned than males and unaware about protective measures such as sun screen creams.

The most affected age groups in this study was over 60 years of old (52.5%) with a mean age of 62.9, SD=16.3 years, which was similar to the data published in many literature. It was between 70-80 years in Saudi Arabia with a mean age of 62.2 years (Al-Maghrabi et al., 2004) and 58.75 SD=15.21 in Pakistan (Ahmed et al., 2007). In Jordan, the median age at onset for females was 49 years while that for males was 70 years (Omari et al., 2006) and 70.2% of patients in Bahrain were above 60 years, (Al-Hilli 2005). The same is applicable for series from Western and Asian countries (Judy Sng et al., 2009) were skin cancer appears rare before 30 years. Older individuals usually suffer from various metabolic diseases at this age and take various medicaments which weaken the immune system making them at high risk of skin cancer.

In this study, 36.3% of our patients were from Aden governorate. Aden is the capital of Southern governorates and located at the equatorial plate with hot and sunny wheatear most of the year where people under chronic sun exposure all over the year as may people in Aden working in fishing with long period of sun exposure.

It is well documented that non melanoma and melanoma skin cancer is sun exposed injury. Head and neck is the most exposed part of the body in almost all countries irrespective to the cloth wearing style between different population overall the world. Likewise, head and neck was the most commonly involved site by skin cancer in this study (58%). It is also the most common anatomical site in other Arab and neighboring Asian countries. It is 74.5% among Sudanese (Mohamed et al., 2012); 55% among Saudi people (Mufti 2000); 60% among Bahraini people (Al-Hilli 2005); 47.5 % in Semnan city in Iran (Vahid et al., 2009) and 82.8% in Malaysian people (Yap 2010).

In the present study, the most common histological type was BCC (50.5%) which was also the most common skin cancer in females (59.6%), whereas SqCC was more common in males (42.4%). Similarly, BCC is the most common skin cancer in Bahrain (Al-Hilli, 2005); Jordan

(Omari et al., 2006); Saudi Arabia (Al-Maghrabi et al., 2004; Al Aboud et al., 2003); Egypt (Hussein, 2005) and Iran (Vahid et al., 2009). It is also a commonest cancer in Asia and Europe (Mahmoud R. Hussein M.R, 2005).

BCC is the most common form of skin cancer; corresponding to around 75% of malignant skin tumors. Chronic sun exposure which differs between men and women is believed to be the principal cause of these lesions (Jamal et al., 2008). In our country, majority of people living in coastal areas and expose to sun for long time per year and large fraction of the people are living in mountains and are fair skin with more vulnerability to sun injury.

SqCC is the second skin cancer in this study (34.8%) and it was more common in males than females. It also appears as the second skin cancer of adjacent Arab countries. For instance; it is 53.3 % in Egypt (Mahmoud et al., 2006); 31.1% in Bahrain (Al-Hilli 2005); 47% in Saudi Arabia (Mutti 2012); 42.6 % in Sudan population (Mohamed et al., 2012); and 26.4%in Jordan (Omari et al., 2006). Similar trend encountered in Iran (Vahid et al., 2009) ,Chinese (Koh et al., 2003); Japan (Gloster and Neal, 2013), and Irelands (National cancer registry Ireland 2013). On the other hand, SqCC is the commonest skin cancer in Sudan (42.6%) as indicated by Mohammed A A et al (2012) and it represents 53.6 % in comparison to BCC 40% in Pakistan (Ahmed A et al 2007). These reverse figures may be related to different etiological factors in Sudan and Pakistan. Male was the most outdoor worker in Yemen as well as other countries making then at high risk for the ethological factors of SqCC including chronic exposure to UVR and chronic ulcer during work. Most women in Yemen are indoor worker and this may justify the high prevalence of SqCC in male

In this study, MSC was a rare skin cancer. It represented 6.9% of all skin cancer, and it was more common in males than females. Almost comparable figure was seen in Egyptian population where MSC represents 8% of skin cancer with male preponderance (Mahmoud et al., 2006). MSC constituted 2.5% of all skin cancer in Iran with male predominance (Noorbala et a l2013., . The highest incidence rate of CMM was seen in Australia which reach up 50 new cases per/100.000 (Diepgen and Mahler, 2002). Melanoma incidence is inversely proportional to darkness of skin. Fairer-skinned Singaporeans of Chinese origin have a higher incidence of melanoma (0.5/100,000) than darker-skinned Indian Singaporeans (0.2/100,000) (Koh et al., 2003), and white South Africans have a greater incidence of melanoma than those with mixed ancestry and then black South Africans (Swan and Hudson, 2003). Most people in south governorate in Yemen are of dark skin which make them more protected from UVR and with low incidence of melanoma. MSC in darker-skinned people presents in different anatomic locations than in lighter colored people with a greater proportion of acral melanoma and melanoma presenting in non-sun-exposed areas (Gloster and Neal, 2013). In our study most of the cases with malignant melanoma occur in the extremities (Acral) 11(78.6%).

In conclusion, skin cancer is a common cancer in patients living in southern governorates of Yemen. The pattern of skin cancer appears nearly similar to the international figures with low incidence of MSC. Regardless how common skin cancer in Yemen, these information indicates the need of specific and comprehensive health care and epidemiological studies to investigate skin cancer community related risk factors in Yemen and to implement a public strategy for prevention and control.

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