

Pattern of skin cancer in north western region of Yemen
Al-Bahlouli Saeed Hadi,* Sultan Ahmed Saif. and Al-Bahlouly Mohammed**
Abdulhadi***

* Department of Surgery, Faculty of Medicine, Tamar University, Yemen

** Department of Pathology, Faculty of Medicine, Tamar University, Yemen.

*** Department of pediatrics, faculty of Medicine, Tamar University, Yemen.

dr-saeed58@hotmail.com

DOI: <https://doi.org/10.47372/uajnas.2018.n1.a17>

Abstract

The pattern of skin cancer differs in different countries. The aim of this study is to identify the pattern of skin cancer in northwestern region in Yemen and to compare it to similar studies done in southern Yemeni governorates and in neighborhood.

This is a descriptive prospective study of patients data with histologically diagnosed skin cancers carried out in the Saudi hospital in Sa'adah and Hajjah governorates in Yemen between Jan.2007 and Dec.2014. The data were collected and recorded on proforma and was analyzed according to the type of tumor, age and gender of the patients and anatomical site involved. Two histopathologists investigated the specimens.

There were 324 Yemeni patients with skin malignancy, 204 were males (63%) and 120 were females (37%), the M: F ratio was 1.7:1. Most of the patients were over the age of 60 years and the mean age of all cases was 66.4 years. Squamous cell carcinoma was the most frequent (50%), followed by basal cell carcinoma (29%), Non-Hodgkin's lymphoma (4.9%), malignant melanoma (4%), and Kaposi's sarcoma (3.7%). Other rare primary skin cancers such as basosquamous carcinoma, adnexal carcinoma, dermatofibrosarcoma protuberans, neuroendocrine carcinoma, extramammary Paget's disease and aggressive angiomyxoma were recorded. Metastatic skin lesions were seen in six patients.

The patterns of skin cancer in northwestern governorates of Yemen are nearly similar to international studies with higher incidence of squamous cell carcinoma. Head and neck was the most common affected site, followed by lower extremities. Community education about the risk of long exposure to sunlight is important, including coverage of the head and neck when working outdoor under sunny weather.

Keywords: Skin Cancer, Northwestern Region, Yemen.

Introduction

It is estimated that 2,750,000 cases of nonmelanocytic skin cancer occur annually worldwide [5]. Incidence of these cancers varies more than 100 fold from low rate in Asian population to very high rate in Caucasian population [4]. The incidence of skin cancer is more common among white populations compared with black and dark skinned populations [1,7,12,13,18,19,21,28]. Skin Cancer represents 6.4% of all cancers in southern governorates in Yemen [9]. Exposure to sunlight and fair color of the skin are thought to be important contributing factors for developing primary malignant skin tumors [7,12,17,19,21,28,29]. Some studies about pattern of skin cancer were published in nearby countries [3,4,8,27]. It is expected that Yemeni population is less affected by skin cancer as Yemen is a country with brown and partially black skinned population. On the other hand, Yemeni population is exposed to sun light longer than white populations. *Amer Bin Al-Zou et al* [5] has published a study about skin cancer in southern governorates of Yemen that include Aden, Lahj, Abyian, Al-Dhale and Ibb. Similar study from northwestern governorates is not available yet. So, by this study we identify the pattern of skin cancer in northwestern (NW) region of Yemen that includes mainly Hajjah, Amran and Saadah governorates.

Patients and methods

A prospective study of data of 324 patients with histopathologically diagnosed skin cancer was conducted in Saudi hospitals in Sadah and Hajjah governorates over the period of 8 years, from

Jan.2007 to Dec.2014. All patients included in this prospective study were first examined by dermatologist. Patients with clinically suspected skin malignancy were sent to the surgeon for either incisional or excisional biopsy. The specimens were collected and analyzed by two well-experienced histopathologists in histopathological department that belong Saudi hospitals. However; some skin specimens were received from other hospitals in the region and were included in the study.

All patients in this study were of Yemeni nationality. The collected demographical, and clinical data were analyzed according to patients' age, sex, anatomical sites and clinical presentation. Histopathological reports were studied and classified according to the pattern of skin cancer. The data were stored in a personal computer and analyzed using SPSS version 22.

Results

There were 324 cases with malignant skin tumors, all were of Yemeni nationality. They were 204 males (63%) and 120 females (37%), and the M:F ratio was 1.7:1. One hundred ninety six patients (60.4 %) were over the age of 60 years old with a mean age of 66.4 years.

Table (1) shows types and frequency of skin cancers, number and percentage of each type. The epithelial skin cancer is the predominant type, accounting for 267 (82.4%)of the cases. In this category, squamous cell carcinoma (SCC) was the most common type of skin cancer (50%), followed by basal cell carcinoma (BCC) at 29%. The lymphoid cancer was found in 16 patients (4.9%), and all of them were of non-Hodgkin's lymphomas. Out of these 16 cases, 5 cases were mycosis fungoides. Malignant melanoma ranked in the fourth place (4%) followed by vascular cancer (3.7). All vascular cancer were all of Kaposi's sarcoma. The connective tissue tumors were presented by dermatofibrosarcoma protuberans(DFSP) in 4 patients (1.2%). A miscellaneous group includes two cases of neuroendocrine carcinoma, two extramammary Paget's disease and two cases of aggressive angiomyxoma of the vulva.

Table (2) shows the various histopathological types in the various age groups. One hundred and ninety six patients (60.4%) in all the categories were beyond the age of 60 years. Almost all types of skin cancer occur nearly in all age groups except adnexal carcinoma and metastases that are not observed before the age of 40 year. DFSP is restricted to the first two decades of life. Table (3) shows the distribution of various types of skin cancer on the body regions. The vast majority of epithelial cancers occurred in the head and neck, while MM and Kaposi's sarcoma occurred in the extremities predominantly in the lower. Adnexal carcinoma was limited to the head and neck (eye lid, forehead and scalp- one in each site). Non-Hodgkin's lymphoma (NHL) was seen predominantly on the trunk, head and on the neck. Metastatic skin lesions were found as follow: one in the scalp from hepatocellular carcinoma, one within abdominal wall from the colon, and one in the scar of previous surgery for renal cell carcinoma. The other three metastatic skin lesions that involves chest wall were of unknown primary origins.

Discussion

Malignant skin tumor, in humans, is the most common^[30], with geographical and racial variation in the incidence with preference of white individuals with fair hair^[5,11]. It presents 35-45% of all neoplasms in Caucasians, 4-5% in Hispanics, 2-4% in Asians and 1-2% in blacks^[10]. An exposure to sun and ultraviolet radiation is the most primary etiology^[20]. Almost one half of those who live to 65 years of age get at least one type of skin cancer^[31]. In our study, 60.4% of the patients were over 60 years with a mean age 66.4 years. This finding makes skin cancer in northwestern governorates a disease of elderly patients. This may be referred to chronic exposure to sunlight with cumulative dosages. *Amer Bin Al-Zou et al*^[5] reported that 52.5% of patients in southern governorates of Yemen were over 60 years old with a mean age 62.9. In Saudi Arabia, it was between 70-80 years with a mean age 62.2 years^[4]. In this study, men are affected more than women 1.7 : 1. It might explain that men are usually working outdoor more than women without protective clothing, hats and sunglasses. Furthermore, men are often in chronic contact with chemical products such as tar, arsenic-contaminated water, herbi and insecticides and tobacco^[16]. However, *Amer Bin Al-Zou*^[5] reported that female preponderance in southern governorates of Yemen were with M:F ratio at 1:1.06. This might be attributed to that Aden region is located at the equatorial area with hot and sunny weather most of the year where women under chronic sunlight exposure with uncovered head and neck.

SCC in our study was seen in 162 patients (50%) to be the commonest type of skin cancer. This ratio agrees with some reports and differs with others. In Nigerian study^[18] SCC represented 55.4% of all malignant skin tumors. Other studies^[13, 26] reported a higher frequency of SCC among blacks, up to 66%. Similar findings were reported from neighboring areas of Saudi Arabia (Asir + Abha, Southwestern part of Saudi Arabia), that showed SCC as the most one^[18,26]. However, *Amer Bin Al-Zou et al*^[5] from the southern governorates of Yemen and *Al Aboud KM et al*^[3] from Taif region in Saudi Arabia found BCC as the most frequent primary skin cancer (50.5% and 51% respectively) followed by SCC (34.8% and 26% respectively). Some other series reported SCC as the second most frequent skin cancer^[2,17,19,24,28,29]. In this study, squamous cell carcinoma affects mainly head and neck region that comprised up to 65.4% of all the cases. The second most common anatomical site of SCC location is on the lower limbs with a ratio of 22.2%. This is consistent with other several studies^[3,5,17,19].

BCC in our study ranked the second most frequent type of skin cancer that involved 94 patients (29%). This finding is different when compared with the finding of *Amer et al*^[5] and *Al Aboud KM et al*^[3]. BCC in their series accounts for 50.5% and 51% respectively.

Regarding anatomical predilection, out of 94 cases of BCC, 89 cases (94.6%) involve the head and neck area, but rarely involve other sites. It may be due to chronic exposure of these anatomical regions to sunlight all over the year, which is an important contributing factor in developing this type of primary malignant skin tumors^[7,17,21].

NHL in our study accounts for 4.9% (16 patients) and is ranked the third most common primary skin cancer. It affects predominantly the head, neck and trunk regions and rarely upper limb skin. All these patients with cutaneous NHL have no evidence of lymph nodes or blood involvement at the time of the diagnosis. The age of these patients ranges from 10-80 years and the mean age is 43.2 year. Male: female ratio is 3:1.

Malignant melanoma in this study was seen in 13 patients (4%) to ranking the fourth most common type of skin cancer. A similar finding was reported from the southwestern region of Saudi Arabia 4.1%^[4]. However, Bahamdan KA et al^[8] and Al Aboud KM et al^[3] reported higher values, at 11.7% and 12.5% of all malignant skin tumors respectively. Out of 13 MM cases, 11 cases involve predominantly the lower extremities. They show mainly acral distribution (soles, palms and nail beds). This finding is higher than reported by other studies.^[8,13,22,25,28] Similar observation was noticed also in black patients^[17,19]. However; the anatomical distribution of MM in Caucasians shows predilection to the trunk and head^[14,15,28] while acral distribution ranges between 6% and 10%^[6] which is substantially less than ours. One of the 13 cases of MM involves the skin of the penis of 20 years old male patient. It has been treated surgically by tumor excision since the type was of nodular.

Kaposi's sarcoma ranks the fifth place among primary skin cancer in this study, while in Al-Abha region of Saudi Arabia^[8] it ranks the third most common type of skin cancer. It is more common among males (75%) and mainly affects the lower limbs, as high as 83.3% of the cases. The remnant 16.7% restricted to the upper limbs. In the vast majority of our Kaposi's sarcoma cases, the tumor was not related to organ transplant and not associated with immunodeficiency virus.

Out of 8 baso-squamous carcinomas cases, 7 cases (87.5%) were seen in the region of the head and neck and only one involved the genital skin with male predominance (male : female ratio 7:1). The anatomical distribution of epithelial skin cancer is very similar in white and black populations, with predilection to the head and neck region^[13, 21,26,27,29].

DFSP and adnexal skin tumors are among the very rare malignant skin tumors. Metastatic skin tumor was seen in six patients; one in the scalp representing metastases from hepatocellular carcinoma, one in abdominal skin representing metastases from colon carcinoma, and one in the scar of previous surgery for renal cell carcinoma. The other three cases involved the skin of the chest wall rather than the breast and were of unknown origin.

In conclusion, squamous cell carcinoma is the most common primary skin cancer in northwestern region in Yemen, followed by basal cell carcinoma, which is almost similar to international studies. Squamous cell and basal cell carcinoma had higher distribution on the head and neck, while malignant melanomas and Kaposi's sarcomas affected mainly the lower extremities. Community education about the risk of long standing under sunlight should be undertaken, including coverage of the head and neck when working outdoor under sunny weather.

Conflict of interest: The authors declare no conflict of interest.

Acknowledgment:

The authors wish to thank Dr. Mohammed Abdullah Hussein for his comments and assistance during preparation of this manuscript.

Table1: Types and frequency of malignant skin tumors.

Cancer type	<i>n</i>	%
Epithelial	267	82.4
SCC	162	
BCC	94	
Basosq.ca	8	
Adnexal ca	3	
Lymphoid	16	4.9
Melanoma	13	4
Vascular	12	3.7
Connective tissue	4	1.2
Miscellaneous	6	1.9
Metastases	6	1.9
TOTAL	324	100

SCC = Squamous cell carcinoma. BCC=Basal cell carcinoma . Basosq.ca= Basosquamous carcinoma

Table2: Distribution of skin cancer among various age groups.

Diagnosis	40 year	40-59 year	60-79 year	>80 year	Total	(%)
SCC	19	43	86	14	162	50
BCC	7	28	51	8	94	29
Basosq. ca	1	2	4	1	8	2.5
NHL	8	2	5	1	16	4.9
MM	2	3	5	3	13	4
Kaposi's Sa.	2	2	5	3	12	3.7
Adnexal ca.		1	2		3	0.9
DFSP	2	2			4	1.2
Miscellaneous	1		4	1	6	1.9
Metastatic		3	3		6	1.9
Total	42	86	165	31	324	100

SCC= Squamous cell carcinoma. BCC= Basal Cell carcinoma.
 Basosq.ca = Basosquamous carcinoma. NHL= Non-Hodgkin's lymphoma.
 MM= Malignant melanoma. DFSP= Dermatofibrosarcoma protuberans.

Table 3: Distribution of different types of skin cancer according to the anatomical sites

Diagnosis	Head & neck(%)	Trunk (%)	Lower limb (%)	Upper limb (%)	Genital (%)	Unko wn(%)	M:F	Total
SCC	106 (65.4)	9 (5.5)	36(22)	6 (3.7)	2 (1.2)	3 (0.9)	2:1	162
BCC	89 (94.7)	3 (3.2)	2 (2.1)				1.2:1	94
Basosq.ca.	7 (87.5)				1 (7.7)		7:1	8
NHL	5 (31.2)	7 (43.8)	2 (12.5)	2(12.5)			3:1	16
MM			11 (84.6)	1 (7.7)	1(7.7)		0.8:1	13
Kaposi's sa.			10 (83.3)	2 (16.7)			3:1	12
Adnexal ca.	3 (100)						0:3	3
DFSP			2 (50)				1:1	4
Miscellaneous	1 (16.7)	2 (50)			4(66.6)		1:1	6
Metastatic ca.	1 (16.7)	1 (16.7)					5:1	6
		5 (83.3)						
Total (%)	212 (65.4)	27 (8.3)	63 (19.5)	11 (3.4)	8 (2.5)	3(0.9)	1.7 :1	324

SCC= Squamous cell carcinoma. BCC= Basal Cell carcinoma. Basosq.ca = Basosquamous carcinoma. NHL= Non-Hodgkin's lymphoma. MM= Malignant melanoma. DFSP= Dermatofibrosarcoma protuberans.

References

1. Abreo F, Sanusi ID (1991). Basal cell carcinoma in North American blacks. *J Am Acad Dermatol*; 25: 1005-11.
2. Ahmed A, Alam MB, Khan W, Badar A (2007). Frequency and characteristics of skin cancers diagnosed at ayub medical college, abbotabad pakistan from 1995-2003. *J Ayub Med Coll Abbottabad*; 19: 3-6.
3. Al Aboud KM, Al Hawsawi KA, Bhat MA, Ramesh V, Ali SM (2003). Skin cancer in western Saudi Arabia. *Saudi Med J*; 24(12):1381-1387.
4. Al-Maghrabi JA, Al-Gamdi AS, Elhakem HA (2004). Pattern of skin cancer in southwestern Saudi Arabia. *Saudi Med J*; 25(6): 776-779.
5. Amer Bin Al-Zou, Mazen Abood Bin Thabit, Khalid Abdulla Al-Sakkaf, Huda Omer Basaleem (2016). Skin Cancer: Clinico-Pathological Study of 204 Patients in Southern Governorates of Yemen. *Asian Paci J Cancer Prevention*;17 (7): 3195-3199.
6. Armstrong BK, Kricher A (1995). Skin cancer. *Dermatol clin*; 13: 583-594.
7. Aubry F, Mac Gibbon B (1985). Risk factors of squamous cell carcinoma of skin. *Cancer*; 55: 907-11.
8. Bahamdan KA, Morad NA (1993). Pattern of malignant skin tumors in Asir region, Saudi Arabia. *Ann Saudi Med*;13: 402-406.
9. Ba Saleem HO, Abdullah SA, Suwaileh MM (2013). Cancer Incidence Report 2007-2011. Aden Cancer Registry and Research Centre, Aden, Yemen.
10. Bradford PT (2009). Skin cancer in skin of color. *Dermatol Nurs*; **21**, 170-8.
11. Castori M, Morrone A, Kanitakis J (2012). Genetic skin diseases predisposing to basal cell carcinoma. *Eur J Dermatol*; 22: 299-309
12. Drake LA, Salache SJ, Ceilley RI (1992). Guidelines of care for basal cell carcinoma. *J Am Acad Dermatol*; 26: 117-20
13. Flemming ID, Barnawell JR, Burlison PE (1975). Skin cancer in black patients. *Cancer*; 35: 600-5.
14. Gallagher RP, Ma B, McLean DI (1990). Trends in basal cell carcinoma, squamous cell carcinoma, and melanoma of the skin. *J Am Acad Dermatol*; 23: 413-21

15. Glass AG, Hoover RN. (1989) The emerging epidemic of melanoma squamous cell skin cancer. *JAMA*; 262: 2097-100.
16. Howley P.M, Pfister H.J (2015). Beta genus papillomaviruses and skin cancer. *Virology*; 479-480, 290-6.
17. Johnson TM, Rowe DE, Nelson BR (1992). Squamous cell carcinoma of skin (excluding lip and oral mucosa). *J Am Acad Dermatol*; 26: 467-84.
18. Kitiku KK, Fregene AO (1989). The incidence and management of skin cancer in Nigeria. *African J Derm*; 2: 105-9.
19. Kwa RE, Campana K, Moy RL (1992). Biology of squamous cell carcinoma. *J Am Acad Dermatol*; 26: 1-26.
20. Leiter U, Garbe C (2008). Epidemiology of melanoma and nonmelanoma skin cancer--the role of sunlight. *Adv Exp Med Biol*; 624: 89-103.
21. Leong GKP, Stone JL, Farmer ER (1987). Non-melanoma skin cancer in Japanese residents of Kauai, Hawaii. *J Am Acad Dermatol*; 17: 233-238.
22. Lin CS, Wang WJ, Wang CK (1990). Acral Melanoma: a clinicopathologic study of 28 patients. *Int. J Dermatol*; 29: 107-12.
23. Miller SJ (1991). Biology of basal cell carcinoma. *J Am Acad Dermatol* 24: 1-13.
24. Mohamed AA, Mahmud SM, Hassan (2012). Skin cancer in dark skin: a review of 535 patients from Sudan. *JOAMS*; 2: 8-12
25. Mughal T, Ribinson WA (1982). Malignant melanoma of skin, review and KFSH experience. *King Faisal Specialist Hosp Med J*; 2: 167-74.
26. Rosen T (1986). Non-melanoma skin cancer in black patients. *Cancer Bull*; 38: 96-9.
27. Sayigh AAM, Sebai ZA, Haleem A (1977). Preliminary study of solar radiation effects on skin cancer. *Proceedings of the First Conference on Biological Aspects of Riyadh, Saudi Arabia*; Riyadh: University of Riyadh 1977 Aug 19-21.
28. Sherman CD, Calman KC, Eckhardt S (1987). *Manual of clinical oncology*. Springer Verlag; 4:144-155.
29. Sober AJ (1983). Diagnosis and management of skin cancer. *Cancer*; 51: 2248-52.
30. Solan MJ, Brady LW, Binnick Sa, Fitzpatrick PJ (2013). Skin cancer, pp 479-495 In: *Principle and practice of radiation oncology*. CA Perez (editor). Philadelphia (PA), Lippincott Williams & Wilkin pp 1936.
31. Walsh P (1999). Non melanoma skin cancer, pp 317-319 In: *Hematology/oncology Secrets*. ME Wood, PA Bunn jr, (editors). Philadelphia (PA): Hanley & Belfus Inc. pp 434.

أنواع سرطان الجلد في المنطقة الشمالية الغربية في اليمن

سعيد هادي البهلولي¹ ، سلطان احمد سيف² ومحمد عبدالهادي البهلولي³

¹قسم الجراحة-كلية الطب - جامعة ذمار.

²قسم علم الأمراض (الباثولوجي) - كلية الطب - جامعة ذمار.

³قسم الأطفال - كلية الطب - جامعة ذمار.

DOI: <https://doi.org/10.47372/uajnas.2018.n1.a17>

الملخص

يختلف سرطان الجلد من بلد الى آخر. في هذه الدراسة سنحدد الأشكال المختلفة لسرطان الجلد في المنطقة الشمالية الغربية باليمن ومقارنة النتائج بنتائج الدراسات المماثلة خارج اليمن.

هذه الدراسة الوصفية تدرس المعلومات المرضية للمرضى الذين أثبتت فحوصات الأنسجة لأورام الجلد أنهم مصابون بسرطان الجلد. الدراسة أجريت في المستشفى السعودي بمدينة حجة وصعدة اليميتين في الفترة من يناير 2007م حتى ديسمبر 2014م. الدراسة تطرقت في الأساس إلى تحديد نوع السرطان، جنس وعمر المريض وكذا الجزء المصاب من الجسم. العينات التي تم أخذها من أنسجة الأورام وتم ارسالها وفحصها من قبل اثنين اخصائيين في علم الأمراض ويتبعون المستشفى السعودي باليمن.

وكانت النتائج ثلاثمائة وأربعة وعشرون مريض هم المصابون بسرطان الجلد، منهم 204 ذكور (63%) و120 أنثى (37%). معدل الذكور: الإناث هو 1.7: 1. معظم المرضى تجاوزت أعمارهم الستين عاماً، بمتوسط عمر 66.4 عاماً. وتبين أن سرطان الخلايا الشائكة هي الأكثر شيوعاً في هذه الدراسة (50%) يليه سرطان الخلايا القاعدية (29%) من مجمل الحالات. أما سرطان الغدد الليمفاوية اللاهودشكي فسجل (4.9%) والميلانوما الخبيثة (4%) وسرطان كابوسي (3.7%) من مجموع الحالات. سرطان الجلد البديئة الأخرى نادرة مثل سرطان الخلايا الشائكة-القاعدية، سرطان الملحقات، والسرطان الليفي الجلدي ذات النواتي، وكارسينوما الغدية العصبية، وداء باجت خارج الثدي والورم الوعائي المخاطي الغازي.

سرطان الخلايا الشائكة في الجلد هي الأكثر شيوعاً بين المرضى اليمنيين القاطنين في المنطقة الشمالية الغربية باليمن، يتبعه سرطان الخلايا القاعدية. أما سرطان الغدد الليمفاوية اللاهودشكين فيأتي في المرتبة الثالثة يتبعه الميلانوما الخبيثة وسرطان كابوسي على التوالي. إن منطقة الرأس هي الأكثر إصابة بسرطان الخلايا الشائكة والقاعدية بينما سرطان الميلانوما الخبيث وسرطان كابوسي تصيب الأطراف السفلى للمرضى. أن توعية أفراد المجتمع بخطورة التعرض المفرط لأشعة الشمس مهمة يجب الأخذ بها والذي من شأنه تقليل فرص الإصابة بسرطان الجلد. بما في ذلك تغطية الرأس والرقبة أثناء العمل تحت اشعة الشمس الحارة.

الكلمات المفتاحية: سرطان الجلد- المنطقة الشمالية الغربية-اليمن.