



The prevalence and histological patterns of malignant skin tumors in Albaha, Saudi Arabia: A retrospective study

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General Note



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ABSTRACT

Introduction: The dermatological malignancy has wide varieties in their prevalence all over the world and even within the same country depending on multifactor including environmental as exposure to ultraviolet rays, chemicals and host-related factors such as genetic vulnerability, age, sex, presence of precursor lesions, and pre-existing medical conditions. In Saudi Arabia, several studies have been conducted aimed to investigate the prevalence and histological pattern of malignant dermatological tumors; of these areas Dammam, Qassim, Jeddah, and Asir, but, up to now, there are no studies to investigate both the prevalence and pattern of

malignant skin tumors in Albaha province so the aim of this study is to assess the prevalence of skin cancer in Albaha province. *Methods:* This study was done after taking the ethical approval from the ethical committee of Faculty of medicine, Albaha University. A retrospective study was carried out in Albaha province hospitals (Governmental and some private hospitals) following the roles applied for conducting the research. All recorded dermatological cancer cases between January 2010 and December 2019 with both histological diagnoses and their clinical data were obtained. *Results:* A 124 skin cancer cases were obtained and the median age of the patients was 58 years, 91 (73%) patients were males and 33 were female (26.6%). 57 cases (46%) of Basal Cell Carcinoma (BCC), 35 cases (28.2%) for squamous cell carcinoma (SCC), 13 cases (10.5%) for cutaneous T cell lymphoma (CTCL), 7 cases (5.7%) for malignant melanoma, 4 cases (3.2%) for Kaposi's sarcoma (KS), 3 cases (2.4%) for Baso-squamous cell carcinoma (BASOSCC), 2 cases (1.6%) for dermatofibrosarcoma protuberans (DFSP) and 3 cases (2.4%) of metastatic origin. Most cases of SCC were moderate differentiated grade II. 51 BCC cases (89.5%), followed by 29 SCC (82.9%), 3 BASOSCC (100%) and one case of MM (14.3%) were found in head and neck area. In the extremities; 5 cases of BCC (9.8%), 6 cases of SCC (17.1%), 3 cases of CTCL (23%), 5 cases of MM (71.4%), 4 cases of KS (100%) and 1 case of breast metastasis (33.3%) were found. In the trunk region, 1 case of BCC (2%), 10 cases of CTCL (77%), 1 case of melanoma (14.3%), 2 cases (100%) of DFSP and 2 cases (66.7%) of metastases from lung carcinoma. *Conclusion:* The most common skin cancer seen in albaha province is Basal cell carcinoma (46%), followed by Squamous cell carcinoma (28.2%) and Cutaneous T Cell Lymphoma (10.5%), however other tumors such as Malignant Melanoma, Kaposi's sarcoma, Baso-squamous cell carcinoma and Dermatofibrosarcoma Protuberans are encountered, their prevalence did not exceed 10% of the tumors obtained. The most frequent site of primary skin cancer was in the head and neck (67.7%), followed by the extremities and trunk region respectively. Our study findings were compared with some studies in the kingdom of Saudi Arabia and some countries.

Keywords: Basal cell carcinoma, Squamous cell carcinoma, Cutaneous T cell lymphoma, Dermatofibrosarcoma protuberance, Skin tumors.

1. INTRODUCTION

Malignant skin tumors comprise an important part of the dermatology field. They have been studied in different areas across the world. Of special concern, studies from Saudi Arabia signified that skin cancer incidence is about 3.2% of all newly diagnosed cases in year 2010, and is considered as the ninth in rank with other malignancies for both genders (Al-Eid & Quindo, 2014). In comparison with other countries, like Australia and USA, Australia has the highest skin cancer incidence rate in the world (AIHW, 2012). In USA, skin cancers were found to be the most common malignancy and represent approximately half of all cancers in the United States (Xie et al., 2010). In general, about 2.5 millions of new cases of non melanoma skin cancer (NMSC) are recorded annually by the World Health Organization (WHO) (Lian & Mihm Jr, 2014). Racial and geographical factors are encountered to play a role in the prevalence of skin cancer, for example; Caucasians have been reported to be the most commonly affected (Diepgen & Mahler, 2002). Histological analysis revealed that the BCC or rodent ulcer is the most common skin malignancy reported in many studies followed by SCC followed by MM where the aggressiveness is more encountered for MM followed by SCC and BCC (Murphy & Elder, 1991).

In Saudi Arabia, several studies have been conducted aimed to investigate the prevalence and histological pattern of malignant dermatological tumors; of these areas Dammam (AlSalman et al., 2018), Qassim (Alzolibani et al., 2013), Jeddah (Mufti, 2012) and Asir (Bahamdan & Morad, 1993), but, up to now, there are no studies to investigate both the prevalence and pattern of malignant skin tumors in Albaha province. A previous study from Asir area indicates that the most common malignancy in both genders is the skin cancer (Khan et al., 1991). Another study from Qassim countered that the BCC was the most common malignant dermatological tumor (Alzolibani et al., 2013). Another study conducted in Jeddah showed that the basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) were the most common skin cancer followed by mycosis fungoides (MF) and malignant melanoma (MM) (Mufti, 2012). Many factors encountered in the pathogenesis of dermatological cancer including environmental (ultraviolet radiation, ionizing radiation, and chemicals) and host factors such as genetic vulnerability, age, sex, presence of precursor lesions, and pre-existing medical conditions (Alonso et al., 2010; Arora & Attwood, 2009; Diepgen & Mahler, 2002). Saudi Arabia is mapped in low northern latitudes, and the degree of sun exposure ranges from area to area and thus the different dermatological malignancies may be reported from area to area especially those related to ultraviolet rays exposure.

The aim of our study is to investigate the prevalence and histological pattern of dermatological malignant tumors in Albaha province in the last ten years and compare these results with those recorded in other regions inside the Saudi Arabia and with international records in other countries.

2. PATIENTS AND METHODS

Study design

This is an observational, retrospective cross-sectional study to assess the prevalence and histological pattern of dermatological malignant tumors in Albaha province among patients attending governmental and some private hospitals following the roles applied for conducting the research. All recorded dermatological cancer cases between January 2010 and December 2019 with both histological diagnoses and their clinical data were obtained.

Study setting

The present study was carried out in Albaha region of Saudi Arabia. It contains two large hospitals with central pathology laboratories; some private hospitals were included in this study. Al Baha province lies in the south-west of the kingdom of Saudi Arabia. It is the smallest province in the kingdom. It has an area of 9,921 km², and a population of 476,172.

Study Population

The study population includes dermatological medical records of malignant tumor. Histological reports were screened and the dermatological records retrieved and examined. A total of 124 cases of malignant dermatological tumor were investigated and included in this study.

Data collection and analysis

All cases of histologically confirmed skin cancer in the archives of Pathology Departments were collected. Age, sex, clinical presentation and histological diagnoses were obtained (figure 1). Data were analyzed by Statistical Packages for the Social Sciences (SPSS Inc., Chicago, Illinois, USA) version 24. P-value < 0.05 was considered to be statistically significant.

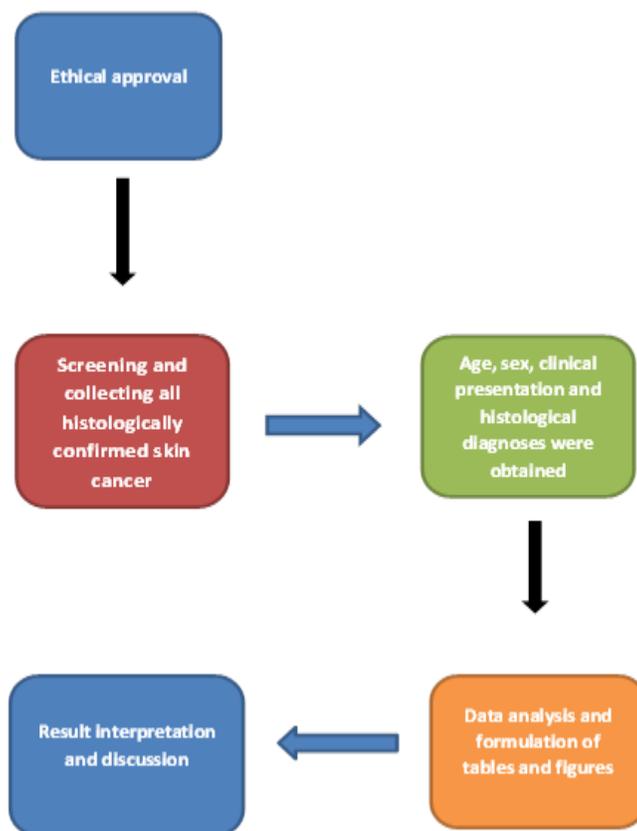


Figure 1 Flow chat for methodology of the study.

3. RESULTS

This retrospective studies revealed the followings; a total of 124 cases of malignant skin tumors were diagnosed including 121 (97.6%) primary and 3 (2.4%) secondary malignant dermatological tumors. Median age of the male patients was 58 years and 55 years for the female patients, 91 (73%) patients were males and 33 were female (26.6%). There were 109 Saudi patients (88%) and 15 non Saudi patients (12%). The histological patterns revealed that most of the diagnosed cases were basal cell carcinoma (BCC) 57 cases (46%), 35 cases (28.2%) for squamous cell carcinoma (SCC), 13 cases (10.5%) for cutaneous T cell lymphoma (CTCL), 7 cases (5.7%) for malignant melanoma, 4 cases (3.2%) for Kaposi's sarcoma (KS), 3 cases (2.4%) for Baso-squamous cell carcinoma (BASOSCC) and 2 cases (1.6%) for dermatofibrosarcoma protuberans (DFSP). The 3 secondaries or metastatic cases were from lung (2 cases; 1.6%) and breast (one case (0.8%). All these data are represented in the Table 1 and Figure 2 and 3.

Head and neck is the most frequent site of primary skin cancer. It was recorded in 84 (67.7%) cases. Extremities and trunk region were involved in 24 (19.4%), and 16 (12.9%) cases, respectively. Common cancer seen in head and neck region was as follow: 51 BCC cases (89.5%), followed by 29 SCC (82.9%), 3 BASOSCC (100%) and one case of MM (14.3%) were found in head and neck area. In the extremities; 5 cases of BCC (9.8%), 6 cases of SCC (17.1%), 3 cases of CTCL (23%), 5 cases of MM (71.4%), 4 cases of KS (100%) and 1 case of breast metastasis (33.3%) were found. In the trunk region, 1 case of BCC (2%), 10 cases of CTCL (77%), 1 case of melanoma (14.3%), 2 cases (100%) of DFSP and 2 cases (66.7%) of metastases from lung carcinoma. All these data are summarized in the Table 2 and Figure 4 & 3. The histologic grade of non-melanoma skin cancer revealed that: 49 out of 57 cases of BCC were of low grade (grade I to II) and 8 cases were of high grade (grade III to IV), of SCC cases, revealed that 70% of SCC was of grade II, 10% of grade I, 15% of grade III and 5% of grade IV and the late was recommended for immunohistochemical profile. Other non-melanoma skin cancers reported were not assessed. 5 out of 7 cases of MM were of level 2 and 2 cases of level 3 according to the Clark scale.

Table 1 Table summarizes the results of the current study

Item	Total	Percent	Male	Female
Median age and Sex				
Median age			58y	55y
Sex			91 (73.4%)	33 (26.6%)
Primary vs secondary				
Primary tumor	121	97.6 %	89 (73.6%)	32 (26.4%)
Secondaries	3	2.4 %	2 (66.7%)	1 (33.3%)
Tumor Sites				
Head and neck cases	84	67.7 %	66 (78.6)	18 (21.4%)
Extremities	24	19.4 %	16 (66.7%)	8 (33.3%)
Trunk	16	12.9 %	9 (56.3%)	7 (43.7%)
Tumor Types				
Basal cell carcinoma	57	46%	41 (72%)	16 (28%)
Squamous cell carcinoma	35	28.2%	27 (77.1%)	8 (22.9%)
Cutaneous T cell lymphoma	13	10.5%	9 (69.2%)	4 (30.8%)
Malignant melanoma	7	5.7%	5 (71.4%)	2 (28.6%)
Kaposi's sarcoma	4	3.2%	3 (75%)	1 (25%)
Baso-squamous cell carcinoma	3	2.4%	2 (66.7%)	1 (33.3%)
Dermatofibrosarcoma Protuberance	2	1.6%	2 (100%)	0 (0%)
Secondaries from Lung cancer	2	1.6%	2(100%)	0(0%)
Secondaries from breast cancer	1	0.8%	0 (0%)	1 (100%)

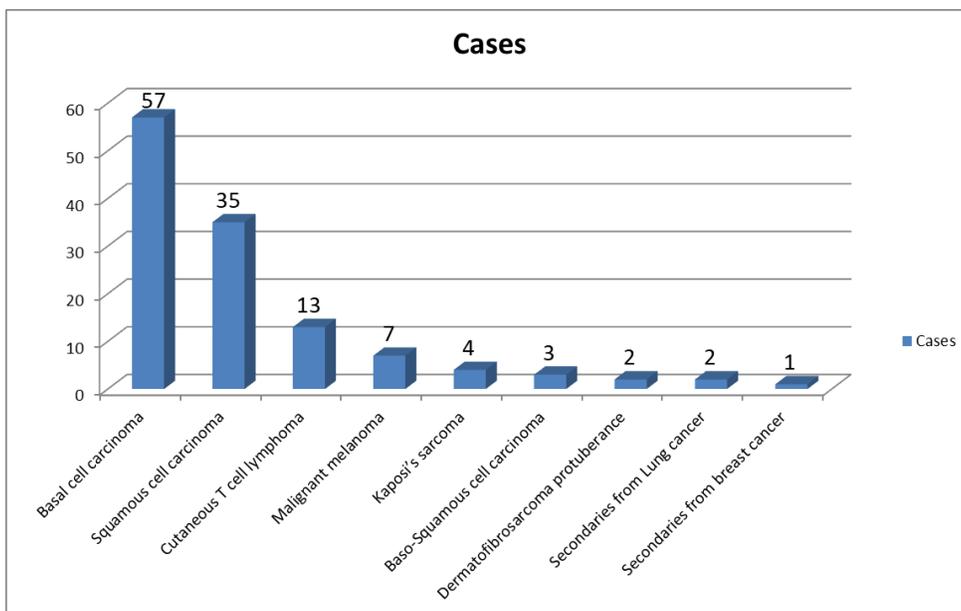


Figure 2 A graph represents the cases presented with skin tumors obtained from the present study and their numbers.

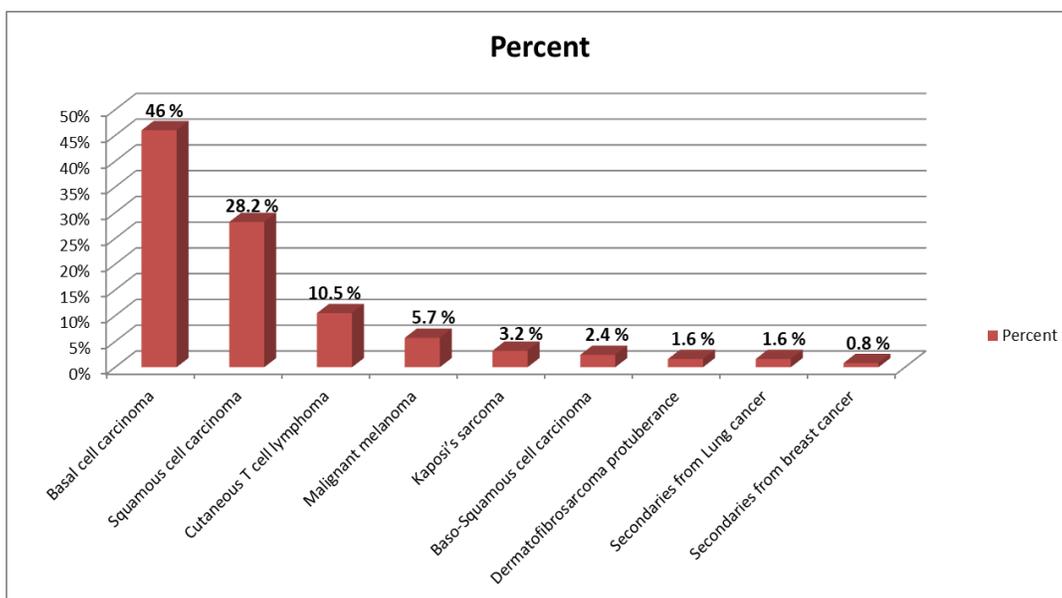


Figure 3 A graph represents the prevalence of skin tumors obtained from the present study.

Table 2 Distribution of skin tumors obtained from the present study

Tumor Site	Tumor Type								Total
	BCC	SCC	CTCL	MM	KS	BASOSCC	DFSP	Secondaries	
Head and neck	51	29	0	1	0	3	0	0	84
Extremities	5	6	3	5	4	0	0	1	24
Trunk	1	0	10	1	0	0	2	2	16
Total	57	35	13	7	4	3	2	3	124

BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma; CTCL: Cutaneous T cell lymphoma; MM: Malignant melanoma; KS: Kaposi sarcoma; BASOSCC: Baso-squamous cell carcinoma; DFSP: Dermatofibrosarcoma Protuberance

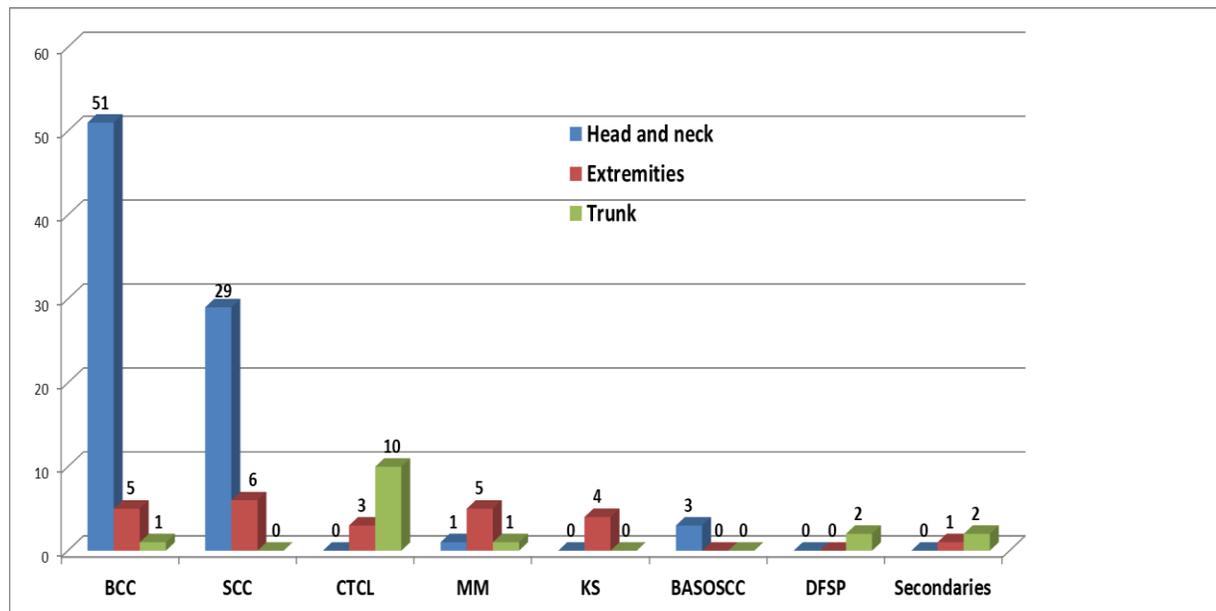


Figure 4 Distribution of cases obtained from the current study according to sites of presentation

BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma; CTCL: Cutaneous T cell lymphoma; MM: Malignant melanoma; KS: Kaposi sarcoma; BASOSCC: Baso-squamous cell carcinoma; DFSP: Dermatofibrosarcoma Protuberance

4. DISCUSSION

124 malignant skin tumors were obtained from this study. It was collected over 10 year's period at Albaha province hospitals retrospectively. The most common malignant tumor observed in this study is the BCC. This coincides with many studies done elsewhere especially within Saudi Arabia like Dammam (AlSalman et al., 2018), Qasim (Alzolibani et al., 2013), Asir (Bahamdan & Morad, 1993) and Jeddah (Mufti, 2012; Al-Maghrabi et al., 2004), and also, it coincides with another results which revealed that the prevalence of BCC is most common among Caucasians (Rubin et al., 2005). However our result is close to Gloster and Neal (2006) who found that the BCC represents the most common cancer in Asian and Hispanics as most of the population in Saudi Arabia has varied degrees of skin pigmentation. The degree of skin pigmentation as well as exposure to ultraviolet rays determines with a large extent the prevalence of BCC all over the countries. So BCC was found to be highest in Australia and South Africa (Marks et al., 1989; Bradford, 2009).

The descriptive analysis of the current data revealed that most of the BCC and SCC are present in head and neck area. These findings also seem comparable to the study done Alwunais and Ahmad (2016), who found that the most common cancer encountered in head and neck is BCC followed by SCC. Also our results are in close to many previous studies as staples et al., (2006) who found high incidence of non-melanoma skin cancer especially BCC and SCC 5 times more than any skin cancer (Staples et al., 2006; Buettner & Raasch, 1998). Also our results are consistent with the study of AlSalman et al., (2018) who investigated 279 cases of NMSC and found that BCC was observed in 140 (50.2%) and SCC in 125 (44.8%) patients, on the other hand, our results are in contrary with the study done in Asir area (south region) which revealed that SCC is more common than BCC (Mufti, 2012; Bahamdan & Morad, 1993; Khan et al., 1991). In the present study, we found the ratio between BCC and SCC is 1.62:1, this is near to that obtained by AlSalman et al. (2018) who reported 1.12:1, Al-Dawsari & Amra (2016) 1.5:1, Bahamdan & Morad (1993) 0.8:1, Al-Maghrabi et al. (2004) 1.4:1, Mufti (2012) 1.15:1, Al Aboud et al. (2003) 1.9:1, 3.2:1 Alakloby et al. (2008), 1.6:1 and away from Alzolibani et al who reported the ratio 3:1 (Alzolibani et al., 2013).

In the current study we found 13 cases of CTCL, 7 cases of MM and 2 cases for DFEP and, these results is in agreement with the study of Alwunais & Ahmad (2016) and also coincides with Rouhani et al (Rouhani et al., 2008) who reported that DFSP is less common among population with relative increase in dark race than others. Both incidence of DFSP and CTCL are ranged from 4.4 to 6.4 per million annually as reported by Criscione & Weinstock (2007) and Rouhani et al. (2008). The rare incidence of the CTCL is recorded in many literatures however, it was found to be higher among Arabian people than others (Alsaleh et al., 2010). In the current study we found 3 secondaries to skin this coincides from lung and breast, the skin metastases from these sites are reported in many textbooks and literature. Also, these metastases are reported in the study of Alwunais & Ahmad (2016). These metastases

may be the key to investigate the primary lesion which may be occult and thus initiation of the management plan will occur. In the present study 7 cases of MM were recorded 5 of these cases were developed on top of nevus or benign mole as reported in the pathology report and graded as Clark level II and 2 cases graded as level III. This represents 5.7 % of the studied cases. This may be in agreement with that reported by American Cancer Society, 2014 (Cancer Facts & Figures, 2014) which stated the ratio of melanoma to nonmelanomatous skin cancer is nearly 5%.

5. CONCLUSION

Basal cell carcinoma was the commonest tumor encountered in our study (46%), followed by Squamous cell carcinoma (28.2%) and Cutaneous T Cell Lymphoma (10.5%). Other tumors such as Malignant Melanoma, Kaposi's sarcoma and Baso-squamous cell carcinoma are encountered; however their prevalence did not exceed 10% of the tumors obtained. Dermatofibrosarcoma Protuberans was the least common seen in our study. Melanoma is a rare skin tumor compared to western countries. The most common site involved is head and neck (67.7%), followed by the extremities and trunk region in (19.4%), and (12.9%) respectively. Metastases to skin are also reported which may be the first presentation for occult internal tumors. More studies needed to determine the incidence and prevalence of dermatological malignancy compared to other malignancies.

Funding

No funds were received for this study from any funding organization.

Conflict of Interest

The author has no conflict of interest to be declared.

Ethical approval

The study was approved by the Medical Ethics Committee of Faculty of Medicine, Albaha University (ethical approval code: REC/MED/BU-FM/2018/043).

Data and materials availability

All data associated with this study are present in the paper.

Abbreviations

AIHW:	Australian Institute of Health and Welfare
BCC:	Basal cell carcinoma
SCC:	Squamous cell carcinoma
CTCL:	Cutaneous T cell lymphoma
MM:	Malignant melanoma
KS:	Kaposi sarcoma
BASOSCC:	Baso-squamous cell carcinoma
DFSP:	Dermatofibrosarcoma Protuberance
MF:	Mycosis Fungoides
NMSC:	Non Melanoma Skin Cancer

REFERENCES AND NOTES

1. Al About KM, Al Hawsawi KA, Bhat MA, Ramesh V, Ali SM. Skin cancers in Western Saudi Arabia. *Saudi Med J* 2003;24:1381–7.
2. Alakloby OM, Bukhari IA, Shawarby MA. Histopathological pattern of non melanoma skin cancers at King Fahd Hospital of the university in the eastern region of Saudi Arabia during the years 1983–2002. *Cancer Ther* 2008;6:303–6.
3. Al-Dawsari NA, Amra N. Pattern of skin cancer among Saudi patients attending a tertiary care center in Dhahran, Eastern Province of Saudi Arabia. A 20-year retrospective study. *Int J Dermatol* 2016;55:1396–1401.
4. Al-Eid HS, Quindo MA. Saudi Cancer Registry: Cancer Incidence report 2010. Ministry of Health, Saudi Arabia; 2014:52-53.
5. Al-Maghrabi JA, Al-Ghamdi AS, Elhakeem HA. Pattern of skin cancer in Southwestern Saudi Arabia. *Saudi Med J* 2004;25:776–9.

6. Alonso FT, Garmendia ML, Bogado M. Increased skin cancer mortality in Chile beyond the effect of ageing: temporal analysis 1990 to 2005. *Acta Derm Venereol* 2010;90:141-6.
7. Alsaleh QA, Nanda A, Al-Ajmi H, Al-Sabah H, Elkashlan M, Al-Shemmari S, et al. Clinicoepidemiological features of mycosis fungoides in Kuwait, 1991–2006. *Int J Dermatol* 2010;49:1393-8.
8. AlSalman SA, Alkaff TM, Alzaid T, Binamer Y. Nonmelanoma skin cancer in Saudi Arabia: single center experience. *Ann Saudi Med* 2018;38:42–5.
9. Alwunais KM, Ahmad S. Pattern of skin cancer at Dammam Medical Complex in Dammam. *J Dermatol Surg* 2016;20:51-4.
10. Alzolibani AA, Al Shobaili HA, Al Robaee A, Khan A, Haque IU, Rao NS, et al. Clinical and histopathologic characteristics of skin malignancies in Qassim Region, Saudi Arabia. *Int J Health Sci* 2013;7:61.
11. American Cancer Society. *Cancer Facts & Figures 2014*. Atlanta: American Cancer Society; 2014.
12. Arora A, Attwood J. Common skin cancers and their precursors. *Surg Clin North Am* 2009;89:703-12.
13. Australian Institute of Health and Welfare. *Cancer in Australia: an overview 2012*. Cancer Series No. 74. Canberra: AIHW; 2012:10-11.
14. Bahamdan KA, Morad NA. Pattern of malignant skin tumors in Asir region, Saudi Arabia. *Ann Saudi Med* 1993;13:402–6.
15. Bradford PT. Skin cancer in skin of color. *Dermatol Nurs* 2009;21:170-8.
16. Buettner BG, Raasch BA. Incidence rates of skin cancer in Townsville, Australia. *Int J Cancer* 1998;78:587-93.
17. Criscione VD, Weinstock MA. Incidence of cutaneous T-cell lymphoma in the United States, 1973–2002. *Arch Dermatol* 2007;143:854-9.
18. Diepgen TL, Mahler V. The epidemiology of skin cancer. *Br J Dermatol* 2002;146(Suppl 61):1-6.
19. Gloster HM, Neal K. Skin cancer in skin of color. *J Am Acad Dermatol* 2006;55:741-60.
20. Khan AR, Hussain NK, Al Saigh A, Malatani T, Sheikha AA. Pattern of cancer at Asir Central Hospital, Abha, Saudi Arabia. *Ann Saudi Med* 1991;11:285–8.
21. Lian CG, Mihm Jr MC. Chapter 5.14. In: Stewart BW, Wild CP, eds. *World cancer report 2014*. Lyon: World Health Organization; 2014:495-501
22. Marks R, Jolley D, Dorevitch AP, Selwood TS. The incidence of non-melanocytic skin cancers in an Australian population: results of a five-year prospective study. *Med J Aust* 1989;150:475-8.
23. Mufti ST. Pattern of skin cancer among Saudi patients who attended King Abdul Aziz University Hospital between Jan 2000 and Dec 2010. *J Saudi Soc Dermatol Surg* 2012;16:13–8.
24. Murphy GF, Elder DE. *Nonmelanocytic tumors of the skin*. AFIP atlas of tumor pathology, 3rd series. Washington, DC: Armed Forces Institute of Pathology;1991. pp 266–8.
25. Rouhani P, Fletcher CD, Devesa SS, Toro JR. Cutaneous soft tissue sarcoma incidence patterns in the U.S.: an analysis of 12,114 cases. *Cancer* 2008;113:616-27.
26. Rubin AI, Chen EH, Ratner D. Basal cell carcinoma. *N Engl J Med* 2005;353:2262-9.
27. Staples MP, Elwood M, Burton RC, Williams JL, Marks R, Giles GG. Non-melanoma skin cancer in Australia: the 2002 national survey and trends since 1985. *Med J Aust* 2006;184:6-10.
28. Xie J, Qureshi AA, Li Y, Han J. ABO blood group and incidence of skin cancer. *PLoS One* 2010;5:e11972.