

# Pattern of skin cancer in Southwestern Saudi Arabia

Jaudah A. Al-Maghrabi, MD, FRCPC, Abdulhameed S. Al-Ghamdi, MD, FRCS, Howaida A. Elhakeem, MD, FACHARZT.

---

## ABSTRACT

**Objective:** Skin cancer is a common malignant neoplasm in the Kingdom of Saudi Arabia (KSA) and it is the most common malignant neoplasm in Al-Baha area. This study was performed to determine the pattern of skin cancers seen at King Fahad Hospital, Al-Baha, KSA.

**Methods:** Histologically diagnosed skin cancers, seen between 1990 and 2003, were reviewed and analyzed according to age, gender, race and site of distribution.

**Results:** Of a total of 193 patients, there were 79 (41%) cases of basal cell carcinoma (BCC), 56 (29%) cases of squamous cell carcinoma (SCC) and 34 (18%) cases of Kaposi's sarcoma. Malignant melanomas represent 4.1% of the cases. The male to female ratio for all cancer was

1.6:1. The peak age distribution was in the 70-80-year group. The most common site involved in BCC was the head and neck (90%) and in Kaposi's sarcoma were the lower limbs (59%). Acral distribution of malignant melanoma was seen in 62% cases.

**Conclusion:** The most common skin cancers seen are BCC and SCC followed by Kaposi's sarcoma. The site of distribution of BCC and SCC in our study is similar to studies in Caucasians. The site of distribution of BCC in sun exposed area supports the role of the ultraviolet light in the pathogenesis of such tumor. In contrast to the western countries, melanoma is a rare skin neoplasm in KSA.

Saudi Med J 2004; Vol. 25 (6): 776-779

---

Skin cancer is a common malignant neoplasm in Kingdom of Saudi Arabia (KSA) and it is the most common malignant neoplasm in Al-Baha area according to the records of King Fahad Hospital (KFH), Al-Baha, KSA. It is estimated that 2,750,000 cases of non-melanocytic (NMSC) skin cancer occur worldwide each year.<sup>1</sup> Incidence of these cancers varies more than 100-fold from low rates in Asian populations to a very high rates in Caucasian population. The non-melanoma skin cancers including basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the most common type of cancer in Caucasians populations.<sup>2,3</sup> The pattern of skin cancer in KSA is not yet clear. This study was performed to determine the pattern of skin cancers seen at KFH in Al-Baha area.

Trends in cutaneous malignant incidence by anatomic site were examined. The analysis included 193 malignant skin neoplasms registered between 1990 and 2003.

**Methods.** A retrospective study was designed to review the skin cancer pathology material in the archives of Pathology Department, KFH, Al-Baha, KSA over the last 12 years, starting from January 1990 until July 2003. Age, gender and clinical presentation were reviewed. One hundred and ninety-three skin cancer cases were available for the study. King Fahad Hospital is the main hospital in this region that receives most of the malignant cases in this area.

---

From the Department of Pathology (Al-Maghrabi, Elhakeem), Department of Surgery (Al-Ghamdi), King Fahad Hospital, Al-Baha, Kingdom of Saudi Arabia.

Received 3rd November 2003. Accepted for publication in final form 10th February 2004.

Address correspondence and reprint request to: Dr. Jaudah A. Al-Maghrabi, Assistant Professor and Consultant Pathologist, Department of Pathology, Faculty of Medicine, King Abdul-Aziz University Hospital, PO Box 80215, Jeddah 21589, Kingdom of Saudi Arabia. Tel. +966 (2) 6401000 Ext. 18426. Fax. +966 (2) 6408433. E-mail: jalmaghrabi@hotmail.com

**Results.** There were 193 cases of malignant skin, among those were 98% Saudis. The mean age of all cases was 62.2 years. There were 119 (62%) male and 74 (38%) female and the male to female ratio was 1.6:1. Tumors were rare below the age of 30 years with only 4 cases detected. The most common incidence was among the age group of 70-79 years with 46 cases detected followed by the age group of 60-69 years with 39 cases. Distribution of the different malignant types of skin cancer according to sites affected of the patients was summarized in **Table 1**. There were 79 (41%) cases of BCC, 56 (29%) cases of SCC, 34 (18%) cases of Kaposi's sarcoma, 3 (1.6%) cases of adnexal carcinoma, 8 (4.1%) melanoma, 2 (1%) cases of dermatofibrosarcoma protuberans, 2 (1%) cases of mycosis fungoides and 8 (4.1%) cases of metastatic carcinoma. According to the locations, the tumor cases distributed as follows: head and neck 107 (55%), back 7 (3.6%), chest 14 (7.2%), genital 6 (3.1%), upper limbs 13 (6.7%), lower limbs 45 (23.3%). Among the BCC cases, 71 (90%) of the cases were located in the head region. Among the SCC cases, 30 (54%) were located in the head and neck region. Kaposi's sarcoma was more common among male (76%) with 3:1 male to female ratio. The lower limb was the most common site (71%). Acral distribution of malignant melanoma was seen in 5 (62%) cases.

**DISCUSSION.** Skin cancer is the most common malignant neoplasm in Al-Baha area followed by lymphoma, colorectal carcinoma, breast and hepatocellular carcinoma according to the records of KFH in Al-Baha. Skin cancer is a common malignant neoplasm worldwide and it is well documented that skin cancer is the most common malignant neoplasm in the Western countries. In our study, BCC was the most common skin cancer

in Al-Baha area followed by SCC. This is similar to studies from Western countries,<sup>4-8</sup> however, it is rare in blacks,<sup>9-13</sup> Turkey and Singapore.<sup>14,15</sup> In Asir region, SCC was the most common skin cancer.<sup>16</sup> Basal cell carcinoma does not commonly occur in the African and Asian races. In Tanzania SCC has been found to be the most frequent form of superficial malignancy, followed by Kaposi's sarcoma and then malignant melanoma.<sup>17</sup> In the current study, among the BCC cases, 90% of the cases were located in the head region, which similar to others.<sup>16,18,19</sup> Basal-cell carcinoma is the most common type in Caucasians population,<sup>4-8</sup> however, it is rare in blacks.<sup>9-13</sup> In black patients, BCC is found more frequently in regions of the body that are protected from ultraviolet radiation when compared to Caucasians patients.<sup>20</sup> Skin cancer accounts for 1-2% of malignancies in blacks and Indians, compared with one-third of neoplasms in Caucasians.<sup>5</sup> Basal cell carcinoma comprises 75% of skin cancers in Caucasians, but SCC represents 60-65% of skin cancers in blacks and Indians.<sup>5</sup> Although most BCCs occur in sun-exposed areas in Caucasians, in blacks and Indians, a significant percentage also develop in photo protected areas. In Asian BCC is relatively rare, however, it is usually occurs in the sun exposed areas like in Caucasians population.<sup>18,21</sup> In KSA, variable figures of the prevalence of skin cancer has been reported, however in most of them skin cancer was reported after breast and colorectal carcinoma.<sup>16,22-25</sup> It is well known that ultraviolet light plays a major role in causing skin cancer in Caucasians population particularly BCC and SCC.<sup>4,8, 26-31</sup> In our study among the BCC cases, 71 cases (90%) were located in the head region. Among the BCC cases, male represented 38 (48%) and female represented 41 (52%). Among the SCC cases, 30 (54%) were located in the head and neck region. This clearly

Table 1 - Distribution of the different malignant types of skin cancer according to sites affected.

Diagnosis	Head	Chest	Back	Upper extremity	Lower extremity	Genital	Male	Female	Total
Basal cell carcinoma	71	4	0	1	3	0	38	41	79
Squamous cell carcinoma	30	6	0	6	12	2	39	17	56
Kaposi's sarcoma	0	0	0	6	24	4	26	8	34
Malignant melanoma	1	0	2	0	5	0	5	3	8
Adnexal carcinoma	2	1	0	0	0	0	1	2	3
Dermatofibrosarcoma protuberance	1	1	1	0	0	0	2	1	2
Mycosis fungoides	0	0	2	0	0	0	2	0	2
Metastatic carcinoma	2	2	3	0	1	0	6	2	8
<b>Total</b>	<b>107</b>	<b>14</b>	<b>7</b>	<b>13</b>	<b>45</b>	<b>6</b>	<b>119</b>	<b>74</b>	<b>193</b>

indicated the role of sunlight in the pathogenesis of those tumors as it has been demonstrated in Caucasians and Asian population. Saudi Arabia has one of the highest sun intensities in the world.<sup>32</sup> It is expected to have a very high incidence of these types of tumor, however, this is not true and Saudi population has much less incidence of such tumors compared to Caucasian population. The explanation is not clear yet, however, dark color of the skin may play a role in reducing this incidence at the same time this indicated as well that sunlight is not the only factor in the pathogenesis of such tumors. The genetic background may play a role in these types of cancer. In our study, Kaposi's sarcoma is relatively common and rank third among the skin cancer in this region. Kaposi's sarcoma was more common among male (76%) with male to female ratio of 3:1. The lower limbs were the most common site. In the vast majority of Kaposi's sarcoma cases, the tumor was not related to the organ transplant and was not human immunodeficiency virus associated. Kaposi's sarcoma is the most common cancer occurring in renal transplant recipients in KSA, however, there is no clear data on those cases not related to transplantation.<sup>33-39</sup> In our study, there were 8 malignant melanoma cases, which represent 4.1% of skin neoplasm, compared to 11.7% reported in Asir region.<sup>16</sup> Acral distribution was seen in 5 (62%) cases in our study compared to 87.6% in Asir<sup>16</sup> and 54% reported in Riyadh, KSA.<sup>40</sup>

We concluded that the most common skin cancers seen are BCC and SCC followed by Kaposi's sarcoma. The site of distribution of BCC and SCC in our study is similar to studies in Caucasians. The site of distribution of BCC in sun exposed areas supports the role of the ultraviolet light in the pathogenesis of such tumor. Melanoma is a rare skin neoplasm in KSA and Acral distribution is the dominant pattern, which is clearly different from the incidence and pattern of melanoma in the Western countries.

## References

1. Armstrong BK, Kricger A. Skin cancer. *Dermatol Clin* 1995; 13: 583-594.
2. Miller SJ. Biology of basal cell carcinoma. *Am Acad Dermatol* 1991; 26: 1-13.
3. Corona R. Epidemiology of nonmelanoma skin cancer: a review. *Ann Ist Super Sanita* 1996; 32: 37-42.
4. Drake LA, Ceilley RI, Cornelison RL, Dobes WA, Dorner W, Goltz RW, et al. Guidelines of care for basal cell carcinoma. The American Academy of Dermatology Committee on Guidelines of Care. *J Am Acad Dermatol* 1992; 26: 117-120.
5. Dhir A, Orengo I, Bruce S, Kolbusz RV, Alford E, Goldberg L. Basal cell carcinoma on the scalp of an Indian patient. *Dermatol Surg* 1995; 21: 247-250.
6. Lear JT, Tan BB, Smith AG, Bowers W, Jones PW, Heagerty AH, et al. Risk factors for basal cell carcinoma in the UK: case-control study in 806 patients. *J R Soc Med* 1997; 90: 371-374.
7. McKnight CK, Magnusson B. Tumours in Iceland. I. Malignant tumours of skin: a histological classification. *Acta Pathol Microbiol Scand* 1979; 87: 37-44.
8. Reizner GT, Chuan TY, Elpern DJ, Stone JL, Farmer ER. Basal cell carcinoma in Kauai, Hawaii: the highest documented incidence in the United States. *J Am Acad Dermatol* 1993 (2 Pt 1): 184-189.
9. Fleming ID, Barnawell JR, Burlison PE, Rankin JS. Skin cancer in black patients. *Cancer* 1975; 35: 600-605.
10. Abreo F, Sanusi ID. Basal cell carcinoma in North American blacks. Clinical and histopathologic study of 26 patients. *J Am Acad Dermatol* 1991; 25 (6 Pt 1): 1005-1011.
11. Amonette RA, Kaplan RJ. Squamous-cell and basal-cell carcinomas in black patients. *J Dermatol Surg* 1976; 2: 158-161.
12. Mora RG, Perniciaro C. Cancer of the skin in blacks. I. A review of 163 black patients with cutaneous squamous cell carcinoma. *J Am Acad Dermatol* 1981; 5: 535-543.
13. Datubo-Brown DD. Primary malignant skin tumors in Nigerians. *J Natl Med Assoc* 1991; 83: 345-348.
14. Ceylan C, Ozturk G, Alper S. Non-melanoma skin cancers between the years of 1990 and 1999 in Izmir, Turkey: demographic and clinicopathological characteristics. *J Dermatol* 2003; 30:123-131.
15. Tan SH, Tham SN, Goh CL. Skin cancers at Tertiary Referral Skin Hospital in Singapore. *Int J Dermatol* 1995; 34: 770-776.
16. Bahamdan KA, Morad NA. Pattern of Malignant Skin Tumors in Asir Region, Saudi Arabia. *Annals of Saudi Medicine* 1993;13: 402-406.
17. Amir H, Kwesigabo G, Hirji K. Comparative study of superficial cancer in Tanzania. *East Afr Med J* 1992; 69: 88-93.
18. Cho S, Kim MH, Whang KK, Hahm JH. Clinical and histopathological characteristics of basal cell carcinoma in Korean patients. *J Dermatol* 1999; 26: 494-501.
19. Coebergh JW, Neumann HA, Vrints LW, van der Heijden L, Meijer WJ, Verhagen-Teulings MT. Trends in the incidence of non-melanoma skin cancer in the SE Netherlands 1975-1988: a registry-based study. *Br J Dermatol* 1991; 125: 353-359.
20. Beckenstein MS, Windle BH. Basal cell carcinoma in black patients: the need to include it in the differential diagnosis. *Ann Plast Surg* 1995; 35: 546-548.
21. Kikuchi A, Shimizu H, Nishikawa T. Clinical histopathological characteristics of basal cell carcinoma in Japanese patients. *Arch Dermatol* 1996; 132: 320-324.
22. El-Hag IA, Katchabeswaran R, Chiedozi LC, Kollur SM. Pattern and incidence of cancer in Northern Saudi Arabia. *Saudi Med J* 2002; 23: 1210-1213.
23. Archibong EI, Sobande AA, Sadek AA, Ajao OG, Khan AR, Fawehinmi O. The changing pattern of malignant neoplasms among females in Asir region of Saudi Arabia. *Saudi Med J* 2000; 21: 869-872.
24. Hannan MA, Paul M, Amer MH, Al-Watban FH. Study of ultraviolet radiation and genotoxic effects of natural sunlight in relation to skin cancer in Saudi Arabia. *Cancer Res* 1984; 44: 2192-2197.
25. Morsy TA, Mangoud AM, Al-Seghayer SM. Cutaneous leishmaniasis and basal cell carcinoma in a patient from Al Baha, Saudi Arabia. *J Egypt Soc Parasitol* 1992; 22: 167-170.

26. Kwa RE, Campana K, Moy RL. Biology of cutaneous squamous cell carcinoma. *J Am Acad Dermatol* 1992; 26: 1-26.
27. Aubry F, MacGibbon B. Risk factors of squamous cell carcinoma of the skin. A case-control study in the Montreal region. *Cancer* 1985; 55: 907-911.
28. Armstrong BK, Kricger A, English DR. Sun exposure and skin cancer. *Australas J Dermatol* 1997; 38 (Suppl 1): S1-S6.
29. Karagas MR, Greenberg ER, Spencer SK, Stukel TA, Mott LA. Increase in incidence rates of basal cell and squamous cell skin cancer in New Hampshire, USA. New Hampshire Skin Cancer Study Group. *Int J Cancer* 1999; 81: 555-559.
30. Rosso S, Joris F, Zanetti R. Risk of basal and squamous cell carcinomas of the skin in Sion, Switzerland: a case-control study. *Tumor* 1999; 85: 435-442.
31. English DR, Armstrong BK, Kricger A, Fleming C. Sunlight and cancer. *Cancer Causes Control* 1997; 8: 271-283.
32. Sayigh AAM, Sebai ZA, Halleem A. Preliminary Study Of The Solar Radiation Effect On Skin Cancer. Proceeding of the first conference on biological aspects of Saudi Arabia. Riyadh (KSA): University of Riyadh; 1977.
33. Shaheen FA, Al-Sulaiman MH, Ramprasad KS, Al-Khader AA. Kaposi's sarcoma in renal transplant recipients. *Ann Transplant* 1997; 2: 49-58.
34. Qunibi WAM, Sheth K, Ginn HE, Al-Furayh O, DeVol EB, Taher S. Kaposi's sarcoma: the most common tumor after renal transplantation in Saudi Arabia. *Am J Med* 1988; 84: 225-232.
35. Qunibi W, Al-Furayh O, Almeshari K, Lin SF, Sun R, Heston L, et al. Serologic association of human herpesvirus eight with posttransplant Kaposi's sarcoma in Saudi Arabia. *Transplantation* 1998; 65: 583-585.
36. Qunibi WY, Barri Y, Alfurayh O, Almeshari K, Khan B, Taher S, Sheth K. Kaposi's sarcoma in renal transplant recipients: a report on 26 cases from a single institution. *Transplant Proc* 1993; 25 (1 Pt 2): 1402-1405.
37. Almuneef M, Nimjee S, Khoshnood K, Miller G, Rigsby MO. Prevalence of antibodies to human herpesvirus 8 (HHV-8) in Saudi Arabian patients with and without renal failure. *Transplantation* 2001; 71: 1120-1124.
38. Foreman KE, Alkan S, Krueger AE, Panella JR, Swinnen LJ, Nickoloff BJ. Geographically distinct HHV-8 DNA sequences in Saudi Arabian Iatrogenic Kaposi's sarcoma lesions. *Am J Pathol* 1998; 153: 1001-1004.
39. Krayem AB, Wali SO, Samman YS. The diagnostic challenge and management of pulmonary Kaposi's sarcoma in renal transplant recipients. *Saudi Med J* 2001; 22: 1061-1064.
40. Mughal T, Ribinson W. Malignant melanoma of the skin, review and KFSH experience. *King Faisal Specialist Hospital Medical Journal* 1982; 2: 167-174.