Original Article

Pattern of cutaneous melanoma at King AbdulAziz University Hospital, Jeddah, Saudi Arabia

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ABSTRACT

Objective: This study was performed to determine the pattern of CM (cutaneous melanoma) among Saudi patients at King AbdulAziz University Hospital, Jeddah, Saudi Arabia.

***Methodology*:** The analysis included 139 skin cancers histological diagnosed among Saudi patients between Jan 1995 and Jan 2011. Pattern of CM by age, sex and anatomic location was examined along with the possible risk factors implicated.

***Results*:** Among the 139 cases of skin cancer in Saudis there were 16(11.5%) cases of CM. CM ranked as the fourth skin cancer in the order of frequency with a mean age of 52 years and equal gender distribution. The predominant pattern of distribution was acral 68.7%. Risk factors involved mainly were exposure to pesticides and history of high solar exposure in childhood.

***Conclusion*:** Incidence of CM continues to be remain relatively stable over a period of past two decades across different regions of the Kingdom which is contrary to the incidence and pattern of CM in the West. Risk factors other than UV radiation, such as occupational exposure to pesticides, variable UV radiation susceptibility, genetic predisposition could be involved among the Saudis.

KEY WORDS: Cutaneous melanoma, Acral, Uv radiation, Pesticide exposure.

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INTRODUCTION

Skin cancer is usually classified as cutaneous melanoma (CM) or non-melanoma skin cancer (NMSC), which includes basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), and is the most common cancer worldwide.[1] CM is an increasingly important public health problem worldwide and its pattern and incidence rates vary significantly depending on the ethnicity and geographic location of the study population. The World Health Organization (WHO) estimates that about 132,000 cases of CM are diagnosed each year and that NMSC and CM are together responsible for 66,000 deaths per year.[1]

Each year more than one million cases of skin cancer are diagnosed in USA including ~55 000 cases of CM.[2] Incidence rates for melanoma have been increasing rapidly for several decades in white populations. CM, however is a rare disease in minority populations, with an average annual age-adjusted melanoma incidence per 100 000 persons being 18.4 for whites compared with 2.3, 0.8, 1.6, and 1.0 for Hispanics, African Americans, American Indians, and Asians, respectively.[3-5] The incidence among Asian population in the U SA is expected to increase in the next 50 years.[6]

There are rare reports describing the pattern of CM (cutaneous melanoma) among Saudi patients in the Saudi Arabia limiting our knowledge about

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the factors implicated in the pathogenesis, with regard to this ethnic group.

This study was performed to determine the pattern of CM among Saudi patients at King AbdulAziz University Hospital, Jeddah. Pattern of CM by age, sex and anatomic location was examined along with the possible risk factors implicated. The analysis included 139 skin cancers histologically diagnosed between Jan 1995 and Jan 2011.

METHODOLOGY

A retrospective study including all cases of Saudi patients biopsied or excised, with a histological diagnosis of skin cancer, was performed between January 1995 January 2011. All biopsy specimen data was collected through a computerized search of the Anatomical Pathology archives at KAAUH (King AbdulAziz University Hospital). The data was filtered using appropriate SNOMED (Systematized Nomenclature of Medicine) morphology codes indicating the parameters such as; date of receiving biopsy, personal identity (medical record number, age, sex, nationality etc), clinical and histopathological diagnosis and topography.

The data was rechecked manually to delete duplications. Computerized search was then exported to Microsoft excel format and used for analysis. Target group with a histological diagnosis of skin cancer was identified and initially all skin cancers were classified, followed by age, gender and site distribution of CM cases. Manual review of biopsy reports was completed twice independently and discrepancy, if any, was resolved through a third review. Clinical data and data regarding the possible risk factors were obtained by a personal follow up from the patients' hospital records, concerned surgical and medical teams. The data was classified into three major areas: a) Pigmentaion and susceptibility factors; b) Sun exposure habits (recreational versus occupational) and history of blistering sun burn; c) Family history of skin cancer in the first degree relatives. Possible risk factors involved were evaluated against those cited by other international studies.[7-9]

Table-I: Distribution of skin cancers with mean age.

Diagnosis	*No of cases*	*% N=139*	*Mean Age*
BCC	37	26.6	62
SCC	29	20.8	49
MF	22	15.8	45
CM	16	11.5	52
DSFP	12	8.6	41
BASOSCC	3	2.1	67
KS	2	1.4	52.2
LH	2	1.4	7
METS	16	11.5	65

* BCC: Basal cell carcinoma, SCC: Squamous cell carcinoma, BASOSCC: Basosquamous cell carcinoma,
CM: Cutaneous melanoma, MFL: Mycosis fungoides,
KS: Kaposi sarcoma,
DSFP: Dermato fibrosarcoma protuberan, LH: Langerhans cell histiocytosis, METS: Metastasis.

RESULTS

There were 139 cases of skin cancer among Saudis. The mean age of all cases was 49 years. Distribution of the different skin cancers according to mean age are summarized in Table-I. There were 16(11.5%) cases of CM. The most common skin cancer was BCC with a mean age of 62 years. CM ranked as the fourth skin cancer in the order of frequency with a mean age of 52 years and equal gender distribution. Trends in CM with regard to age, gender of the patients and location of the lesion are summarized in Table II and III. CM was rare below the age of 20 years at the time of diagnosis with only one case (6.2%) diagnosed.

The most common incidence was among the age group of 60 -79 years 43.7%, followed by the age group of 20-39 years 31.2%.No gender predilection or gender specific pattern was observed. In the descending order of frequency according to the locations, CM was distributed as follows: 68.7% in the lower limb, 25% in the head and neck region, and

Table-II: Age and sex distribution of Cutaneous Melanoma.

Total	*Less than 20 yrs*		*20-39 yrs*		*40-59 yrs*		*60-79 yrs*	
N	*M*	*F*	*M*	*F*	*M*	*F*	*M*	F
16	0	1	3	2	2	1	3	4
%	0	6.2	18.7	12.5	12.5	6.2	18.7	25

Table-III: Location of Cutaneous Melanoma.

Total	*Site*					
N	*Head & neck*	*Total %*	*Lower Extremity*	*Total %*	*Perineal skin*	*Total %*
16	4	25	11	68.7	1	6.25
	2(face)	12.5	7(sole of feet)	43.7		
	2(neck)	25	4(legs)	25		

Table-IV: Associated risk factors of Cutaneous Melanoma

Risk factor	*No. of patients*
H/O exposure to pesticides	7
H/O high solar exposure in early childhood	5
H/O one or more blistering sun burns	2
Pale color of skin	2
Dysplasticl nevi	2
Numerous nevi more than 100	1
Invasive cutaneous melanoma in one or more first-degree relatives	1

Table-V: Analytical comparison of Cutaneous melanoma with recent studies from KSA.10-12

CM	*This study*	*Al Maghrabhi et al12 2004*	*Al Aboud et al11 2003*	*Zimmo SK et al10 2001*
CM %	11.5	4.1	12.5	10.6
Mean age	52	70-80 years*	64	60
M:F ratio	1:1	1.6:1	3.3:1	0.3:1
Predominant Location	Sole of feet (43.7%)	Lower limb (62%)	Lower limb	Extremities

CM: Cutaneous melanoma, M:Male, F:Female, *:Result indicated as peak age in the study.

6.2% in the perineal skin. In Table-IV the risk factors implicated in the study group of CM are summarized. In Table-V the analytical comparison of CM with data extracted from recent studies on skin cancer from different parts of KSA are presented.[10-12]

DISCUSSION

Currently, there is limited available data on CM in Asians.[13] Recent and past studies indicate that CM is a rare cancer in Saudi population.[10-12] The most recent official Cancer Incidence report from the Ministry Of Health, Saudi Arabia indicates that CM was 0.3% of all newly diagnosed cases in year 2006[14] with equal distribution in both genders. It affected females mainly in their sixth through seventh decade of life and males mainly in their fourth and seventh decades. Incidence rates of 10.5[10], 12.5%[11] and 4.1%[12], have been reported for CM from different parts of Saudi Arabia in the past 2 decades.CM of 11.5% in the present study was 0.9% more than the previous study by Zimmo et a l(10.5 %)[10] conducted between 1984-1996 at the same hospital indicating that the frequency of CM in this region has remained rather stable with only a slight increase over the past two decade. It is however about 7.4% more than that reported by Al Magrabhi from Al Baha (4.1%)[12] and about 1% less than the frequency of CM reported by Al Aboud from Taif (12.5%).[11] This regional variation in the frequency of CM could be explained by a number of reasons. Firstly, by the geographic variation of ultra violet radiation implicated in the pathogenesis of CM, in different parts of Saudi Arabia.[15]

Secondly by the variation in the skin pigmentation, degree of photosensitivity and genetic susceptibility of Saudi population to different skin cancers, which are less studied so far. Thirdly by the changing and/or inconsistent regional trends in the frequency of different skin cancers across Saudi Arabia explained by variability in life style particularly the occupation. Younger mean age of 52 years in the present study could be partly explained by the increasing awareness of such cancers bringing them to clinical attention early in the course. No gender predilection or gender specific consistent pattern was observed which could be partly explained by the changing societal behaviors. The trend of continuing increase in overall incidence of CM does not seem to be applicable to the Saudi population.[12] Saudi Arabia is located approximately between 15Â°and 32Â°North latitude and is considered to be a high-sun area and although potentially carcinogenic and biologically active short UV wavelengths are sufficiently present in the sunlight at Riyadh, yet skin cancer is rare.[15]

On the contrary CM is the most lethal form of skin cancer and accounts for ~78% of all skin cancer deaths in USA.[16,17] Currently CM is the 6th and 7th most commonly diagnosed cancer among men and women, respectively in USA.[16,17] The incidence of CM has been increasing faster than that of any other cancer in this country with a lifetime risk of 1 in 58 Americans.[17] The highest incidence of CM occurs in Queensland with 56 new cases per 100,000 inhabitants per year in men and 43 in women.[18] New Zealand, records an extremely high incidence of invasive melanoma of 79/105 in the non-Maori population for 2003.[19] Likewise the incidence has sharply increased in France, Europe and Denmark.[20,21]

The low incidence of CM in darker skinned groups, is primarily a result of photo protection provided by increased epidermal melanin, which filters twice as much ultraviolet (UV) radiation as does that in the epidermis of Caucasians color.[13,22,23] The larger, more melanized melanosomes of darker skinned groups absorb and scatter more energy than do the smaller, melanosomes of Caucasians.[24] Hence, UV radiation, the most important predisposing factor for CM in Caucasians, plays a lesser role in people of color.[23,24] There is no data available indicating the UV radiation susceptibility in Saudi population as it is in the West.[25] Besides CM unlike SCC seems to be associated with intermittent exposure to sunlight rather than cumulative.[26]

Regardless of exposure to UV radiation, certain phenotypic characteristics are known to be predisposing factors for CM.[7-9,27] It is generally recognized that CM rarely affects individuals of ethnic backgrounds other than Caucasians, including those of Asian, Indian, Hispanic, or African descent.[13] Based on these observations it is likely that the low incidence of CM in Saudi Arabia

is partly due to darker skinned groups. Other likely factors are indoor restriction due to extremely hot weather and enhanced general public awareness regarding the harmful effects of sunlight.

Acral distribution of CM seen in the present study was similar to the previous study by Zimmo et al[10] from the same institution and to other studies from different parts of Saudi Arabia like Al Baha[12] raising possibilities that risk factors other than exposure to UV radiation could be implicated in the pathogenesis. In the present study this distribution correlated with the exposure to pesticides as farming was the main occupation in most of the cases. CM occurs more commonly in unusual anatomic sites (eg, palms and soles) in dark-skinned ethnic groups.[22,23,28]

Some risk factors for CM are clearly inherited.[29] Approximately 5-12% of all CM occur in a familial setting with two or more close relatives affected.[29] Members of families affected by familial dysplastic nevus syndrome share a 50% cumulative lifetime risk of developing CM.[29] Roughly one third of CMs arise from preexisting nevi (both acquired and congenital types), whereas the remainder appear to arise de novo. Currently, to the authors knowledge, no data is available to indicate the genetic susceptibility of Saudi's to CM.

This study has certain limitations and the results should be interpreted keeping them in mind. Although the study was carried out using validated hospital database, the author cannot assume that information bias was absent. Actions were taken to address this issue, such as exhaustive personal verification of clinical and demographic data. Another limitation was the small number of cases which further limits the application of these results to the Saudi population at large.

In conclusion CM ranks fourth in the order of frequency among skin cancers in Saudis presenting with an unusual and unique acral distribution and remaining relatively stable over a period of past two decades in this region of Saudi Arabia. These findings are contrary to the incidence and pattern of CM in the West. Risk factors other than UV radiation, such as occupational exposure to pesticides, variable UV radiation susceptibility, genetic predisposition could be involved. When evaluating geographic variability, sun exposure alone does not account for CM differences between ethnicities.[16]

Good population based epidemiological data is required as a tool for assessing the relevance of CM to public health of Saudi Arabia along with identification of regionally relevant risk factors in different parts of the country. Since prognosis in CM is directly proportionate to the depth therefore its detection in early evolution is of crucial importance.

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