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A Study of Non-Melanoma Skin Cancer In Benha District, Qalyubiyah Governorate, Egypt

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Abstract

Back ground: Non-melanoma skin cancer (NMSC) constitutes a major public health problem as it is the most common cancer world-wide.
Objective: Studying the prevalence, risk factors and clinico-pathological characteristics of NMSC over a year period (2002-2003) in Benha district, Qalyubiyah Governorate, Egypt.
Methods: Full clinical and histopathological examinations were done to the attendance of the outpatient clinic of Benha University Hospital and the prevalence rate of NMSC cases were recorded.
Results: A total of 18 males & 19 females presented with NMSC. 59.5% of patients had basal cell carcinoma (BCC) and 40.5% had squamous cell carcinoma (SCC). The mean age in years for BCC was (55.2+15.2) and for SCC was (57.9+15.6). The mean duration in years for BCC was (5.7+4.6) and for SCC (1.5+2.0). 89.2% of patients with NMSC had dark complexion and 67.5% were chronically exposed to ultraviolet rays (UVR). Head and neck were the site of predilection (83.8%) for both groups. Nodulo-ulcerative pattern (68.3%) formed the majority of BCC. SCC had variable presentation of ulcerating nodule, deep malignant ulcer and a superficial plaque.
Conclusion: Intense sunlight exposure puts outdoor farmers and workers at the risk of developing NMSC along with other factors. No sex predilection was noted as females share field work more or less equally with males. Patients with relatively pigmented skin are still at risk of developing NMSC.

Introduction

Non-melanoma skin cancer (NMSC) generally refers to cutaneous squamous cell carcinoma (SCC) and basal cell carcinoma (BCC).[1,2,3] It constitutes a major world public health problem as it is the most common cancer. World-wide efforts have been made to study NMSC, determine the etiology, the population at risk, prevention, and control.[4] This urged us to conduct a study on the prevalence, risk factors and clinico-pathological characteristics of NMSC in Benha.

In Egypt, there are 28 governorates. Benha is the capital of Qalyubiyah governorate located in the middle of Delta-Nile valley. It is surrounded by different villages within the governorates whose main field of work is agriculture. Benha University Hospital is the main center that drains most of the referral from different hospitals and health centers in the villages around. Hence, this study would almost reflect the prevalence of NMSC in the whole governorate.

Patients and Methods

This study was conducted along one year period starting in January 2002. The total number of patients attending the Dermatology Outpatient Clinic and the number of patients presenting clinically with NMSC were recorded daily. Age, Sex, special habits, occupation, exposure to chemicals, leisure activities and the frequency of sunlight exposure were noted for each patient presenting with NMSC.

For each, a past history was taken as regards the presence of a chronic debilitating disorder, intake of immunosuppressive therapy or radiotherapy or the presence of other skin disorders. A family history of skin tumors and related genodermatoses was noted. Patients were questioned for the onset, duration, and previous management. They were examined for the skin color, the clinical presentation and the site of the tumor, and manifestations of photo-damage e.g. freckling, pigmentation, or solar elastosis. They were also examined for the presence of premalignant lesions e.g. Bowen's disease, chronic scarring or ulceration, solar and arsenical keratoses and leukoplakia. The patients were included only once regardless of the total number of NMSC lesions presented at the time of examination.

Wedge shaped incisional or excisional biopsy was taken. Paraffin-embedded sections stained with Hematoxylin and Eosin (H&E) were examined by light microscopy.

The patients with SCC were further investigated for routine laboratory and radiological studies and lymph node biopsy was performed in cases with lymphadenopathy. SCC was graded into four grades according to Lever and Schaumburg classification[5] :

The degree of cellular differentiation and grading of SCC:

	Grade I (well differentiated)	Grade II (moderately differentiated)	Grade III (poorly differentiated)	Grade IV (un-differentiated)
Horn pearls	Present (abundant)	Present (few)	Absent	Absent
Central keratinization	Nearly full	Poor	Individual cell keratinization	Absent
Atypical cells	Mild (+)	Moderate(++)	The majority of cells(+++)	All cells
Depth of penetration	Above the level of sweat glands	At the level of sweat glands	Below the level of sweat glands	Below the level of sweat glands
Inflammatory infiltrate	Marked (+++)	Moderate(++)	Mild(+)	Absent (0)

The test of proportion (Z) was used as a test of significance for comparing two percentages. The significance of the result; the corresponding P-value was considered significant if it is <0.05.

Results

Thirsty-seven patients with non melanoma skin cancer (NMSC) were identified among 18927 patients who attended the Dermatology Outpatient Clinic of Benha University Hospital, Over a period of one year 2002 - 2003 with a prevalence of 0.19%.

Twenty two patients (59. 5%) had BCC, 10 males (45.4%), and 12 females (54.6%). Fifteen patients (40.5%) had SCC, 8 males (53.3%) and 7 females (46.7%) . A total of 18 males and 19 females presented with NMSC. Sex distribution in relation to the type of the tumor was not statistically significant, table (1).

Sex of patients	Males		Females		Total		Z	P
Studied groups	No.	%	No.	%	No.	%		
BCC (n:22)	10	45.4	12	54.6	22	59.5	0.317	>0.05
SCC (n:15)	8	53.3	7	46.7	15	40.5	0.47	>0.05
Total (n:37)	18	48.7	19	51.3	37	100		

Table (1): sex distribution of NMSC patients:

The age range for NMSC patients was 17-90 years. The mean age in years for BCC was (55.2 ±15.2) and for SCC was (57.9±15.6). The age distribution in relation to the type of the tumor is shown in table (2).

AGE & SEX	<40			>40			Z	P
TUMOR	MALE	FEMALE	No.(%)	MALE	FEMALE	No.(%)		
BCC (n:22)	1	2	3(13.6)	9	10	19(86.4)	6.4	<0.05
SCC(n:15)	1	1	2(13.4)	7	6	13(86.7)	2.4	<0.05
Total (n:37)	2	3	0	16	16		6.2	<0.05

Table(2): Age distribution in relation to the type of the tumor:

Both BCC and SCC occurred significantly more above the age of 40 years. Fig (1) shows age distribution in relation to sex and type of tumor. Males were at an older age group than females and males with SCC were at an older age group than those with BCC.

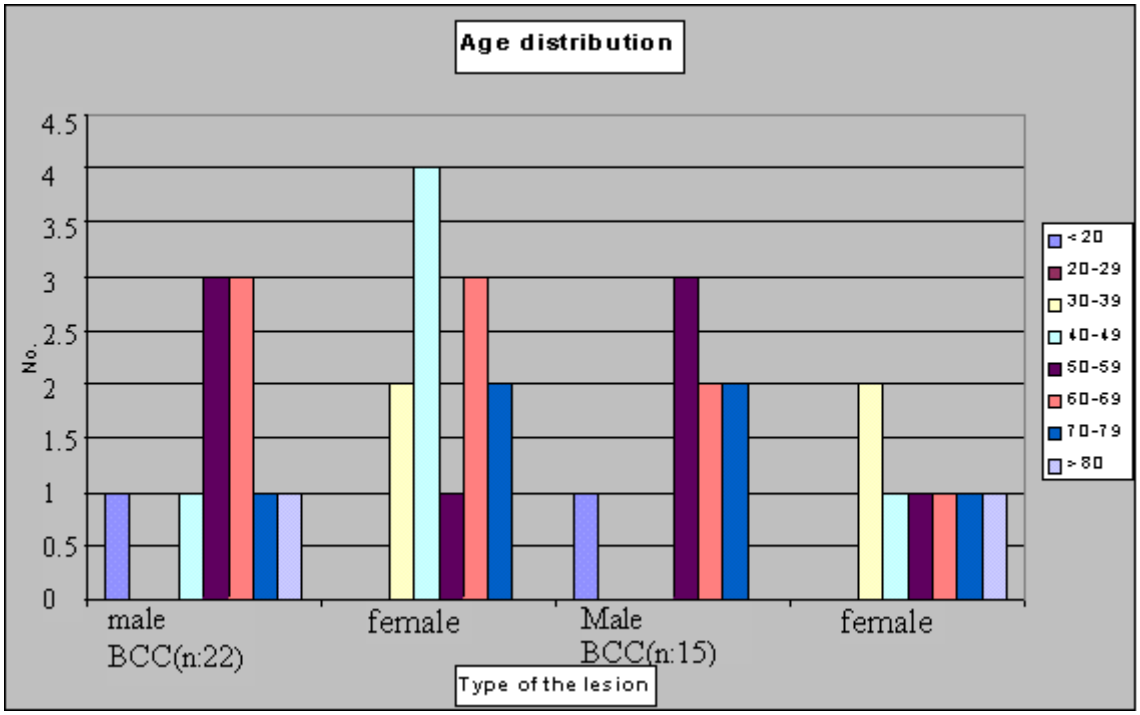

Fig. (1): Age distribution of patients in relation to sex and tumor type

Basal cell carcinoma had a long duration ranging from 1-15 year with a mean of (5.7±4.6), while SCC duration ranged from 1m-7 years with a mean of (1.5 ± 2.0). Two patients; one BCC and one with SCC had tumor recurrence at the same site of the original one.

Of the studied group, 33 patients (89.2%) had dark complexion and only 4 (10.8%) had light complexion. Both BCC and SCC were significantly more in patients with dark complexion and skin type IV-V, table (3).

Complexion	Fair		Dark		Total		Z	P
Studied groups	No.	%	No.	%	No.	%		
BCC	1	4.5	21	95.5	22	100	6	<0.05
SCC	3	20	12	80	15	100	3.3	<0.05
Total	4	10.8	33	89.2	37	100	6.7	<0.05

Table(3): skin color in relation to the type of tumor:

Nine SCC patients (60%) had precancerous lesions including solar keratoses (2), Bowen's disease (2), leukoplakia (2), and long standing ulcer (3).Eleven patients (73.3%) had smoking habits, and 7 had insignificant association with chronic renal failure, viral hepatitis, diabetes mellitus, hypertension and osteoarthritis .The overall number of patients chronically exposed to UVR was 25 (67.5%) through field work and different outdoor occupational activities. Family

history was irrelevant for both BCC and SCC.

Head and neck were significantly the site of predilection for both BCC and SCC (31 patients , 83.8%), table (4).

Site / Tumor	Head & Neck (n:31)								Other sites (n:6)			z	p
	Scalp	Forehead	Eye lid	Nose	Cheeks	Ears	Lips	Neck	Trunk	Extremities	Genitalia (vulva)		
BCC (n:22)	0	2(9%)	5(22.7%)	5(22.7%)	6(27.3%)	3(13.6%)	0	1(4.5%)	0	0	0	6.6	<0.05
SCC (n:15)	0	1(6.7%)	0	1(6.7%)	2(13.3%)	2(13.3%)	3(20%)	0	1(6.7%)	2(13.3%)	3(20%)	2.6	<0.05
Total (n:37)	0	3(8.1%)	5(13.5%)	6(16.2%)	8(21.6%)	5(13.5%)	3(8.1%)	1(2.7%)	1(2.7%)	2(5.4%)	3(8.1%)	6.7	<0.05

Table(4): site of predilection in respect to the type of NMSC

The tumor size for BCC ranged from 0.5-1 cm in 20 lesions, 2 cm in 3 lesions and 5 cm in one tumor. SCC diameter size ranged from 0.5-3 cm.

Table (5) shows the histopathological variants of BCC in regards to sex. The noduloulcerative pattern constituted the majority of BCC (15 patients, 68.3%), and was found more among females (9 patients, 41%). Females had statistically significant direct correlation with the solid histopathological variant of BCC (r0.3, P<0.05).

Histopathological subtypes	Male	Female	Total	%
Noduloulcerative (15)			15	68.3
- Solid(9)	1	8	9	41.0
- solid pigmented(6)	5	1	6	27.3
Keratotic (2)	0	2	2	9.1
Superficial(1)	1	0	1	4.5
BCC with adenoid differentiation (2)	1	1	2	9.1
BCC with sebaceous differentiation (1)	1	0	1	4.5
Basosquamous(1)	1	0	1	4.5
Total (22)	10	12	22	100%

Table(5):Histopathological subtypes of BCC in regards to sex:

Nine patients with SCC presented with ulcerating nodule on the head, 2 with deep malignant ulcers on the lower limb, 3 on the genitalia and one as superficial plaque on the chest. Of the 15 patients with SCC, 7(46.6%) had well differentiated tumors and an equal number of 4 (26.6%) for both moderately and poorly differentiated tumors, table (6). One patient with ulcerating nodule on the vulva had regional inguinal lymph node metastases.

Cellular differentiation	Grade	No.	%
Well differentiated	I	7	46.6
Moderately differentiated	II	4	26.7
poorly differentiated	III	4	26.7
undifferentiated	IV	0	0.0
Total		15	100%

Table (6):Degree of cellular differentiation and grading of SCC:

Discussion

Though the public health burden of NMSC particularly BCC is considerable, yet the profile afforded to this cutaneous malignancy is inadequate[6]. The incidence of NMSC varies greatly from one country to another depending on the carcinogenic hazards of the environment and susceptibility of the population. Incidence rates around the globe follow a pattern that reflects sunlight exposure: Hawaii > Australia > New Zealand > Minnesota > Iceland[7]. In USA, a population - based study from Michigan quotes a figure of BCC about 750.000 and of SCC about 200.000 new cases each year[8]. Australia, with high solar exposure and a predominantly white skinned population, is the second country with high rate of NMSC. One out of two Australians is expected to develop skin cancer at some stage during his life[9]. In 1995 the recorded increased incidence of NMSC was about 19% for BCC and 93% for SCC in comparison to the year 1985. In UK an annual incidence of around 100 cases of NMSC per 100.000 populations was recorded[10]. The incidence figure of NMSC in the Arab countries are few. In Qatar the incidence rate recorded was 9.9 per 100.000 residents of working manpower based on a study period from (1990-1994)[11]. In Egypt, shin cancer contributed about 4% of all cancers recorded in the National Cancer Institute during the period 1990-1997. The incidence ratio between BCC, SCC and malignant melanoma was 30:4:1[12].

In this study, the prevalence rate of NMSC in Benha University Hospital was 0.19%. In respect that the hospital is considered the main center for referred cases from different health units in Qalyubiyah Governorate, the prevalence might seem quite low. However, one should put in consideration that some patients might have thought medical treatment in other hospital departments or in health clinic in the far off location. Since previous records are few for comparison, this reflects the need for a cooperative work of multicenter studies all over Egypt.

Ultraviolet light exposure is found to be the major risk factor playing a critical role in NMSC development[13]. In the present study, most of NMSC were found on sun exposed areas, basically on the head and neck and mostly in workers in welding factories and in farmers. Both constituted a large bulk of working manpower in Benha district. BCC may occur at any age, although more than three quarter of cases are over 40 years[14], while SCC occur at an older age with a mean of 66 years[15]. In the present study, 84.5% of NMSC patients were above the age of 40 years, only two brothers with xeroderma pigmentosa were at the second decade, one had BCC and the other one had SCC. This is in further support of the role of UVR exposure, as the older is the person the greater is the life time exposure.

Occupational risk of NMSC was described mainly in people working outdoors such as farmers, sailors and people working with welding, asphalt, tar and oily products, inorganic arsenic and ionizing radiation. In Benha, beside the risk of sun exposure, farmers had also the risk of exposure to the inorganic arsenical compounds in insecticides and pesticides. Also it was observed that 89.2% of patients were of dark complexion which indicates that even persons with relatively pigmented skin are still at risk of developing NMSC. This was also previously noted is a previous study in the Arabian Gulf where 66.7% of patients were with relatively pigmented skin[11]. It is believed to be related to the intense sun light

that prevails all the year round, along with other factors. Also the location of NMSC to the head and neck might be related to the traditional conservative farmer clothing in the Arab community of long wear of galabia with long sleeves and serwal for both sexes that might help as a sun protective factor for other body sites. A slight predominance of NMSC in males over females were found in USA and Australia and were postulated to be a reflection of a greater percentage of outdoor male occupations and leisure activities[4]. In the present study, NMSC occured more or less the same in both sexes. This may be related to the changing pattern of life style for women in Benha district with more women working outdoor especially in farming. However, females usually seek medical advice earlier, had it been the same for males, their number might have surpassed that of females.

The most common type of BCC is the noduloulcerative, less common is the superficial and the least is the morphea like[17]. In the present study, ulcerative BCC of the solid and solid-pigmented were the predominant pattern. These types have an indolent behavior and usually do not require aggressive therapy[18].

The tumor size is the most important factor affecting BCC morbidity and mortality[19]. In the present work, most of BCC had a small size and a long duration which imply the slow growth nature of the tumor and is an indication of its good prognosis.

The well differentiated grade I pattern of SCC formed the majority of SCC recorded cases. More than half of the patients had a precancerous skin lesion on examination. The tumor varied in appearance from a malignant ulcer, ulcerated fungating growth to a superficial plaque.

A strong relation of BCC positive family history of skin cancer was suggested as a genetic predisposition to NMSC[20]. But, in spite of family consanguinity that in prevalent is Egyptian districts, familial tendency and genetic predisposition did not seen contributing to the disease.

NMSC, had it been early detected, might have helped in decreasing the incidence and morbidity of patients. This study sheds light on the importance of NMSC as a health problem in our community and the importance of population awareness of risk of developing specially among farmers and outdoor workers. Also, it shows that the cooperative work of multicenter studies all over Egypt is of utmost importance.

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