Original Article

BASAL CELL CARCINOMA: A retrospective analysis of 76 patients

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ABSTRACT

Objective: To define the clinical features of cases of basal cell carcinoma in patients treated surgically in a specific period of time at King Hussein Medical Center (KHMC), Jordan.

Methods: A retrospective analysis of 76 patients who were diagnosed to have basal cell carcinoma and treated surgically over a five year's period. The following data were analyzed: age, sex and occupation for all patients. The characteristics of the tumor including clinical type, site and size, status of surgical margin and recurrence of each BCC tumor were studied.

Results: The male to female ratio was 1.5 to 1, the age of patients ranged between 23 and 90 years, 40.8 % were in the age group of 60-69 years. There were 76 tumors in the 76 patients; the majority of patients had skin type III and IV. The most common site of occurrence of tumor was the nose (46.0%). The most common clinical type was the nodulo-ulcerative (42.1%). Examination of the surgical margins revealed that eleven (14.5%) of the removed lesions were incompletely excised. Over a five-year follow up time 17 patients (22.4%) developed recurrence of BCC at the site of the excision. The status of surgical margin of the tumor was reported as incompletely excised in nine of these patients (52.9%, n=17).

Conclusion: The clinical features of basal cell carcinoma in our patients are similar to those in literature in many aspects. However other aspects such as gender distribution, skin type, and age are more similar to reports from Mediterranean region.

KEY WORDS: Basal Cell Carcinoma, Clinical features, Recurrence.

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INTRODUCTION

Basal cell carcinoma is the most common invasive malignant cutaneous neoplasm found in human.[1] Depletion of the ozone layer which filter out ultraviolet light rays, is important in cutaneous carcinogensis; increased outdoor recreational activities are probable causes responsible for the increased incidence of BCC. Phototherapy and tanning beds are other ways for ultraviolet light exposure and predispose to BCC. Immunosuppressant settings such as AIDS and organ transplantation and exposure to ionizing radiation and chemicals are additional risk factors for developing BCC. Patients with certain genetic syndromes such as xeroderma pigmentosa, nevoid basal cell carcinoma syndrome and Bazex syndrome are also at risk to develop BCC.

BCC arises from basal keratinocyte of the epidermis, and adnexal structures (hair follicle, eccrine, and sweat gland). BCC grows by direct extension and appears to require the surrounding stroma to support its growth and

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this may explain why metastasis is rare through blood vessel or lymphatics.

The tumor may occur at any age, but incidence of BCC increases markedly after age of 40, and the incidence in younger people are increasing possibly as a result of increased sun exposure. The majority of BCCs appear on the head and neck region.[1] 25-30% occurs on the nose alone, the most common site. BCC is rarely found on the back of hands although it receives a significant amount of solar radiation. It is obvious that regional factors, perhaps related to the density and type of pilosebaceous follicles are important in determining the distribution of tumor.[1] The course of BCC is unpredictable it can remain small for years with little or no tendency to grow, or may grow rapidly. This study was conducted to define the clinical features of BCC cases treated surgically over a period of time at King Hussein Medical Center (KHMC), Jordan.

METHODS

This was a retrospective study of patients who were diagnosed to have BCC and were treated by surgical excision at KHMC between January 1996 to December 2000.

Patient included in this study fulfilled the following criteria: A clinical diagnosis of BCC based on history and description of the lesion. Standard histological examination confirming the diagnosis of BCC. A standard surgical excision aiming for complete excision, depending on clinical judgment and safety margin(usually 2-4 mm according to the anatomical site limitations) Histological evaluation for the status of margin (if tumor is completely or incompletely excised). And a minimum five years follow up period.

The following data were obtained for each patient: Age, sex, skin type and occupation especially patients involved in outdoor work associated with chronic prolonged sun exposure .The number of BCCs, the site and size for each lesion. The clinical type of the tumor. Pathological evaluation of the tumor surgical margins. And the incidence of recurrence over a period of 5 years follows up.

RESULTS

A total number of 76 patients were included in this study. Forty six patients were males and thirty were females with a 1.5:1 male to female ratio. The age of patients ranged between 23 and 90 years, with 40.8% were in the age groups of 60 to 69 years. Distribution of patients among different age groups is summarized in Table-I. There were 76 tumors in the 76 patients; each patient had only one tumor. The majority (75.0%) of patients are skin type III and IV, Table-II. History of outdoor jobs with prolonged sun exposure has been detected in forty five (59.2%) patients.

The most common site of occurrence of tumor was the nose (46.0%). The most common clinical type was the noduloulcerative (42.1%). Details of the clinical features are presented in Table-III. Over a five-year follow up time, 17 patients (22.4%) developed recurrence of BCC at the site of the excision. The histopathological examination of surgical margin of the tumor was reported as incompletely excised in eleven (14.5%) patients, non-immediate re-excision of these tumors over a period of 3 months was planned. Recurrences in relation to anatomical sites, clinical types and size of the lesions are detailed further in Table-III.

DISCUSSION

The sex distribution of our patients, 1.5:1 male to female ratio is consistent with data in current literature.[2-6] Men have greater risk to develop BCC ,since they are involved more in outdoor activities and jobs with chronic prolonged exposure to sunlight. In addition

Table-I: Distribution of patients according to their age

Age (year)	*No. of patients (%)*
20-29	1 (1.3)
30-39	3 (3.9)
40-49	2 (2.6)
50-59	18 (23.7)
60-69	31 (40.8)
70-79	15 (19.7)
80-90	6 (7.9)

Table-II: Distribution of patients according to their skin type

Skin type	*No. of patients (%)*
Type 1	3 (3.9%)
Type 2	9 (11.8%)
Type 3	19 (25.0%)
Type 4	38 (50.0%)
Type 5	7 (9.2%)

female patients tend to wear clothes that cover the head, face and most parts of the body; according to religious and traditional believes.

However there are reports of higher incidence of BCC in women. For example In Chinese patients, the male-to-female ratio was 1:1.1,[2] 0.902 in Korean and in Turkey,[7-10] 52% in Brazil and 0.97 in Japanese.[3] BCC is also reported to be common in females in North American black patients.[8] In studies from Australia, the basal cell carcinoma was distributed in a similar fashion among the sexes.[9,10] The majority of basal cell carcinomas (95%) occur in the age range between 40 and 79 with an average of 62 years.[11] Basal cell carcinoma is uncommon below the age of 40 years and is rare in children and adolescents.[11,12] Occurrence of BCC in young age groups has been reported in tropical regions and in patients with a positive family history of BCC.[12] In our study the majority (84.2%) of patients were found to be in the age group between 50 and 79 years, the average age was 62.1 year, and the highest incidence was in the age group of 60 to 69. These findings are consistent with the data in current literature.[1-15] Old age is a well-known factor for BCC.[16,17] Elderly individuals have a less efficient immune system and have a diminished DNA repair capacity which increases the risk of developing melanoma skin caners including BCC.[17] However the average age of our patients(62.1 year) is higher than the average age reported from some Asian countries: 59 years in Japanese patients.[3] 58.8 years in Chinese patients,[2] and 58.2 years in Korea patients.[7] In a study from Turkey; the authors report an average similar to our patients.[14] They explain their findings on the basis of comparing the average life expectancy between Turkey (59.8 years) and Japan (73.0 years)and they feel that Turkey population is more resistant to BCC despite the high levels of sun exposure in the Middle East. Our findings may add further support to their hypothesis especially in view of the similarity of geographic location with Turkey and possibly a similar genetic background with their population, life expectancy in healthy people in Jordan is 71.5 years (2004 Jordan statistics) and this may explain why only six patients were found to be above the age of 80 years.

Skin photo type is important factor in relation to the development of BCC, as it determines the individual susceptibility to skin

Table-III: Clinical Features of BCC and their recurrences

Clinical feature	*No. of Patients (%, n=76)*	*No. of recurrences (%, n=17)*
Anatomical site		
Tip of nose	6 (7.9%)	2 (11.8%)
Alae of nose	4 (5.3%)	1 (5.9%)
Dorsum of nose	7 (9.2%)	1 (5.9%)
Lateral sides of nose	15 (19.7%)	5 (29.4%)
Base of nose	3 (3.9%)	1 (5.9%)
Canthal areas	10 (13.2%)	2 (11.8%)
Cheeks	14 (18.4%)	3 (17.6%)
Forehead	5 (6.6%)	0 (0.0%)
Eyelids	4 (5.3%)	0 (0.0%)
Ears	2 (3.9%)	1 (5.9%)
Lips	6 (7.9%)	1 (5.9%)
Clinical type		
Nodulo-ulcerative	32 (42.1%)	9 (52.9%)
Pigmented	6 (7.9%)	0 (0.0%)
Morphea-like (fibrosing)	18 (23.7%)	6 (35.3%)
Superficial spreading	14 (18.4%)	1 (5.9%)
Fibroepithelioma	6 (7.9%)	1 (5.9%)
Size of tumor (cm) (the largest diameter)		
0.0-0.9	9 (11.8%)	0 (0.0%)
1.0-1.9	24 (31.6%)	4 (23.5%)
2.0-2.9	29 (38.2%)	6 (35.3%)
3.0-3.9	8 (10.5%)	4 (23.5%)
4.0-4.9	4 (5.3%)	3 (17.6%)
≥5.0	2 (2.6%)	0 (0.0%)

cancer. The incidence of non-melanoma skin cancer is related to amount of melanin in the skin and to the capacity of skin to tan when exposed to ultraviolet radiation.[15] In order to study this relationship patient were classified according to their skin photo type employing the Fitzpatrick classification.[18] Interestingly we found that 75.0% of our patients were type III and IV which is in contrast to data found in the literature, which show a greater incidence in the white race.[6,11-19] For example Bariani RL, et al in a similar study of 202 patients with 253 BCC reported photo type I patients in 99 cases and type II in 94 cases; these two group correspond to 95.5% of the cases. Nine patients (4.5%) were phototype III and IV.[15] Inspite of the fact that, the presence of more melanin in darker skin types protect from the carcinogenic effect of solar radiation, we think that the frequency of BCC according to skin type is correspondent to the pattern of skin types in the general population of the patients' sample. Exposed parts of the body are the most common sites of BCC occurrence,[11] between 73.2% and 85% of BCC found in the head and neck regions, particularly on the nose[2-7,20-22] forehead, the periocular areas, cheeks and ears are also often involved.[23] The vast majority of lesions in our patients were located in the face and the most common locations were the nose and cheek.

The results from Asian countries are also similar to our results[7] and in accordance with the literature.[23] We have not encountered any BCC on the dorsum of hands despite the fact that this area is constantly exposed to sunlight. We have also not encountered any BCC neither on the scalp nor on the trunk. Scalp involvement has been reported in 7.9% of patients,[14] most men (especially the elderly) in our country used to wear a traditional head cover particularly when they are outdoors, which provide a good protection to their scalps against sunlight. Absence of risk factors for BCC development other than solar radiation in our patients; may also explain why most tumors had occurred in the face and non over the trunk.

The most common clinical presentation of BCC among patients included in this study was the nodulo-ulcerative type which was also the most common variant of BCC reported in other studies.[7-24] The other clinical variants order of frequency were: the morphea-like (fibrosing), the superficial spreading and the pigmented type. The frequency of occurrence of these variants was invariably consistent with previous similar reports.[14,15] As regards the tumor size 38.2% of patients had tumors with size 2.0 to 2.9cm as measured by the largest diameter of the lesion and in 69.8% of patients the tumor size ranged between 1.0 and 2.9cm. The size of the tumor has been reported in the range of 6 to 15mm in 58.9% and only 10.7% were larger than 15mm.[15] The cause of larger BCC size in our patients is a result of multiple factors. Firstly, most of patients were elderly patients who tend to neglect such skin lesions. Secondly, the slow growth of BCC; taking one year and longer to duplicate its size, with few symptoms that might not alert the patient to its malignant nature resulting in delay of presentation of the patient with larger tumor size. In addition some patients do not have an easy access to medical consultation. We found a recurrence rate of 22.4% which is high when compared to 5% recurrence rate mentioned in other series.[15] This is mostly a result of surgical excision without standard policy of safety margin, with significant number of patients with tumor size of 2cm or more at the time of diagnosis.

In conclusion the clinical feature of BCC among our patients was similar to those published in the literature including: male/female ratio, age distribution, most common site of occurrence and the clinical presentation. However there were aspects of differences: most of tumors occurred in patient with skin type III and IV, larger tumor size at presentation and higher incidence of incomplete excision and recurrence rate.

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