

Non-Melanoma Skin Carcinoma Versus Skin Carcinoma Complicating Xeroderma Pigmentosa

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ABSTRACT

This retrospective study included 186 patients with non-melanoma skin cancers, who were managed in Plastic Surgery Department, Assiut University Hospital, Egypt, 161 patients of them were on top of normal skin and 25 were on top of xeroderma pigmentosum (XP). The purpose of this study was to make a statistical comparative study between epidemiological data of conventional skin carcinoma and that of skin carcinoma complicating xeroderma pigmentosum. As a statistical comparative study between the two groups, the following findings were noticed, Basal cell carcinoma (BBC) was highly significant more common than Squamous cell carcinoma (SCC) on top of normal skin but in xeroderma pigmentosum patients no significant difference can be detected between these two types of lesions. A skin cancer in xeroderma pigmentosum mainly occurred in teenagers about 50yrs less than that among patients with skin cancer on top of normal skin. In ordinary skin cancer, male patients were highly significant more commonly affected than females but in xeroderma pigmentosum patients no significant difference could be noticed between males and females. Multiplicity of skin cancers on top of xeroderma pigmentosum was a highly significant character in comparison with skin cancers on top of normal skin, and the presentation with solitary skin cancer on top of normal skin was a highly significant character for this group of patients. In Non-melanoma skin cancers (NMSC) on top of normal skin the commonest site for BCC was the nose and the commonest site for SCC was the lower lip. But in XP patients the commonest site for both BCC and SCC was the butterfly area (nose and cheeks).

INTRODUCTION

Skin malignancies (basal cell carcinoma, squamous cell carcinoma and melanoma) are the most common cancers in white populations. The incidence of skin cancers is increasing. This trend has been observed in all geographical regions covered by cancer registration, and is not restricted to any particular age group or sex [1]. Basal cell carcinoma (BCC) is currently the most common cutaneous cancer in humans [2]. It generally shows a relatively benign course, growing slowly and expanding only locally. Surgical excision, if complete, is almost always curative [3]. Cutaneous squamous cell carcinoma (SCC) is the second most common skin cancer in whites. Despite the fact that these tumors are largely preventable, the incidence of SCC is rising every year, and shows no signs of abating. Invasive SCC may arise from a precursor lesion such as actinic keratosis, or from SCC in situ, and may exhibit a wide spectrum of clinical features [4].

Xeroderma pigmentosum (XP) is a condition inherited as an autosomal recessive trait. XP patients are characterized by their predisposition to skin cancers on sun-exposed body sites, as early as 3-5yrs of age, comprising mainly the non-melanoma skin cancers (NMSC), the basal and squamous cell carcinomas [5]. This is in striking contrast with the general population where the mean age for NMSC is 50-60yrs. NMSCs are derived from keratinocytes of the basal layer of the epidermis and BCCs are found to be slow growing and rarely metastasize whereas SCCs are fast growing, invasive tumors with the capacity to metastasize [6]. The frequency of NMSC is 50% in young XP (under 10yrs) and the SCCs in XP patients have a higher probability to metastasize (4%) compared to under 2% in the normal population [7].

The purpose of this work is to make a statistical comparative study between conventional skin carcinoma and skin carcinoma complicating xeroderma pigmentosum.

PATIENTS AND METHODS

This retrospective study was done on 186 patients who underwent surgery for non melanoma skin cancers on top of normal skin and on top of xeroderma pigmentosum in the period from January 2001 to December 2011. All the cases were seen, evaluated and treated in Plastic Surgery Department.

ment, Faculty of Medicine Assiut University, Egypt. Medical records, histopathological reports, and clinical photographs were retrieved for data analysis.

The patient were classified into two groups:

Group 1: Patients presented with non melanoma skin cancers on top of normal skin. These were 161 in number. Their ages varied between 22 and 90yrs, with average age 53.2yrs.

Group 2: Patients presented with non melanoma skin cancers as a complication of xeroderma pigmentosum. These were 25 in number. Their ages varied between 3 and 40yrs, with average age 13.2yrs.

Each group was statistically analyzed based on: Age, sex, site, size, multiplicity of the lesions, and clinical and pathological diagnosis.

A comparative study was done between these two groups based on the same criteria (age, sex, site, size multiplicity of the lesions and diagnosis). The difference findings between these two groups of patients were analyzed statistically using Pearson χ^2 Tests.

RESULTS

Patients of group (1): 161 patients had a histopathological diagnosis of NMSC, 98 BCC (60.9%) and 63 SCC (39.1%). The BCC to SCC ratio was 1.55: 1.

105 patients (65.2%) were males, 60 of them showed BCC and 45 SCC, and 56 patients (34.8%) were females, 39 of them showed BCC and 17 SCC. The male to female ratio among patients with NMSC, was 1.8: 1, while patients with BCC, the male to female ratio was 1.5: 1 and for patients with SCC, the male to female ratio was 2.6: 1.

As regards multiplicity of the lesions, fifteen patients out of the 98 patients with BCC (15.3%) and three out of the 63 patients with SCC (4.7%), were found to have more than one lesion at the first presentation, (Fig. 1). 88.8% of NMSC showed solitary lesion and 11.2% showed multiplicity of the lesions.

According to size in BCC, 24 cases were <2cm, 55 cases were 2-4cm and 19 cases were >4cm, while in SCC, 9 cases were <2cm, 24 cases were 2-4cm and 30 cases were >4cm.

For patients with BCC, the overall mean age was 57.9yrs (male, 59.6yrs; female, 55.7yrs). 83.7% of patients were older than 50yrs.

For patients with SCC, the overall mean age was 53.9yrs (male, 56.4yrs; female, 46.4yrs). 65% of patients were older than 50yrs (Fig. 2).

According to site: The majority of BCC lesions occurred in the head and neck region (97.9%). The nose was the most frequent site of BCC, in both male and female patients. Within the head and neck region, approximately half of the lesions were situated on either the cheek or the nose. On the other hand, the sites of predilection for SCC lesions were the head and neck region (60.7%), lower limbs (24.6%), upper limbs (9.8%), and the trunk (5%). The lower lip was the most frequent site of SCC, in both male and female patients (37 %) (Fig. 3).

Patients of group (2): 25 patients had a histopathological diagnosis of NMSC complicating xeroderma pigmentosum (XP) (13 BCC and 12 SCC). The basal cell carcinoma was 52% and the squamous cell carcinoma was 48%. The ratio of BCC to SCC was 1.08: 1.

14 patients (56%) were males, 7 of them showed BCC and 7 SCC, and 11 patients (44%) were females, 6 of them showed BCC and 5 SCC. The male to female ratio was 1.3: 1, while, patients with BCC on top of XP, the male to female ratio was 1.2: 1, and Patients with SCC on top of XP, the male to female ratio was 1.4: 1.

Only three patients presented with solitary lesion (12%), and the remaining 22 patients showed multiplicity of lesions (88%). Most of the patients of XP were affected by multiple lesions either synchronously or metachronously (Fig. 4).

For patients with BCC on top of XP, the overall mean age was 13.6yrs (male, 8.9yrs; female, 17.7yrs). For patients with SCC on top of XP, the overall mean age was 12.8yrs (male, 14.1yrs; female, 10.8yrs) (Fig. 5).

According to site: The majority of BCC lesions occurred in the head and neck region (96.4%), followed by the upper limbs (3.8%). Within the head and neck region, approximately half of the lesions were situated on either the cheek or the nose. The commonest site for SCC lesions was the head and neck region (85.7%), followed by upper limb (13.3%).

As a comparison between group 1 & group 2:

According to type of the lesions: BCC was 60.9% in group (1) and 52% in group (2) but SCC was 39.1% in group (1) and 48% in group (2) (Fig. 6).

According to age: The commonest age group in patients of group (1) was >60yrs old but in patients of group (2) were 10-19yrs old which represent 64% of cases. For patients with BCC, the overall mean age was 57.9yrs in patients of group (1) and 13.6yrs in patients of group (2), also patients with SCC, the overall mean age was 53.9yrs in patients of group (1) and 12.8yrs in patients of group (2) (Table 1).

According to sex: Male is common in patients of both groups which re-present 65.2% of patients of group (1) and represent 56% of patients of group (2). The male to female ratio was 1.8: 1 in group (1), and 1.3: 1, in group (2).

According to site of the lesion: The commonest site of BCC in both groups was head and neck with approximately half of the lesions were situated on either the cheek or the nose. Site distribution in both groups showed small variations between the two groups. The commonest site of SCC in group (1) was lower lip followed by lower limb but in group (2) the commonest site was butter fly area (nose and cheek) followed by lips (Figs. 7,8).

According to number of the lesions: Solitary lesions were more common in patients of group 1 but patients of group 2 characterized by multiplicity of the lesions (Fig. 9).



Fig. (3A): Male patient with SCC of lower lip.



Fig. (3B): Male patient with BCC of the nose.



Fig. (4): Female patient with multiple BCCs on top of xeroderma pigmentosum, preoperative and postoperative after excision of the lesions and skin graft, of mid-third of the face.



Fig. (1): Male patient with multiple BCCs of the nose and temple.

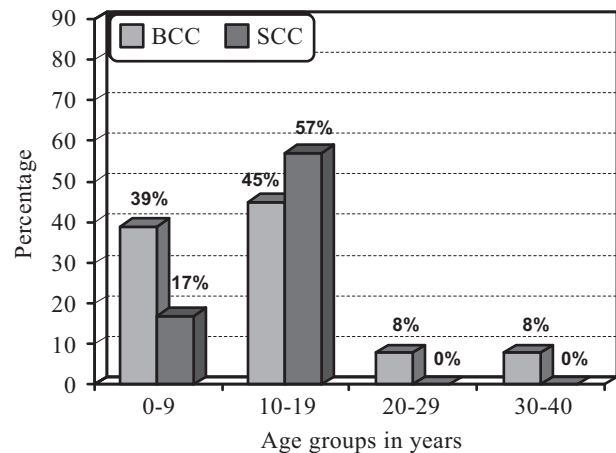


Fig. (5): Distribution of NMSC on top of XP according to the age.

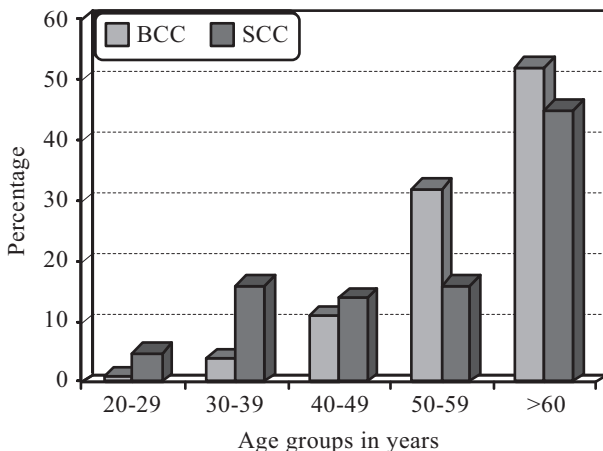


Fig. (2): Distribution of NMSC according to the age.

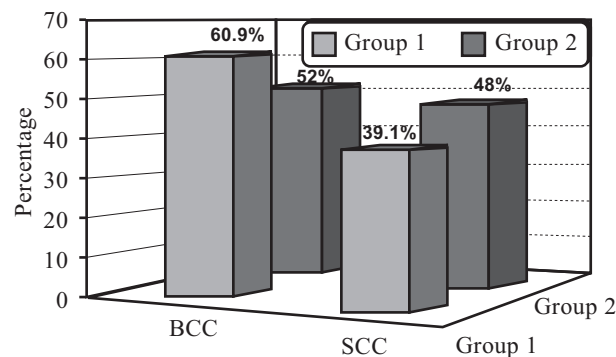


Fig. (6): Distribution of BCC and SCC in group 1 and group 2.

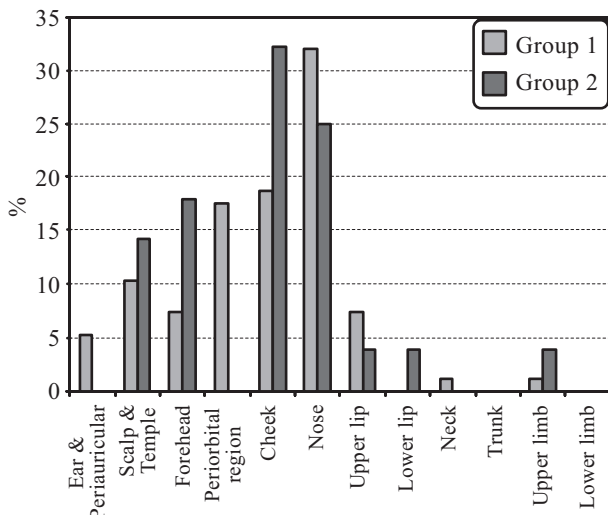


Fig. (7): Comparison between site distribution of BCC in both groups.

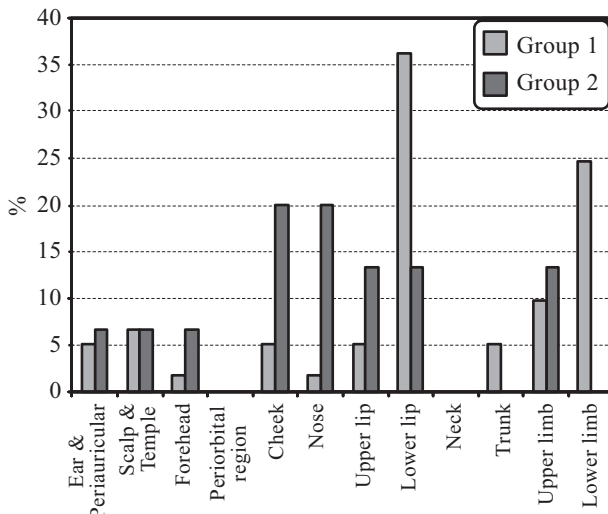


Fig. (8): Comparison between site distribution of SCC in both groups.

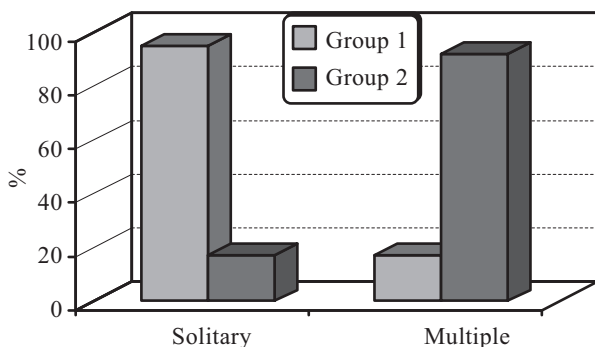


Fig. (9): Multiplicity of the lesion in group 1 and group 2.

Table (1): Age distribution in group 1 and group 2.

	Group 1	Group 2	t-test	p
Avg. age in BCC	57.9	13.6	-15.40	0.001**
Avg. age in SCC	53.9	12.8	-23.00	0.001**

DISCUSSION

Skin malignancies (basal cell carcinoma, squamous cell carcinoma) are the most common cancers in the world. It is usually occurring at old age groups except in certain precancerous conditions such as xeroderma pigmentosum (XP) which characterized by developing of skin cancers at teenagers [1].

Basal cell carcinoma (BCC) is currently the most common cutaneous cancer in humans [2]. The incidence of BCC increases with age and exposure to ultraviolet rays Cutaneous squamous cell carcinoma (SCC) is the second most common skin cancer in whites. Despite the fact that these tumors are largely preventable, the incidence of SCC is rising every year [4].

A retrospective statistical comparative study between non-melanoma skin carcinomas and skin carcinomas complicating xeroderma pigmentosum based on (age, sex, site, size, multiplicity of the lesions and diagnosis was done in Plastic Surgery Department, Assiut Faculty of Medicine in the period from January 2001 to December 2011.

In non-melanoma skin carcinomas, it was found that, the ratio of basal cell carcinoma (BCC) to squamous cell carcinoma (SCC) was 1.5: 1 which is in contrast with the finding of Silverberg and Boring [8] where the ratio was 4: 1 this difference in finding can be explained by that our hospital is a tertiary referral center in upper Egypt for severe cases.

The ratio of males with non-melanoma skin cancers to females was 1.8: 1 and this finding was consistent with most international studies [9,10,12]. This could be partly explained by the lesser degree of exposure of females to prolonged sunlight and the Egyptian females dressing style which protects their body from sun exposure.

It was found that multiplicity of the lesions on top of normal skin was 15% for BCC and 4% for SCC. This was consistent with the finding of Silverberg and Boring [8], they noticed that multiplicity of lesions was less common than single lesion presentation in both BCC and SCC on top of normal skin which represents only 12% for BCC and 5% for SCC.

As regard the size of the lesions, it was classified into three groups (smaller than 2cm, 2-4cm and larger than 4cm) in BCC most of lesions were 2-4cm but in SCC most of lesions were larger than 4cm. These finding to some extent similar to the

finding of [11,22]. This could be partly explained by rapid growth of SCC and slow growth of BCC and most of SCC patients were referred in advanced stages.

The mean age of BCC and SCC on top of normal skin in the present study was 57.9yrs for BCC and 53.9yrs for SCC which more or less similar to other international studies [10,12-14,21] which noticed that non melanoma skin cancers mean age was 68.9yrs for BCC and 74.4yrs for SCC.

The site distribution of BCC on top of normal skin in patients of this study showed that 98% of lesions were in the head and neck region. The nose (32%) was the commonest site followed by cheek (19%) then peri-orbital region (18%). Study who found that nose was (26%), cheek was (16%) and peri-orbital region was (14%). But, it was in contrast with finding noticed in patients of Hawaii [16] and Southeast Australia [24] which showed a shift in the site distribution of BCC from the head and neck region to the trunk and limbs.

For SCC on top of normal skin, the lower lip was the predominant site of involvement in patients of this study (36%); followed by the extremities (34%) this pattern was similar to that noted in the Swiss study [18] and Southeast Australians [24]. The proportion of trunk and limb involvement was greater than that seen with BCC (1%), which could be explained by the high incidence of burn and long standing post burn scars of limbs and trunk in Egypt which developed Marjolin's ulcers.

In this retrospective study on xeroderma pigmentosum patients complicated with BCC and SCC, it was found that, the histopathology in 13 of them was BCC and in 12 was SCC, this non significant difference which was consistent with the finding of Saadia Nasheen et al. [20] and the finding of Kharti et al. [23] in their study on 24 patients of Libyan XP patients.

In xeroderma pigmentosum patients the number of male and female patients who developed skin cancers were nearly equal, (male to female ratio was 1.2: 1) this finding was consistent with the finding of [19,20].

The multiplicity of skin cancers on top of XP, (88%), was a characteristic feature for XP, which consistent with the finding of most international studies [19,20,23].

The mean age of non-melanoma skin cancers complicating XP in the present study was 12yrs, about 50yrs less than that among patients with skin

cancer on top of normal skin, this young age was mildly higher than the finding of Kharti et al. [23], (10yrs), Kramer et al. [20], (8yrs) and Saadia Nasheen et al. [19] (8yrs).

The site distribution of NMSCs as a complication of XP was mainly at butterfly area (nose and cheek) which represents, about 50% of lesions, the head and neck was 93% of lesions. These finding consistent with Saadia et al. [19] who noticed that face represents about 80% of lesions and Kramer et al. [20] they found that head and neck represent 97% of lesions.

As regard the statistical comparison between non-melanoma skin carcinomas and skin carcinomas complicating xeroderma pigmentosum, the following finding were clearly noticed:

- For non-melanoma skin carcinomas, BCC were more common than SCC with highly significant difference could be detected ($p<0.006$) but on top of XP no significant difference could be detected between BCC and SCC ($p<0.8$).
- In this study the average age of BCC on top of normal skin was 57.9yrs versus 13.6yrs on top of XP, it was highly significant difference ($p<0.001$) and it was 53.9yrs for SCC on top of normal skin versus 12.8yrs for SCC on top of XP, it was also high significant difference ($p<0.001$).
- For non-melanoma skin cancers, male patients were more commonly affected than females with high significant difference ($p<0.001$) but in NM-SCs on top of xeroderma pigmentosum male to female ratio showed no significant difference ($p<0.3$).
- Multiplicity of lesions noticed as a characteristic feature for XP patients which represents 89% of patients but it was 11% in non-melanoma skin carcinomas with highly significant difference between the two type of patients ($p<0.001$).
- For site distribution of BCC in non-melanoma skin carcinomas versus skin carcinomas complicating xeroderma pigmentosum, it was found that the nose was the commonest site involved in non-melanoma skin carcinoma and second commonest site in XP patients, but this was non significant difference ($p<0.6$), but showed significant difference in the cheek ($p<0.05$) which was the commonest site in XP and second commonest site in non-melanoma skin carcinomas. Also significant difference could be noticed in upper limb ($p<0.05$) which was more common in non-melanoma skin carcinomas.

- There was a highly significant difference in studying the site distribution of SCC in non-melanoma skin carcinomas versus skin carcinoma complicating xeroderma pigmentosum. It was noticed that the commonest site in non-melanoma skin carcinomas was lower lip followed by lower limb ($p < 0.001$) ($p < 0.001$), respectively. Also we noticed that the commonest site of SCC in XP patients was nose and cheek which showed highly significant difference than the finding in non-melanoma skin carcinomas ($p < 0.001$) ($p < 0.001$), respectively.

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