

The Evolving Pattern Of Primary Skin Cancers in Ile-Ife, Nigeria

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Abstract

Background. The increasing solar intensity and HIV epidemic have progressively eroded the protective effects of melanin among black race. This study was aimed at evaluating the pattern of primary skin cancers in Ile-Ife, Nigeria. **Methods.** This retrospective study, which was conducted at the Obafemi Awolowo University Teaching Hospital, Ile-Ife, included the patients diagnosed with primary skin cancers between January 2008 and December 2017. The data were analyzed using SPSS version 20. **Results.** The frequency of primary skin cancers was 1.0%. Females (58.3%) outnumbered the males (41.7%), the ratio being 1.4:1. The spectrum of primary skin cancers documented by this study are squamous cell carcinoma (33.3%), malignant melanoma (25%), Kaposi sarcoma (15.3%), basal cell carcinoma (9.7%), and cutaneous lymphoma (6.9%). **Conclusion.** Melanin remains a major protective factor for skin cancers among negroids. Albinism and high burden of HIV were identified risk groups for skin cancers. The eradication of HIV and enhanced sun protection will reduce the prevalence of skin cancers.

Key words: Skin Neoplasms; Nigeria; Carcinoma, Squamous Cell; Melanoma; Sarcoma, Kaposi; Carcinoma, Basal Cell, African Continental Ancestry Group; Prevalence

Introduction

Primary neoplastic changes affecting the cells of the epidermis and the dermis are common occurrences encountered in dermatologic practice. The sun is a major inducer of skin cancers such as squamous cell carcinoma, basal cell carcinomas and melanomas. Melanin provides protection from the damaging effect of solar radiation by absorbing these radiations and thus prevents the vulnerable cells of the epidermis from associated damage.

The black skin with larger quantities of melanin is much better protected from the harmful effect of solar radiation and has a reduced incidence of primary skin cancers as compared to the skin of Caucasians (1). This very important factor in the prevention of skin cancer is being progressively undermined by the increasing incidence of immunosuppression, higher burden of sexually transmitted disease (STD), and detrimental climate change (2-5) with attendant depletion of ozone layer.

The prevalence of skin cancers have previously been reported in some centres in Ni-

geria. A prevalence of 5.5% was reported in Osogbo, whereas a prevalence of 27% was reported in Benin (6, 7). While the incidence of skin cancers may still be higher in the Caucasians, an alteration in the ratio of the incidence as well as in the prevalence may require verification. The frequency of some specific types (subtypes) of skin cancer may also be influenced by some of these evolving mutagenic factors. It is important to document our local experience with the occurrence of primary skin cancer because it will provide reference data to compare with other regions and also direct planning by providing data for policy formulation, and hence the need to evaluate the pattern of primary skin cancers among the patients of African origin in Ile-Ife, South-Western Nigeria.

Material and Methods

The study was conducted among the patients of dermatology and the plastic surgery units of the Obafemi Awolowo University

Table 1. Demographic characteristics of patients with primary skin cancers

| Skin cancers | Gender | | | | Mean age | Standard deviation | Median age | Frequency | | Skin type | |
|--------------------------|-----------|------|-----------|------|----------|--------------------|------------|-----------|------|-----------|----|
| | M | | F | | | | | N= 72 | | I | IV |
| | Frequency | % | Frequency | % | | | | Frequency | % | | |
| Squamous cell carcinomas | 7 | 29.2 | 17 | 70.8 | 39.3 | 15.7 | 36.5 | 24 | 33.3 | 8 | 16 |
| Melanoma | 7 | 38.9 | 11 | 61.1 | 63.6 | 15.7 | 67.5 | 18 | 25 | – | 18 |
| Kaposi sarcoma | 7 | 63.6 | 4 | 33.4 | 32.6 | 9.2 | 35 | 11 | 15.3 | – | 11 |
| Basal cell carcinomas | 2 | 28.6 | 5 | 71.4 | 55.1 | 18.9 | 52 | 7 | 9.7 | 4 | 3 |
| Mycosis fungoides | 4 | 80 | 1 | 20 | 59 | 10.2 | 53 | 5 | 6.9 | – | 5 |
| Dermatofibroasarcoma | 1 | 50 | 1 | 50 | 58 | 33.9 | 58 | 2 | 2.8 | – | 2 |
| Neurofibrosarcoma | – | – | 2 | 100 | 58 | 31.1 | 58 | 2 | 2.8 | – | 2 |
| Mucoepitheliosarcoma | 1 | 50 | 1 | 50 | 44.5 | 14.9 | 44.5 | 2 | 2.8 | – | 2 |
| Trichoepitheliosarcoma | 1 | 100 | – | – | 30 | – | 30 | 1 | 1.4 | – | 1 |

Teaching Hospitals Complex, Ile-Ife, South Western Nigeria.

The study sample patients were largely negroid with Fitzpatrick skin type VI and high level of skin melanin. However, a few patients with reduced/absent melanin (albinism), hence Fitzpatrick skin type I, were also seen. Ile-Ife is located on the longitude 7° 28' 0.001" N and the latitude 4° 34' 0.001" E and it re-

ceives a relatively high solar intensity throughout the year.

Design

The records of patients referred to the dermatology and venereology outpatient clinic and the out-patient clinic of the plastic surgery unit of the hospital were examined be-

Table 2. The pattern of skin cancers and associated risk groups in Ile-Ife

| Skin cancers | RISK FACTORS | | | | | | |
|--------------------------|--------------|--------------|-----------|-----------------------|-----------|-------------------|-----------|
| | HIV | Genital Wart | Albinism | Xeroderma Pig- | Other | Chronic | Total |
| | N=72 (%) | N=72 (%) | N=72 (%) | mentosum N= 72 (%) | N= 72 (%) | ulcer N=72 (%) | |
| Kaposi sarcoma | 11 (15.3) | – | – | – | – | – | 11 (15.3) |
| Mycosis fungoides | – | – | – | – | 5 (6.9) | – | 5 (6.9) |
| Melanoma | – | – | – | – | 18 (25.0) | – | 18 (25.0) |
| Basal cell carcinomas | – | – | 4 (5.6) | – | 3 (4.2) | – | 7 (9.7) |
| Squamous cell carcinomas | 1 (1.4) | 4 (5.6) | 8 (11.1) | 1 (1.4) | 7 (9.7) | 3 (4.2) | 24 (33.3) |
| Dermatofibrosarcoma | – | – | – | – | 2 (2.8) | – | 2 (2.8) |
| Neurofibrosarcoma | – | – | – | – | 2 (2.8) | – | 2 (2.8) |
| Mucoepitheliosarcoma | 1 (1.4) | – | – | – | 1 (1.4) | – | 2 (2.8) |
| Trichoepitheliosarcoma | – | – | – | – | 1 (1.4) | – | 1 (1.4) |
| Total | 13 (18.1) | 4 (5.6) | 12 (16.7) | 1 (1.4) | 39 (54.2) | 3 (4.2) | 72 (100) |



Figure 1. Basal cell carcinoma in an Albino

tween January 2008 and December 2017. All patients presenting with dermatological disorders over the period were noted and those diagnosed with primary skin cancers were recruited. Data such as age, sex, skin type, predisposing factor, occupation and family history of the disease, and laboratory and histological reports of cancers were assessed.

Exclusion: The patients diagnosed with secondary skin cancers or metastases were not considered as primary skin cancer. Data were analyzed using IBM/SPSS version 20, and the test of association and the level of significance were assessed using chi-square. Data were collectively processed with confidentiality strictly ensured.

Results

A total of 7,325 new patients with dermatological disorders were referred to the dermatology and plastic surgery clinic during the study period of 10 years spanning from January 2008 to December 2017. Among these, 72



Figure 2. Xeroderma pigmentosum with squamous cell carcinoma

cases of primary skin cancers were diagnosed, the frequency being 1% (72/7325%). The male/female ratio was 1:1.4 (Table 1). The mean age of patients presenting with primary skin cancers in this study was 48.32 \pm 19.16 years, while the median age was 44 years.

The distribution of different types of cancers observed in descending order of occurrence is shown in Table 2. Specific factors such as Albinism, HIV, Genital wart, Xeroderma pigmentosum, were found to have a significant correlation with primary skin cancers. (p-value=0.001) (Table 2). Kaposi sarcoma was exclusively associated with HIV while albinism was predominantly affected by Basal cell carcinoma and squamous cell carcinomas (Table 2).

Discussion

The Caucasians are at greater risk of getting skin cancer than the negroids. This reduces the index of suspicion and cause late presentation when cancer occurs in the black. In this study, skin cancer occurs at an average prevalence of 7.2/year and affects 1% of patients presenting with skin diseases. A study conducted among population with similar distribution of skin type in Benin and Osogbo reveals 27% and 5.5% of skin cancer, respectively. This higher prevalence may be due to the inclusion of biopsied cases only and therefore suggests the prevalence of skin cancer among skin biopsy specimen while excluding a large population of cases whose lesions were not biopsied. The most frequently observed primary skin cancer was squamous cell carcinoma, and it occurs at a frequency of 33.3% and at a mean age of 39.3 years. This is however in contrast with the review of biopsy specimen at other Centre where melanoma was found to be most frequent (6, 7).

The direct effects of exposure to ultraviolet light, and ionizing radiation as well as exposure to other carcinogens may contribute to the enhanced propensity to develop skin cancers.

The near equatorial location of Ile-Ife and other communities served by the hospital gives a unique advantage of an angle of incidence of solar radiation with enhanced solar intensity. While this may be considered as an advantage for solar energy generation and in the production of renewable energy, it is det-

rimental to the health of the skin by inducing solar elastosis and ultimately skin cancers. Johnson et al have observed a doubling in the incidence of squamous cell carcinomas following every 10 degree reduction in the latitude thereby suggesting increased incidence of squamous cell carcinomas in the regions around the equator (8). Solar radiation (UVA & UVB) damage the DNA of the cell, and cancer develops when the inherent ability to clear the damaged cell by p53 enhanced apoptosis is overwhelmed (9, 10). The sun also has some immunosuppressive effect on the immunological functions of the skin.

This study has shown that primary skin cancers develop at increasingly younger age. The patients with squamous cell carcinoma present at a mean age of 39.3 years and median age of 36.5 years. This observation is consistent with previous reports that suggest that squamous cell carcinoma is becoming more prevalent after the 40 years age of among the Caucasian (11, 12).

The presence of basal cell carcinoma and squamous cell carcinomas among the albino population in the study suggests that the melanin still plays a significant role in protecting from skin cancer despite several other environment and genetic interplay in the black population. This observation aligns with low prevalence of skin cancers reported in the past among people with black skin (13, 14).

Basal cell carcinoma account for 9.7% of the observed skin cancers (Figure 1). The mean age of patients who got them was 55.1 years. Although the frequency was higher in the Caucasians, the mean age of patients when cancers developed in this study was consistent with that reported among the Caucasians in whom basal cell carcinoma have also been documented to be most prevalent between the age of 55 and 70 years (11, 12). This further reinforces the importance of high solar intensity and its effects among the albino population who are mostly affected by basal cell carcinoma, as shown by our study. Although malignant melanoma was reported as the commonest skin cancers in previous studies in our environment, it ranked second in this study where it accounted for 25% of the observed skin cancers. It occurs at a mean age of 63.6 years, and occurs more often in the lower limbs, which is similar to other studies.

Human activities and practices which cause increased out-door exposure to the sun, as well as environment alterations such as deforestation have progressively led to the increased solar intensity in the zone. The depletion of ozone layer also contributes to the increased intensity and exposure of the skin to ultraviolet C (UVC) radiations thereby increasing the prevalence of observed skin cancers.

The prevalence of Kaposi sarcoma increased with the onset of HIV epidemic, and was the third commonest skin cancer observed in the study. Its occurrence in the patients whose mean age is 32.6 years reflects its association with HIV which is common among young and middle aged adults. The characteristic association of some of these cancers with genital wart suggests the possible role of the oncogenic sexually transmitted infections such as human papilloma virus (HPV). HPV can independently cause cancers even in immunocompetent host; however, their propensity to cause cancers in the presence of diminished immunity is greatly enhanced.

Xeroderma pigmentosum (XP) is a disorder arising from heritable defects in the ability of the cells to repair damaged DNA. It is a rare disorder and occurs at a prevalence of 1/250,000. While XP increases the risk of skin cancers by a factor of 2000 in individuals below twenty years of age, and overall lifetime prevalence of 57%, it did not significantly impact the prevalence of skin cancers observed in this study due to the rarity of XP (15). The only case of xeroderma pigmentosum (1.4%) observed in our study was associated with squamous cell carcinoma (Figure 2).

The population under review includes the patients with albinism who are deprived of the protection that is characteristically conferred on the negroid skin by melanin. Albinos have reduced or absent melanin due to a genetic defect with the associated impairment in the synthesis and transport of melanin (16). These patients are at an increased risk of acquiring skin cancers, which is similar to their Caucasian counterparts with similar Fitzpatrick skin type. As shown in this study, 16.7% of the observed primary skin cancers were among patients with albinisms.

Conclusion and Recommendation

The large melanin content found in the black skin offers prominent protection from primary skin cancers. This study affirms the importance of melanin in preventing primary skin cancers despite the increasing intensity of ultraviolet radiations in the region. The high prevalence of HIV and albinism were factors identified with increased incidence of primary skin cancers among the black skin population. While sun avoidance and use of sun screens remain the major preventive approach to skin cancers, the prevention of HIV transmission and coordinated effort aimed at reducing the prevalence of HIV as well as availability of HAART may be an additional effort efficient in reducing the prevalence of primary skin cancers.

Limitations

Although the determination of risk factors has not been included in the objective of this study, a cohort or case control study will be required to determine risk factors of primary skin cancers.

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Primarni kanceri kože u Ile-Ifeu, Nigerija

Sažetak

Uvod. Povećani intenzitet sunčevog zračenja i epidemija HIV-a neprestano uništavaju zaštitne efekte melanina kod ljudi crne rase. Cilj ove studije bio je da proceni obrazac primarnih kancera kože u Ile-Ifeu, Nigerija.

Metode. Ova retrospektivna studija, koja je izvedena u *Obafemi Awolowo* univerzitetskoj bolnici, u Ile-Ifeu, obuhvatila je pacijente sa dijagnozom primarnih kancera

kože između januara 2008. i decembra 2017. godine. Za analizu podataka korišćena je SPSS verzija 20. **Rezultati.** Učestalost primarnih kancera kože bila je 1%. Bilo je više ženskih (58,3%) nego muških pacijenata (41,7%), a odnos je bio 1,4 : 1. Spektar primarnih kancera kože dokazanih ovom studijom su skvamocelularni karcinom (33,3%), maligni melanom (25%),

Kapošijev sarkom (15,3), bazocelularni karcinom (9,7%) i kutani limfom (6,9). **Zaključak.** Melanin je i dalje osnovni zaštitni faktor od kancera kože kod ljudi crne rase.

Albinizam i HIV identifikovani su kao nosioci rizika za kancere kože. Iskorenjivanje HIV-a i povećana zaštita protiv sunca smanjiće prevalenciju kancera kože.

Ključne reči: Kožne neoplazme; Nigerija; Karcinom skvamoznih ćelija; Melanom; Kapoši sarkom; Bazocelularni karcinom; Narodi Negroidne grupe afričkog porekla; Prevalencija

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