International Journal of Research in Dermatology
Ajetunmobi OI et al. Int J Res Dermatol. 2017 Sep;3(3):395-398
http://www.ijord.com

DOI: http://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20173920

Original Research Article

Dermatologic neoplasms: a perspective from Makurdi, North Central Nigeria

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Received: 05 July 2017
Revised: 09 August 2017
Accepted: 11 August 2017

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ABSTRACT

Background: Skin cancers are the commonest malignancies in Caucasians but are relatively less common in dark skinned persons. They are strongly linked to ultraviolet exposure, skin melanin content, and immune status.
Methods: This study reviewed all histologically diagnosed skin neoplasms at the Federal Medical Centre, Makurdi from January 2012 to December 2016.
Results: A total of 84 neoplasms were seen, with 42 (50%) being malignant. Of the malignant lesions, Squamous cell carcinomas were the most frequent (45.2%), followed by melanomas (23.8%). The lower limb was the most frequent site of both benign and malignant neoplasms, while a male to female ratio of 0.88:1 was observed.
Conclusions: A relatively high UV radiation intensity, combined with a predominance of outdoor agricultural based activities, alongside chronic ulcerative/inflammatory lesions and a high HIV burden all indicate a need for widespread enlightenment and screening campaigns to prevent occurrence of skin cancers and aid early diagnosis.

Keywords: Skin, Ultraviolet, Squamous cell carcinoma, HIV

INTRODUCTION

The skin is the largest organ in the body, accounting for up to 16% of body mass. It is broadly divided into the epidermis, and the dermis.[1] Its cellular constituents are ubiquitous comprising epithelial cells, fibroblasts, leukocytes, endothelial cells, adipocytes, smooth muscle and neural bundles. Each of these components has the potential to undergo neoplastic transformation, giving rise to a wide range of malignancies.[2] Cancers of the skin are the commonest type of malignancy in the western world, and show an increasing incidence globally.[3] They are the commonest type of malignancy in the United States and Australia, while in Nigeria, they show regional variations, accounting for 5.5% of cancers in Oshogbo, 8% in Calabar, and 12.7% in Kano.[4-7]

The superficial location of the skin exposes it to a myriad of potentially carcinogenic or otherwise injurious agents. Thus it is unsurprising that cancers of this organ are quite common. Nonetheless, a paradox of sorts exists, as cutaneous lesions are grossly visible and easily accessible. A poor knowledge of the signs and symptoms, as well as the significance of gross features could account for the significant morbidity and mortality associated with this group of cancers. Equally, rapid progression leading to presentation in advanced stages could be due to the immunosuppresion fostered, in many instances by HIV/AIDS.

Ultraviolet radiation is the most important risk factor for skin cancers and has been linked to the three commonest skin malignancies, Basal cell carcinoma, Squamous cell carcinoma, and Malignant Melanoma.[8] Benue State with its capital as Makurdi, is located in the central part of Nigeria often termed the "middle belt". It has a population of about 5 million people with up to 70% of the population engaged in agricultural activities such as farming and fishing, which both increase exposure to UV irradiation as well as frequent trauma.[9,10] In addition, dermatologic malignancies are a common manifestation of HIV/AIDS, and Benue state has a significant HIV burden. All these are factors which necessitate a study of such cancers, especially in the face of a rising cancer burden.[11]

This study analyses skin neoplasms seen at the histopathology department of the Federal Makurdi Centre (FMC), Makurdi over a five year period. It will describe the epidemiologic picture, histological subtypes and histogenetic groups.

METHODS

Review of the surgical pathology register and retrieval of archival glass slides of all skin neoplasms diagnosed at the Histopathology department of the FMC, Makurdi between January 2011 and December 2016. Data was analysed using Microsoft excel (version 12). Frequency tables, pie and bar charts were used to depict the age and sex distribution, tumour behaviour, histological subtypes, and histogenetic groups of the various tumours.

Inclusion criteria

All skin neoplasms diagnosed histologically within the study period, with complete clinical and pathologic data, and representative glass slides were included.

Exclusion criteria

All skin neoplasms diagnosed histologically, within the study period, with incomplete clinico-pathologic data, missing or non-representative archival slides were excluded.

RESULTS

A total of 84 neoplasms (in 83 patients) were seen in this study. These constituted 5.5% of all samples accessioned at the Histopathology department during the study period. Thirty-nine (39) patients were male, 44 were female, giving a male to female ratio of 0.88:1. The age range was 7 months to 90 years, average age was 38.3 yrs, and peak incidence age was between 36-45 years, while 45.7% of cases occurred between 16 and 45 years (Table 1).

Childhood tumours (≤15 years) accounted for 10 (11.9%) of all neoplasms diagnosed. A male to female ratio of 3:2 was observed in this age group. All skin tumours seen in children were benign, Lobular Capillary Haemangioma (Pyogenic granuloma) was the commonest histological type.

Table 1: Age and sex distribution of skin neoplasms.

Age range	Male	Female	Frequency	Percentage (%)
≤15	6	4	10	12.0
16-25	2	11	13	15.7
26-35	6	5	11	13.2
36-45	5	9	14	16.9
46-55	6	1	7	8.4
56-65	8	5	13	15.7
66-75	3	4	7	8.4
≥75	1	0	1	1.2
Unspecified	2	6	8	9.6
Total	39	44	83	100

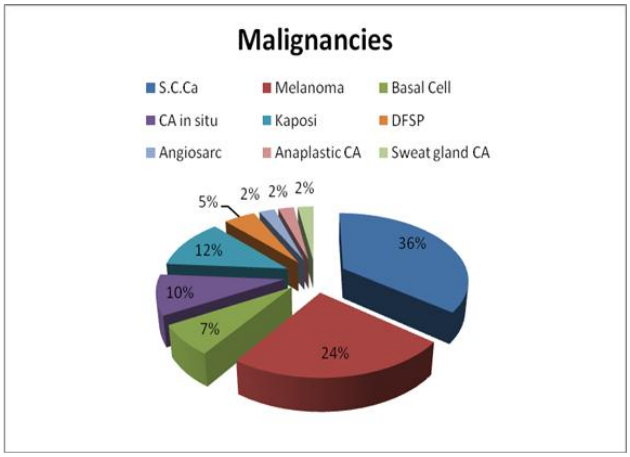

Figure 1: Histological subtypes of the skin malignancies.

Half of the 84 neoplasms, (42) were malignant. These malignancies constituted 21.1% of all cancers and 31.5% of all skin biopsies handled at the department during the study period. Amidst these 42 malignancies, 23 (54.7%) were of keratinocytic origin. In-situ and invasive forms of squamous cell carcinomas were the most frequent form of keratinocytic malignancies, accounting for 82.6%, while forming 45.2% of all malignancies seen. Basal cell carcinomas constituted 13% of all keratinocytic malignancies and 7.1% of all cancers seen in this study (Figure 1). Melanocytic tumours were the 2nd commonest group of skin cancers seen, accounting for 23.8%, and all were melanomas. Cancers of vascular origin occurred in 6 instances, constituting 14.3% of all malignancies. Of these, 5 were Kaposi sarcoma, while a solitary case of angiosarcoma was recorded. Dermatofibrosarcoma protuberans, representing tumours of fibrohistiocytic origin, accounted for 2 (4.8%) of all skin malignancies. A solitary malignant skin adnexal tumour was observed accounting for 2.4% of skin malignancies. No metastatic lesion was identified.

Verrucae were the commonest benign neoplasms observed, accounting for 12 (28.5%) of such cases seen, followed by Haemangioma (21.4%) and dermatofibroma (16.7%). Benign peripheral nerve sheath tumours constituted 4 (9.5%) of benign tumours. All were neurofibromas. Most verrucae (75%) were seen in females, and the lower limb was the commonest site.

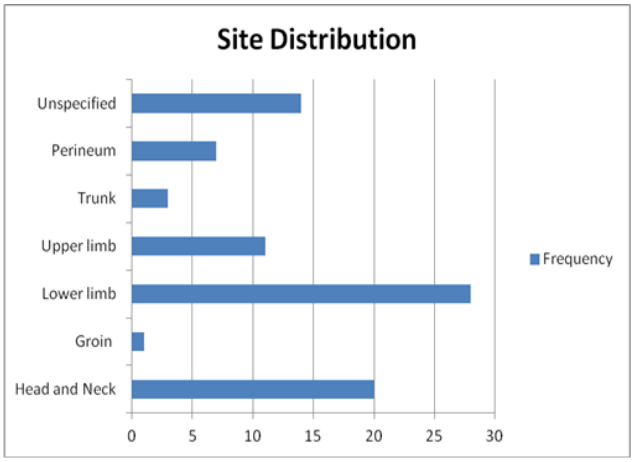

Figure 2: Site distribution of skin neoplasms.

The lower limb was the most frequent site of all neoplasms, involved in 28 (33.3%) cases (Figure 2). The foot was the commonest lower limb sub-region involved, accounting for 16 (57.1%) of the 28 cases. Half of the lower limb neoplasms were malignant, with melanomas the commonest histological type. Specifically, 7 melanomas occurred on the lower limbs, of these, 6 were seen on the foot, while 1 was on the thigh. The head and neck region was the 2nd commonest site involved in this study, accounting for 20 (23.8%) cases in total. Nine (9) of these cases were malignant, with squamous cell carcinoma being the most common cancer at this site (6/9; 67%). The upper limb accounted for 11 cases seen in this study. Six (54.5%) of the upper limb lesions were malignant, however Dermatofibroma was the commonest tumour type at this site.

There were 7 tumours found in the perineum. Three (3) of these were malignant, and most cases were seen in females, with a male to female ratio of 1:6. Site of lesions was unspecified in 14(16.7%) cases. Non-exposed sites such as the groin and trunk were the least frequent sites involved (Figure 2).

Of the squamous cell carcinomas, 15 (78.9%) occurred on sun-exposed sites, while all cases of Basal cell carcinoma were seen in exposed sites such as the head and neck and upper limb. Seven of the 10 melanomas (70%) occurred in the lower limbs, of these 6 were seen on the foot. Two of the melanomas occurred in non-exposed sites such as the groin and perineum, while the site was unspecified in a solitary case.

Notably, and to the best of our knowledge, no lesions from albinos were seen in this study.

DISCUSSION

A female predominance was observed in this study. This contrasts findings in Oshogbo (1.6:1) and Tanzania (1.4:1).[5,12] Notably, Kim et al postulated that a higher incidence in male sex, of skin cancers was a sequel to greater involvement in outdoor activities such as farming, fishing and manual labour.[13] There's an increased involvement of the female sex in such activities in Makurdi, as well as a higher consciousness of the cosmetic effects of skin lesions in the female sex.[14] These two factors account for a documented female predominance with regards skin tumours in this study.

The peak age of incidence was in the 4th and 5th decades of life. This is in contrast with observations in Kano (6th and 7th decades) but correlates with findings in Benin.[7,15] This overall late onset is due to the cumulative effects of UV radiation and other aetiologic agents. In India, Khandpur documented that the vast majority of skin tumours were benign. However, malignant and benign lesions were equal in proportion in this study.[2] This is similar to findings in Benin, where 51.8% of skin tumours were malignant.[15] The predominance of keratinocytic malignancies and squamous cell carcinomas in particular is in keeping with findings in Lagos, Kano and Zaria.[7,16,17] However, studies in Calabar documented that Kaposi Sarcoma was the commonest malignancy, while melanomas were the most frequent in Benin and Tanzania.[6,12,15] In addition basal cell carcinomas were the most common skin malignancy in the United States, China and Egypt, while they accounted for only 7.1% of cancers diagnosed in this study.[18,19] These variations are due to difference in skin types amongst the different racial groups. Africans have a skin type called Flitzpatrick type V, it has the least sensitivity to ultraviolet irradiation and hence the lowest risk for basal cell carcinomas and melanomas.[1] On the other hand, chronic ulcers and inflammatory lesions play a greater role in the aetiology of squamous cell carcinoma. These factors are much commoner in this environment, hence the relative greater incidence of squamous carcinomas in this study.[1,20]

The lower limbs were the most frequent site of skin cancers in this study. This correlates with findings in Kano, Benin and Tanzania.[7,12,15] Lower limbs are usually exposed to UV radiation from the sun and are also a frequent site of chronic ulcerative lesions, which are a common precursor of skin malignancies. The paucity of lesions on the trunk and groin can be attributed to limited UV exposure and lower occurrence of trauma in comparison to the limbs.[1]

Ultraviolet radiation indices above 11 are common in countries (Australia, New Zealand, and South America) with the highest incidence of skin malignancies.[21] Interestingly, indices of 7 to 13 have been observed in Makurdi.[21] In addition, outdoor activities (farming, fishing, artisanship) are predominant in Makurdi, and all

these increase the adverse effects of UV radiation in this environ. Hence, safety measures such as "smart sun exposure", use of caps/hats, sunscreens, and protective clothing are advocated to protect against UV induced skin damage.[1,21] Nonetheless the predominance of lesions on the lower limbs in this study reflects the significance of trauma and chronic untreated wounds in the pathogenesis skin cancers on this region of the body. The use of protective footwear has been suggested to reduce the incidence of skin cancers in some tropical regions.[12]

Going by the level of poverty in this environ and the aetiologic factors listed above, it can be assumed that the cancers seen represent a small proportion of the actual cases present in Benue. Considering the prohibitive costs of managing advanced staged skin malignancies, it is essential that a multi-pronged approach of education campaigns, screening and treatment of suspicious lesions would be instrumental in reducing the burden of this disease. Of particular benefit is enlightenment of patients on the gross features of neoplastic and pre-malignant lesions, to facilitate early presentation.

CONCLUSION

This study describes the dermatologic neoplasms seen in Makurdi, North Central Nigeria. It has demonstrated predominance of the female gender, middle age and lower limbs in terms of sex age and site distribution. Equally keratinocytic lesions were the most frequent amidst benign and malignant tumour types. In the absence of structured interventions, skin malignancies will become of increasing public health importance. Established links in aetiology and pathogenesis provide a sound basis for widespread, interdisciplinary prevention and screening programs which hold great promise in lessening the burden.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Ajetunmobi OI, Dzuachii DO. Dermatologic neoplasms: a perspective from Makurdi, North Central Nigeria. Int J Res Dermatol 2017;3:395-8.