Original Article

Histopathological Pattern of Skin Cancers in Abakaliki, Southeast, Nigeria

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ABSTRACT

Skin cancers involve malignancies that arise from different layers of the skin and have become a global public health problem with an increasingly prevalent rate. There is an increasing rate of this global burden linked to the depletion of the ozone layer. We aim to determine the histological pattern of skin cancers in a tertiary hospital in Abakaliki, Southeast Nigeria. We conducted a fourteen-year retrospective study at Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State, Southeast, Nigeria. We went through our records of all the skin tumours managed in the Division of Plastic Surgery and collected the data of all the cases whose biopsies were sent to the Morbid Anatomy department for diagnoses. All the skin cancers that were histologically diagnosed between 2006 and 2019 were included. The data collected included age, sex, site of lesion, and histological diagnosis. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Our results showed that seventy-three skin cancers were diagnosed within the 14-year study period. There were more skin cancers in females with a male-to-female ratio of 1:1.7. The peak age range of occurrence was 30-39 years, with a mean age of 45+16 years. Skin cancers were uncommon in children. Squamous cell carcinoma (SCC) was the most common skin cancer (26.0%, 19), followed by malignant melanoma (MM) (19.1%, 14). The majority of skin cancers were found to be located on the lower limb. Malignant melanoma was located in the lower limb alone. Skin cancers in Abakaliki are more common in females than in males. Squamous cell carcinoma was the most common skin malignancy in Abakaliki. Also, all the malignant melanomas were located on the lower limb, and malignant fibrous histiocytoma was seen only in females.

Keywords: Basal cell carcinoma; Dermatofibrosarcoma protuberans; Malignant fibrous histiocytoma; Malignant melanoma; Metastatic skin tumours; Skin cancers; Squamous cell carcinoma.

INTRODUCTION

Skin malignancy in recent times remains one of the commonest malignancies globally. [1] There is a worldwide increase in the prevalence and mortality rate of skin cancers. [2]

Skin malignancy is commoner among white Caucasians compared to negroids.[3,4,5] The major reason for this racial difference is the low level of skin pigmentation, which is a predominant risk factor for skin cancers.[6] Increased risk in whites of both malignant melanoma (MM) and nonmelanoma skin cancers (NMSC),[7] including Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), has also been associated with Ultraviolet-B (UV) radiation exposure from sunlight, decreasing latitude, and decreasing level of skin pigmentation. [8,

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[9, 10, 11, 12.] Furthermore, blacks have much lower malignant melanoma, BCC, and SCC incidence rates than whites, [6,7,] and the dose of UV radiation required to produce minimum perceptible erythema has been estimated to be 6–33 times greater in blacks than in whites. [13, 14] Basal cell carcinoma is undisputedly the most common skin malignancy among Caucasians in Europe, North America, and Australia.[15,16] In Africa, several studies revealed a preponderance of SCC. [17,18]

Melanin protects from the damaging effects of solar radiation by absorbing this radiation 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 effects of solar radiation and has a reduced incidence of primary skin cancers as compared to the skin of Caucasians.[19] This very important factor in the prevention of skin cancer is being progressively undermined by the increasing incidence of sexually transmitted diseases (STDs), HIV, and detrimental climate change with attendant depletion of the ozone layer.[20,21]

Albinism, human immunodeficiency virus (HIV), genital warts, and xeroderma pigmentosum were identified to have a significant correlation with primary skin cancer in Nigeria. [22] This was revealed in a work done in Benue state, Northcentral part of Nigeria which showed that Kaposi sarcoma (KS) was the most common dermatological malignancy (n = 78; 52%) could be explained by the probable higher incidence of HIV in the study population,[23] compared to some other locations in the country where Squamous cell carcinoma was the commonest dermatological malignancy.

Even among Africans, there are different patterns of skin cancers. Plantar melanomas are quite common in Sub-Saharan Africa but much less common among African-Americans. [4, 24] In Tanzania, East Africa, SCC and Melanoma are the two most common malignancies, followed by Kaposi sarcoma, which occurred as the second most common malignancy.[25,26]

In Nigeria, most studies on the pattern of skin malignancies demonstrated squamous cell carcinoma as the commonest skin cancer,[17,18,27] while some and a few other studies revealed malignant melanoma and Kaposi sarcoma as the commonest skin cancer, respectively.[23,28,29.] There have been no such studies in Ebonyi State, Nigeria. This study was therefore set up to determine the local occurrences and patterns of skin cancers in Abakaliki, Ebonyi State, Southeast Nigeria. This will provide reference data for focused policy making and evaluations of malignancies with the aim of helping in the prevention and management of such cancers.

MATERIALS AND METHODS

Study Design

This was a retrospective study of all skin cancers seen by the Division of Plastic Surgery, Department of Surgery of Alex Ekwueme Federal University Teaching Hospital, Abakaliki (AEFUTHA), Ebonyi State, South-east Nigeria, during the study period. Ethical approval was obtained from the Research and Ethics Committee of AEFUTHA.

Study area:

The hospital is the only tertiary hospital in the state providing tertiary care to Ebonyi state with a population of about 3 million inhabitants, [30] and neighboring states. The inhabitants are predominantly peasant farmers. The Division of Plastic Surgery was created out of the General Surgery unit about eleven years ago with the engagement of a plastic surgeon. Over these six years, the number of plastic surgeons has increased to 6, divided into three teams, and has five Resident (senior trainee plastic) surgeons. The hospital also has a well-developed morbid anatomy department.

Data collection, analysis, and presentation:

Patient data such as sex, age, Anatomical location of skin cancers, and their histopathologic diagnosis were extracted from laboratory results, case (clinical) notes, histopathology registers, and operation notes. The study included all patients with histopathologically diagnosed skin tumours managed from 2006 to 2019. All skin tumours that were not histopathologically confirmed were excluded. The skin cancers that were one or two in number were grouped as "others". All histological diagnoses were done by the Morbid Anatomy Department of AEFUTHA. Data collected were

analyzed using Statistical Package for the Social Sciences (SPSS) software, Version 20, IBM Corp, Armonk, New York. Results were presented as frequencies, percentages, and means in tables and prose.

RESULTS

A total of 275 skin tumours were managed in our hospital within the study period. Out of the 275 skin tumours, 73(26.0%) were skin cancers. Table 1 shows the types of skin cancers and their sex distribution. There were eight main types of skin cancers, with SCC being the commonest, followed by MM. Kaposi sarcoma is among the least. There were 27(37.0%) males and 46(63.0%) females with skin cancers, with a male-to-female ratio of 1:1.7.

The age distribution of skin cancers is shown in Table 2. The age range of our patients was from 11 years to 98 years, with a mean age of 45±16 years. The peak age group occurrence was 30–39 years, and the youngest age group was below 20 years.

The anatomic regional sites of skin cancers in our study are demonstrated in Table 3. The lower limb was the commonest site of occurrence, 31(42.5%), followed by the trunk, 24(32.9%), and the upper limb was the least common region, 7(9.6%). All the malignant melanomas were located in the lower limb.

Skin cancers that were one or two were grouped as other malignancies. These included Hodgkin's lymphoma, Burkitt lymphoma, adenocarcinoma, undifferentiated carcinoma, malignant vasoformative tumours, transitional cell tumour, etc.

Table 1: 1: Skin cancers and their sex distribution

SKIN TUMOURS	MALE	FEMALE	TOTAL
Squamous cell carcinoma	9	10	19(26.0%)
Malignant melanoma	3	11	14(19.1%)
Dermatofibrosarcoma protuberans	1	7	8(11.0%)
Basal cell carcinoma	1	3	4(5.5%)
Malignant fibrous histiocytoma	0	4	4(5.5%)
Fibrosarcoma	3	1	4(5.5%)
Kaposi sarcoma	2	1	3(4.1%)
Metastastatic skin cancers	5	4	9(12.3%)
Others	3	5	8(11.0%)
TOTAL	27(37.0%)	46(63.0%)	73(100%)

Table 2: Age distribution of skin cancers

SKIN TUMOURS	AGE (YEARS)								
	0-9	10- 19	20-29	30-39	40-49	50-59	60-69	≥ 70	TOTAL
Squamous cell carcinoma	0	1	0	8	5	1	3	1	19(26.0%)
Malignant melanoma	0	0	1	2	1	3	5	2	14(19.1%)
Dermatofibrosarcoma protuberans	0	0	2	5	0	1	0	0	8(11.0%)
Basal cell carcinoma	0	0	0	1	0	1	2	0	4(5.5%)
Malignant fibrous histiocytoma	0	2	0	2	0	0	0	0	4(5.5%)
Fibrosarcoma	0	0	0	1	1	1	0	1	4(5.5%)
Kaposi sarcoma	0	0	1	0	1	0	1	0	3(4.1%)
Metastasis to skin	0	0	0	0	1	4	4	0	9(12.3%)
Others	0	0	1	5	1	1	0	0	8(11.0%)
TOTAL	0 (0.0%)	3 (4.1%)	5 (6.8%)	24 (32.9%)	10 (13.7%)	12(16.5%)	15(20.5%)	4(5.5%)	73(100%)

Table 3: Anatomic regional distribution of skin cancers

SKIN TUMOURS	HEAD/ NECK	TRUNK	UPPER LIMB	LOWER LIMB	TOTAL
Squamous cell carcinoma	6	4	3	6	19(26.0%)
Malignant melanoma	0	0	0	14	14(19.1%)
Dermatofibrosarcoma protuberans	0	2	0	6	8(11.0%)
Basal cell carcinoma	2	2	0	0	4(5.5%)
Malignantfibrous histiocytoma	0	1	3	0	4(5.5%)
Fibrosarcoma	1	2	0	1	4(5.5%)
Kaposi sarcoma	1	0	0	2	3(4.1%)
Metastasis	0	9	0	0	9(12.3%)
Others	1	4	1	2	8(11.0%)
TOTAL	11(15.0%)	24(32.9 %)	7(9.6%)	31(42.5%)	73(100%)

DISCUSSION

Dermatological malignancies remain an increasing global health challenge.[2] The prevalence of skin cancers among the histologically diagnosed skin tumours in Abakaliki, south-eastern Nigeria, was 26.5%. This is similar to a study done by Abubakar et al in Sokoto, North-western Nigeria.[17] Generally, 73 cases of skin cancers over fourteen years are rather low compared to earlier reports in Nigeria.[17,18] This is also at variance with what is seen in the developed world, where skin cancers are even more.[15,16] Our study showed that skin cancers are more common in females with a male-to-female ratio of 1:1.7. This is at variance with other studies in different parts of Nigeria,[17,18] which demonstrated significant male preponderance in skin cancers. Since these findings may be incidental, we noted them with the hope that future study/studies may explain them with assertion by obviating some of our limitations.

The study shows that SCC is the commonest (26.0%) skin cancer among our study population. An earlier study,[31] in a nearby state, reported a similar prevalence of 27.3%. In Sokoto and Jos (northern Nigeria), Abubakar et al,[17] and Mandong et al,[18] reported that SCC is the commonest skin cancer. Poorly managed chronic ulcers and scars, which are common in both northern and southern Nigeria, have been linked to a predilection for SCC,[30] may explain these similarities. Though SCC is increasing in Caucasians.[32,33,34] BCC remains the commonest skin cancer amongst them,[13,14,35,36,] for the obvious protective property melanin has against UV light in blacks.

Other regions of the world, including some parts of Nigeria, showed a higher preponderance of other skin malignancies other than squamous cell carcinoma. Gerald et al from south-south Nigeria, Ganiyu et al from south-west Nigeria, and Pillipo et al from Tanzania, all showed malignant melanoma as the commonest cutaneous cancer in their areas.[26,28,29] Malignant melanoma occurred as the second most common malignancy in this index study, as well as in some other local studies in northern Nigeria.[18,27] This high incidence of SCC and melanoma in various parts of the world could be explained by ultraviolet radiation exposure, possibly due to the depletion of the ozone layer. The low incidence of BCC among blacks was demonstrated in this work (5.4%) as well as in some other studies done in Nigeria,[18,27,] and Tanzania,[25.] Basal cell carcinoma is the most frequent skin malignancy in whites.[15,16,35,36.] This low incidence of BCC seen in Africans is a result of the protective effect of higher melanin in blacks than whites.[15,16,17,18]

We observed a significant number of metastatic skin cancers in our study. These tumours are, however, not primary skin cancers. They spread from their primary sites, mostly from the breast to the skin. It is worth noting that they were all noticed in the trunk. This may be due to the closeness of their primary site. A lot of studies are silent on it.[17,18,29.] This may be because they are secondary skin tumours and neither arose from skin nor its appendages. However, they were significant in our series, constituting the third most common skin cancers.

Dermatofibrosarcoma protuberans (DFSP) 8(11.0%) was the fourth most common cutaneous malignancy. It is the commonest cutaneous skin soft tissue sarcoma seen in this index study. This is compatible with reports from Northwest,[18] and Southwest,[29] Nigeria, and black Americans.[32] Dermatofibrosarcoma protuberans in our study affected more females than males in the ratio of 7:1 and had their highest anatomic location on the lower limb. Ganiyu et al noted similar experiences in southwestern Nigeria.[29] These similarities may be because of the similarity of the population studied.

Malignant fibrous histiocytoma, a dermal tumour, occurred exclusively in females in our study. Its prevalence is low, as in other reports.[17,18,29] The occurrence of malignant fibrous histiocytoma only amongst females in our study may be an incidental finding, as this is at variance with other reports.[18,29]

Kaposi sarcoma recorded a low rate of occurrence in this study and accounted for 4.1% of the skin cancers seen. This is unlike what was obtained in a study in the North Central part of Nigeria by Joseph et al (n=78; 52%),[23] and in Tanzania by Amir et al,[25] where it was the commonest cutaneous malignancy and the second most common malignancy, respectively. Though this prevalence appears unusually low, it may partly be attributed to the decreased prevalence of HIV/AIDS-associated KS in our environment compared to the other two studies.[23,25]

In this study majority of patients with skin cancer were seen within the age range of 30-39 years. Similarly, work done by Joseph et al from the north-central part of Nigeria found that dermatological malignancies occurred mostly in those aged 40 years and above.[23] The age of occurrence is reported to be within the fifth and sixth decades in Tanzania.[26] The different ages of occurrence noticed in different populations may be linked to the wide gap in the study population, and the role of other environmental carcinogenic factors. The patterns of skin cancers in these studies also varied.

Some skin malignancies have a predilection for different anatomical sites of the body. This was affirmed in this work, where the majority of the cutaneous malignancies were situated in the lower limb, 43.2%. Some other studies also demonstrated that the lower limb was the most common site of location for dermatological malignancies.[18,26,27,29.] These studies are in contrast with a Western series where 50 percent of the skin cancers were located on the face, head, and neck.[32] A study done in the United States of America by Pennello et al showed a slight increase in the percentage of melanoma seen on the lower limbs compared with other parts of the body among black African-Americans.[37] Ganiyu et al's report on native black Africans showed that almost all cases of skin melanomas were seen on the lower limb compared with other regions of the body. [29] Our findings in this study also showed that all the cases of malignant melanomas were seen in the lower limb.

This could be due to geographical differences, which would have resulted from depletion of cutaneous melanin pigments among black African-Americans compared to native black Africans, and also possibly due to trauma on barefooted native black Africans. In addition, the reflection of UV light from the ground to the closer lower limbs may also be implicated among native black Africans who walk barefoot. Malignant fibrous histiocytoma (MFH) had a predilection for the upper limb; however, Mandong et al,[18] reported non-occurrences in the upper limb. Rather, he reported an occurrence in the foot and trunk. This may be an incidental finding as the study population of skin cancers is low in both studies. A review article, preferably a systematic review, will give a more scientific assertion.

Skin cancers seen in children in this study are low in occurrence. Ochicha et al,[27] and Gerald et al,[28] also noted the low occurrence of childhood skin cancers in their studies. This could be due to their age factor and the short period of exposure to most premalignant risk factors, like ultraviolet radiation. Malignant fibrous histiocytoma noted in them may be related to the genetic aetiologic factors associated with these mesenchymal cancers, predisposing to their early appearance in life.

Limitations to the study: This is a single-center study; a multicenter study will give more coverage with stronger representation. The sample size is also a significant limitation to making strong assertions.

CONCLUSION

This study showed that Squamous cell carcinoma was the most common skin malignancy in our environment. Skin cancers in Abakaliki are more common in females than in males. Most of the skin cancers were located on the lower limb. Though the pattern of skin cancers in Abakaliki was found to be akin to some findings in Nigeria, it was also noted that all the Malignant melanomas were located on the lower limb, especially the foot; MFH was seen only in females..

Recommendations

There is an urgent need to screen for skin cancers for early detection for better management outcomes in our environment. Suspicious foot lesions should be subjected to histopathological examinations.

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Conflict of interest

The Authors declared they have no conflict of interest

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