REFLECTION ON THE RISK FACTORS FOR SKIN CANCERS: FOCUS ON DARK-SKINNED AFRICANS.

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ABSTRACT:

Background:

Skin cancers are rare in dark-skinned Africans however these individuals are faced with worse morbidity and mortality compared to other racial groups. The lack of awareness of the risk factors for skin cancer as well as the poor perception of risk among dark-skinned individuals has contributed to the late presentation of these patients to skin care clinics.

Aim:

This review aims to highlight the risk factors for skin cancer in dark-skinned Africans in comparison to lighter-skinned racial groups and offer key preventive strategies.

Method:

A search of studies conducted in Africa and other regions with dark-skinned individuals of African descent such as those resident in the United States of America was carried out, through multiple online database searches on PubMed, Google Scholar, Semantic Scholar, Directory of Open Access Journal (DOAJ) and Cochrane Library.

Conclusion:

From our review, squamous cell carcinoma was the most common reported skin cancer in dark-skinned Africans. They were also observed to have higher occurrence of Kaposi sarcoma, cutaneous melanoma, and dermatofibrosarcoma protuberans comparable to Caucasians. Causes of chronic irritation such as leg ulcers and scarring were common risk factors.

Key Words:

African, dark-skinned, skin cancer, risk factors

INTRODUCTION

Skin cancer is defined as an abnormal growth of cells of the skin[1, 2] and it can arise from any structure of the skin. The most common site is the epidermis, from the keratinocytes. The most common of the cancers occurring in the epidermis include the basal cell carcinoma (BCC) and the squamous cell carcinoma (SCC) which arise from the lower and upper layers of the epidermis, respectively.

Melanomas, also found in the epidermis, arise from the melanocytes which are cells that produce the pigment in the skin called melanin.[1] Skin cancers are noted to be more common in those of lighter skin shades, however they can also occur in those with darker skin pigments and most times present in advanced stages.

EPIDEMIOLOGY

Skin cancers occur more commonly in men than women with peak incidence occurring in the fifth to seventh decades of life.[3, 4] Compared to Caucasians, the incidence of SCC is decreased by 30-folds than in American blacks. Tanzanian albinos usually develop SCC by young adulthood and the ratio of BCC to SCC is only 0.2:1.[5] Basal cell carcinoma is the most common cancer in the world, affecting mostly Caucasians and occurring more in the elderly.[6] Nevertheless, melanomas, compared to other skin cancers, have consistently increased in incidence irrespective of age, gender and race.[7]

Among dark-skinned populations, findings have been varied. The most common forms of skin cancers observed in a study among Togolese were Kaposi's sarcoma, melanoma, and dermatofibrosarcoma protuberans (DFSP).[7] Generally however, squamous cell carcinoma is the most common skin cancer among dark-skinned Africans, and this finding is similar in many studies done in Africa.[4, 8-15] A few other studies report Kaposi sarcoma to have the highest occurrence which has necessitated further research.[7, 10, 16-21]

Other malignant skin tumours reported in published studies include adnexal tumours, cutaneous T- cell lymphomas, rhabdomyosarcomas, eccrine carcinomas, metastatic carcinomas, primary angiosarcoma and Paget's disease which is often mistaken for contact dermatitis of the breast.[4, 7-24] Merkel tumours have also been reported in case reports of dark-skinned Africans.[25-27]

METHODOLOGY

A search of studies conducted in Africa and other regions with dark-skinned individuals of African descent including the United States of America was carried out through multiple online database searches on PubMed, Google Scholar, Semantic Scholar, Directory of Open Access Journal (DOAJ) and Cochrane Library using the search terms African, dark-skinned, skin cancer, risk factor and skin of colour.

RESULTS

Table 1 shows various studies done in Africa on skin cancers including reported risk factors.

Table 1- Studies done in Africa on skin cancers

Cancer type	Authors/Publication year/Study site	Number of people with specific cancer (n)	Percentage of specific cancer type among total reported cancer types (%)	Mean age of study participant (years)	M:F ratio	Common sites found	Risk factors
Adnexal tumours	Yakubu & Maboguje, [11] 1995, Zaira, Nigeria	16	2	-	2:1	Lower limb, head and neck, trunk	-
	Asuquo & Egbhue, [16] 2009, Calabar, Nigeria	1	3.4	-	-	-	-
	Okwor V [3], 2013, Ibadan, Nigeria	3	2.4	-	-	Head and neck	-
	Diallo et al., [13] 2017 Dakar, Senegal	1	2	-	-	Face	-
Basal cell carcinoma	Datubo-Brown,[24] 1991, Port Harcourt, Nigeria	4	22.2	-	3:1	Face	Sunlight
	Yakubu & Maboguje,[11] 1995, Zaira, Nigeria	16	2.0	-	2:1	Lower limbs, head and neck, perineum, trunk	Sunlight
	Napo-Kura et al.,[10] 1997, Lomé, Togo	34	6.6	-	-	-	-
	Mssedi et al.,[59] 2007, Togo	890	60.3	60	-	-	Sunlight
	Asuquo & Egbughe,[16] 2009 Calabar, Nigeria	1	3.4	-	-	Face	Solar radiation
	Saka et al.,[7] 2010, Togo	11	4.93	48±17	1.29:1	Head and neck	Sunlight
	Okwor V,[3] 2013, Ibadan, Nigeria	23	16.7	-	-	Lower limb	Albinism, Alcohol Chemical exposure Trauma, ,
	Ahachi et al.,[12] 2016, Makurdi, Nigeria	2	4.7	51±30	0:2	Face	Albinism Farmers Sunlight
	Awe & Azeke,[29] 2016, Irrua, Nigeria	11	22.7	32.6	-	Head and neck	-
	Faye et al.,[44] 2016, Bamako Mali	16	-	48	-	Head, groin, neck, back	Rural dwellers
	Diallo et al.,[13] 2017, Dakar, Senegal	7	14.6	50	-	Face	Sunlight
	Ngbea et al.,[18] 2018, Makurdi, Benue	9	6.0	-	1:2	Lower limb	Sunlight

Dermatofibrosarcoma protuberans	Yakubu & Maboguje,[11] 1995, Zaria, Nigeria	-	-	-	-	Trunk	-
	Napo-Kura et al.,[10] 1997, Lomé, Togo	95	18.3	-	-	-	-
	Mssedi et al.,[59] 2007, Tunisia	30	2.0	-	-	-	Advanced age, solar radiation
	Saka et al.,[7] 2010, Togo	16	7.2	45±20	0.78:1	-	-
	Okwor V,[3] 2013, Ibadan, Nigeria	3	2.4	-	-	-	Trauma, albinism, chemical exposure, alcohol
	Diallo et al.,[13] 2017, Dakar, Senegal	2	4.0	50	-	Face	-
	Ngbea et al.,[18] 2018, Makurdi, Benue	12	7.9	45	1.4:1	Upper limb, trunk, lower limb	-
	Ogun et al.,[51] 2020, Ibadan, Nigeria	69	-	39.6	1.6:1	Trunk	Male sex, past history of DFSP, middle age
Kaposi Sarcoma	Yakubu & Maboguje,[11] 1995, Zaria, Nigeria	60	8	45	2:1	Limbs	-
	Napo-Kura et al.,[10] 1997, Lomé, Togo	72	13.9	-	-	-	-
	Onunu et al.,[19] 2007, Benin, Nigeria	31	0.84	36.3±9	1.6:1	Lower limbs (74.2%), trunk (48.4%) and the face (22.6%)	Human Immunodeficiency Virus (HIV)
	Mssedi et al.,[59] 2007, Tunisia	66	4.5	64.3	-	-	Advanced age, male sex (80%) HIV
	Asuquo & Egbhue,[16] 2009 Calabar, Nigeria	11	38.8	43.5	1.6:1	Lower limb, head and neck	HIV, chronic ulcer, albinism, solar radiation
	Saka et al.,[7] 2010, Togo	103	46.2	39±15	2.68:1	Lower limbs (77.9%)	HIV
	Ahachi et al.,[12] 2016, Makurdi, Nigeria	11	25.6	37±12	1:1	Multifocal with lymph node involvement	HIV Artisans
	Ngbea et al.,[18] 2018, Makurdi, Benue	78	51.7	45	1:2	Lower limb, upper limb, perineum, trunk, head and neck	HIV/ immunosuppression

Malignant melanoma	Datubo- Brown,[24] 1991, Port Harcourt, Nigeria	7	38.9	-	5:2	Soles of the feet	-
	Yakubu & Maboguje,[11] 1995, Zaria, Nigeria	150	19	45	-	Feet	-
	Napo-Kura et al.,[10] 1997, Lomé, Togo	63	12.3	-	-	-	-
	Seleye-Fubara & Etebu,[22] 2005, Port Harcourt, Nigeria	15	-	57.5	2:3	Feet and the legs (46.7%)	Advanced age
	Mssedi et al.,[59] 2007, Tunisia	71	4.8	55	-	-	Advanced age, sunlight
	Saka et al.,[7] 2010 Togo	23	10.3	55±16	0.64:1	Lower limbs	-
	Ahachi et al.,[12] 2016, Makurdi, Nigeria	11	25.6	59±12	1:1	Lower limbs especially soles of the feet	Farmers, sunlight
	Diallo et al.,[13] 2017 Dakar, Senegal	1	2.0	50	-	Face	-
	Ngbea et al.,[18] 2018, Makurdi, Benue	22	14.6	45	1.2:1	Upper and lower limbs, perineum	
T-cell lymphomas	Mssedi et al.,[59] 2007 Tunisia	25	1.7	-	-	-	-
	Saka et al.,[7] 2010, Togo	4	1.8	-	-	-	-
	Diallo et al.,[13] 2017, Dakar, Senegal	9	18.7	50	1.9:1	Head and neck	-
Paget's disease	Chiedozi, Aligbe, & Aghahowa,[23] 2003, Benin, Nigeria	22	-	42.8	0:22	Breasts	Post-menopausal women
	Saka et al.,[7] 2010, Togo	2	0.89	-	-	-	-
Squamous cell carcinoma	Datubo Brown,[24] 1991, Port Harcourt Nigeria	7	39	-	3:4	-	Scars, chronic ulcers
	Yakubu & Maboguje,[11] 1995, Zaira, Nigeria	66	-	-	-	Head and neck, trunk	None (for head and neck). Chronic ulcers, scars from burns or injuries (for other parts of the body).

Squamous cell carcinoma	Napo-Kura et al.,[10] 1997, Lomé, Togo	254	49	-	-	-	Phagedenic ulcers
	Mssedi et al.,[59] 2007, Togo	398	31	60	-	-	Advanced age, sunlight
	Saka et al.,[7] 2010, Togo	64	28.6	48 ±17	1.29:1	Lower limb	Leg ulcers
	Okwor V, [3] 2013, Ibadan, Nigeria	63	50	46.6	1.6:1	Lower limb	Trauma, albinism, chemical exposure, alcohol
	Ahachi et al.,[12] 2016, Makurdi, Nigeria	19	44.2	43±20	1:1	Face, Lower limbs	Albinism, Farmers, Students, Sunlight
	Diallo et al.,[13] 2017, Dakar, Senegal	26	54.5	50	1.9:1	Cheek, lower lip, ears, eyelids, nose, and upper lip	Hydroquinone- induced exogenous ochronosis, actinic cheilitis
	Ngbea et al.,[18] 2018, Makurdi, Benue	30	19.9	45	2:1	Lower limb (highest), head and neck	Repeated use of psoralen and ultraviolet A (PUVA) therapy to treat psoriasis

SKIN CANCERS IN AFRICANS WITH ALBINISM

Skin cancers are common in Africans with albinism because they have reduced pigmentation compared to dark-skinned individuals who have greater amounts of melanin that absorb ultraviolet (UV) light conferring some level of protection.[3-18, 24-34] The spectrum of skin cancers among Africans with albinism as reported in different studies is seen in Table 2. Squamous cell cancer is the most reported skin cancer even among black Africans with albinism, the most common site being the head and neck.[27, 29-33] This contrasts with Caucasians where BCC is the most predominant lesion, and this may be due to genetic susceptibility. Malignant cutaneous melanomas were reported in few cases. Other skin tumours were not commonly reported.[13, 14, 16, 29-33]

Table 2: Skin cancers reported in Africans with Albinism.

SN	Authors /Publication year/Study site	Number with Albinism	M:F ratio	Mean age of study participants (years)	Most common tumours	Most common body site	Occupations most affected
1	Kromberg et al.,[31] 1989, Johannesburg, South Africa	111	-	-	SCC	Head	-
2	Launde et al.,[32] 1989, Dar-es-Salaam, Tanzania	350	1:1	31	SCC	Head and neck	Outdoor workers
3	Datubo-Brown,[24] 1991, Nigeria	3 of 18	-	-	SCC	Head and neck	-
4	Yakubu, Maboguje,[33] 1993, Zaira, Nigeria	18 of 793	-	-	SCC BCC	Head and neck	-
5	Asuquo et al.,[28] 2007, Calabar, Nigeria	5	2:3	38	BCC	Head and neck (67%) Lower limbs (33%)	-
6	Asuquo & Egbhue, 2009,[16] Calabar, Nigeria	4 of 29	1.6:1	43.5	SCC-50% BCC-25% MM-25%	Head and neck (75%)	-
7	Mabula et al.,[30] 2012, Bugando, Tanzania	64	1.5:1	30	SCC -75% BCC-23.4% MM-1.6%	Head and neck, trunk (72%)	Labourers, outdoor workers involved in semi-skilled and unskilled work
8	Kiprono et al.,[14] 2014, The Regional Dermatology Training Centre in Moshi, Tanzania	86	1.1:1	35 ±19.5	SCC	Head and neck region (56.0%) trunk (30%), extremities (14%)	-
9	Duallo et al.,[13] 2017, Dakar, Senegal	2 of 48	-	-	SCC	Face	-
10	Awe & Azeke,[29] 2018, Irrua, Edo, Nigeria	22	1:1	34.8	SCC (68.2%) BCC (22.2%)	Head and neck (63.4%)	Farmers, artisans, students

SCC-Squamous cell carcinoma
BCC-Basal cell carcinoma
MM -Malignant melanoma

RISK FACTORS FOR THE COMMON SKIN CANCERS IN DARK- SKINNED AFRICANS

Squamous Cell Carcinoma (SCC)

In contrast to Caucasians, ultraviolet (UV) light has not been observed to be the major risk factor for the development of SCC in dark-skinned Africans. However, causes of chronic skin irritation such as non-healing ulcers, scarring trauma, and radiation regardless of the cause, are some of the greatest risk factors associated with the development of SCC.[4, 15, 34-37]Marjolin ulcer is described as SCC that arises from a chronic ulcer. Patients with chronic inflammation, such as osteomyelitis, hidradenitis suppurativa, or lupus vulgaris, are also at increased risk for SCC.[9, 36]

The occurrence of skin cancers in the presence of these risk factors is usually an interplay of genetics and possibly other environmental exposures, such as to the sun or other carcinogenic agents.[4] In terms of genetic predisposition, a gene MC1R involved in melanogenesis which encodes for melanocortin receptor 1, has been associated with development of SCC independent of the skin type.[4] Other genes that predispose to genodermatoses such as albinism, xeroderma pigmentosum (XP), and epidermolysis bullosa can also indirectly increase the susceptibility towards SCC. An additional risk factor for the development of SCC that has been reported in the literature is the prolonged use of bleaching agents for cosmetic purposes.[13, 38-39]

The chances of recurrence of SCC is associated with size of the tumour greater than 2cm, Breslow thickness of more than 6mm, invasion beyond the subcutaneous fat, immune suppression [such as Human Immunodeficiency Virus (HIV), renal transplant] location on the temple, lip or pinna and poor differentiation.[4] It has also been reported that tumour depth is associated with the highest relative risk of local recurrence and metastasis of SCC and tumour diameter which is $\geq$ 0.2cm is associated with the highest risk for disease-specific death (DSD).[40] Squamous cell carcinoma in itself is a risk factor for the development of both BCC and melanoma and having SCC results in up to a 50% increased risk of developing non-melanoma skin cancers and other extra-cutaneous cancers.[4]

Kaposi Sarcoma

Kaposi sarcoma is a common malignancy that has been noted among Africans prior to the emergence of the Human Immunodeficiency Virus /Acquired immunodeficiency syndrome (HIV/ AIDS) pandemic. The major risk factors are old age, immunosuppression particularly HIV/AIDS and being African. [3, 7, 10, 16-21, 41] The AIDS-associated Kaposi Sarcoma has been observed to be more aggressive and be more likely to metastasize.[41]

Basal Cell Carcinoma (BCC)

Ultraviolet (UV) light is a major risk factor for the development of BCC in dark-skinned Africans. Ultraviolet light in the range of 290-320nm has been the most implicated and studies have shown that exposure to this range even for short periods of time during outdoor recreational activities, is more likely to predispose to BCC than occupational exposure outside this range. UV light has a double fold action in predisposing humans to skin cancer. Firstly, it has a direct action on stimulating the carcinogenic process on normal skin. Also, it has a stimulatory effect on other precancerous lesions such as actinic keratosis.[5, 42]

In dark-skinned Africans, BCC is observed to occur more commonly in younger age groups when compared to Caucasians. Additional non-modifiable risk factors for BCC in Caucasians include being male, having a lighter skin and eye colour, and having a family history of BCC or genetic markers.

In a study carried out in the United Kingdom, social classes 1 and 2, red hair, green eyes and Fitzpatrick skin type 1 were strongly associated with an increased risk of BCC.[43] On the other hand, other reported risk factors associated with BCC in dark-skinned Africans include alcohol use, trauma, chemical exposure and being rural dwellers.[3, 13-14, 17]

Multiple BCCs may occur as part of a complex genetic disorder called nevoid BCC (also known as Gorlin syndrome), and other syndromes associated with BCC have been reported including Bazex and Oley syndromes.[5, 42] The risk of BCC recurrence has been associated with having a large tumour size more than 2cm, invasion into the dermis and vasa nervorum, and location on the pinna or lip.[5] Of note, giant BCC more than 5cm are commonly located on the head among Africans.[44]

Cutaneous Melanoma

Melanoma is the sixth most common cancer in women with dark skin and the third most common skin cancer in women of colour.[37] Among dark-skinned Africans, UV light exposure has not been observed as a risk factor.[6, 35-36] This is in keeping with the theory that melanin is protective.[6] About 40% of melanomas are seen on the feet. The reasons for this may be related to continuous trauma while walking however this does not fully explain the increased risk in dark-skinned Africans.

In Africans, reported risk factors for cutaneous melanoma include advanced age, immunosuppression from any cause including the use of cytotoxic therapy for organ transplant patients, HIV, albinism, and chronic discoid lupus erythromatosus.[7, 10, 13, 20-24, 37] Advanced age was also considered as a risk factor in a study done in Port Harcourt, Nigeria which reported only the nodular and the acral lentiginous types.[22]

A positive family history of melanoma is a strong risk factor; with individuals having up to a 15% increased risk of being affected if a first degree relative is affected. This risk increases up to 70 times if three or more first degree relatives are affected.[45]Additional risk factors for melanomas are nevi including congenital melanocytic nevi (CMN), common acquired nevi, dysplastic nevi, solar lentigines and atypical lentigines, but rarely Ota nevi.[16, 35, 36] In a study done in African Americans, the cumulative maximum risk of malignant transformation of nevi from birth up to the age of 75 years was 1 in 164. The risk was strongly age dependent, with the majority occurring in persons over age 45 years.[45]

Xeroderma pigmentosum (XP) is one of the genodermatosis that has been associated with skin cancers including melanomas.[46, 47] Vitiligo has been noted to co-exist with malignant melanoma, reflecting the link between autoimmunity and tumour formation. The relationship between melanoma and vitiligo is thought to result from a dualistic immune-mediated response against antigens shared by normal melanocytes and melanoma cells.[48] There have been growing concerns that vitiligo may be a risk factor for developing melanoma in blacks.[49]

RISK FACTORS FOR THE RARE SKIN CANCERS

Dermatofibrosarcoma protuberans (DFSP)

Dermatofibrosarcoma protuberans is a rare tumour and thought to be more common in dark-skinned people compared to light-skinned people of other racial groups. The Bednar variant is reported to be more common in dark-skinned people of African descent.[50] It is known to arise from scars, burns and vaccination sites.[50, 51] Additional risk factors for DFSP include male sex, middle age, previous history of DFSP and trauma, with the trunk being the most commonly affected site. [11, 18, 51]

Cutaneous T-cell lymphoma

There are varying types of cutaneous lymphomas with mycosis fungoides being the most common variety. Nevertheless, differences have been noted as reported by Diallo et al.,[13] who reported NK/T-cell lymphoma, nasal type in four patients, anaplastic CD30 + lymphoma in three patients and mycosis fungoides in two patients. Mycosis fungoides is more common in dark-skinned Africans although a high index of suspicion is needed to make the diagnosis due to its ability to mimic other common skin lesions such as tinea incognito or pityriasis rosea.[52-54] The HIV pandemic has also contributed to an increased incidence of mycoides fungoides.[7, 13]

Paget's disease

This is a rare intraepithelial adenocarcinoma. The main risk factor for the skin manifestation of this disease is being a post-menopausal female and it is commonly seen on the breasts.[55] It can also affect apocrine-bearing skin in areas such as the axilla, penis, scrotum, and vulva.[7, 23, 55]

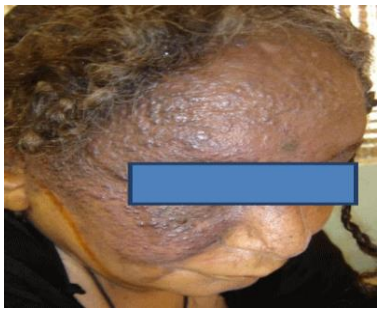
Adnexal tumours

These consist of a diverse variety of malignant tumours. They can occur anywhere in the body and are yet to be associated with any particular risk factor however solar radiation and albinism may likely be risk factors in Africans. [3, 11, 13]

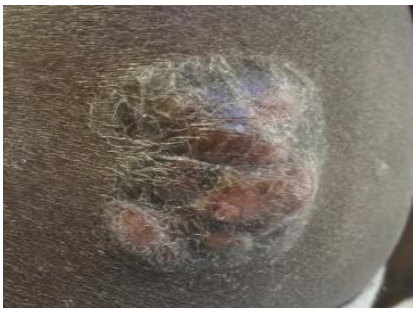
Merkel cell carcinoma (MCC)

Despite few published studies on MCC in African literature, there have been a few case reports identified. [26-27, 56] Albinism and HIV are two recurring risk factors that have been observed.[3, 25-27, 56] Table 3 shows various pictorial examples of skin cancers as reported in Africans.

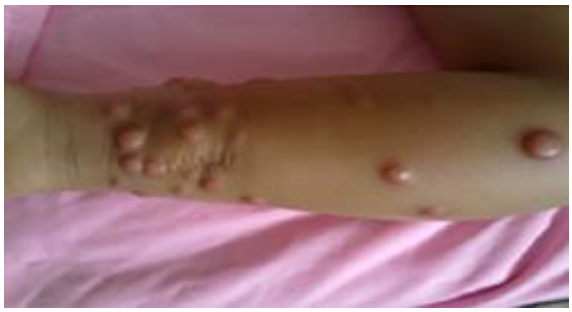
Table 3- Pictures of skin cancers in Africans



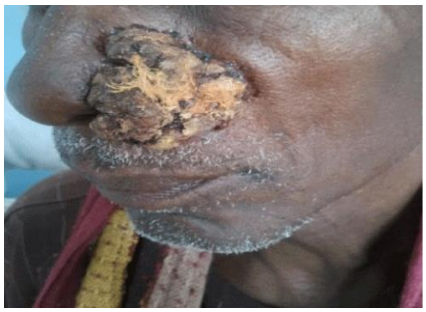
Adnexal tumours (angiosarcoma)[13]



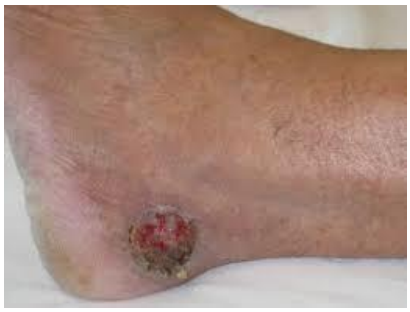
Dermatofibrosarcoma protuberans (DFSP)[62]



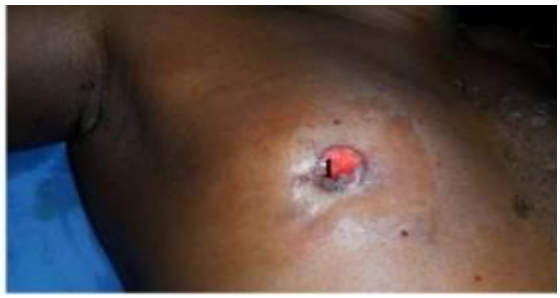
Rhabdomyosarcoma with skin metastasis[63]



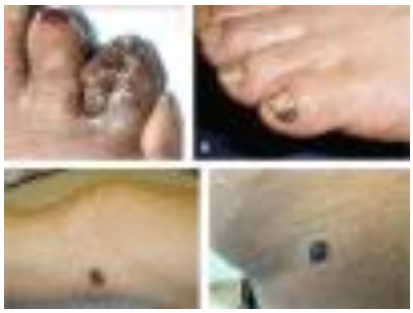
Basal cell carcinoma[13]



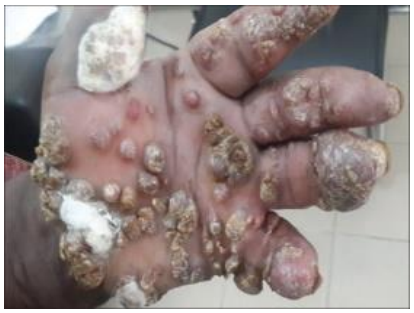
Eccrine porocarcinoma[64]



Paget disease [65]



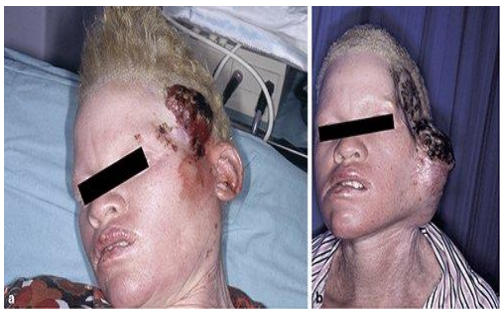
Cutaneous Malignant Melanoma[38]



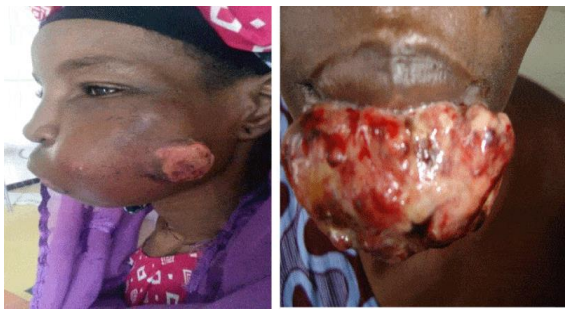
Kaposi sarcoma [18]

Squamous cell carcinoma in xeroderma pigmentosum and albinism[13]

Cutaneous T-cell lymphoma (NK/T cell lymphoma)[13]



Merkel cell carcinoma[27]



Squamous cell carcinoma in hydroquinone exogenous ochronosis and in actinic keratitis [13]

PERCEPTION, PREVENTION, AND PROGNOSIS OF SKIN CANCERS

Studies have shown that many dark-skinned Africans irrespective of their residence have misconceptions of reduced susceptibility to skin cancer.[8-9, 15, 36-40, 57-58] This perception spans across different age groups including the elderly.[58] Although the incidence of skin cancers appears to be less in dark-skinned Africans compared to those with lighter skin phototypes, studies have shown that lighter skin types such as phototype III is seen in more than half of the patients from Northern African countries.[59] Disease risk scores are being developed to aid early cancer detection in patients particularly for the major skin cancers.[60]

The major treatment modalities for skin cancers include chemotherapy, radiotherapy, immune therapy, targeted therapy, and surgery. Prevention strategies include all levels of prevention. Primary level includes avoidance of exposure to sunlight particularly from midday to afternoon when the solar radiation is at its peak, wearing protective clothing including sunglasses, use of high sun protection factor (SPF) sunscreens, avoidance of skin-lightening creams and tanning parlours.[4-9, 36-40, 57, 61]

Secondary prevention includes screening and regular skin examination to detect any new dermatological lesions and presentation to dermatologists for proper care and continuous surveillance while tertiary prevention includes follow-up of a prior skin cancer with the aim of detecting early recurrence.[61] Continuous skin surveillance using different dermatologic investigations such as dermoscopy and sentinel lymph node biopsy are also useful at the different levels of prevention and diagnosis.[62-65]

Recommendations for clinicians managing dark-skinned Africans include thorough examination of the entire skin including the scalp, hair, nails without varnish, palms, soles, and interdigital clefts. Scars, burns, moles, tattoos, and other chronic lesions should be thoroughly examined for changes, and if possible, followed with medical photography and biopsy if they become ulcerated. Non-healing ulcers should be biopsied and treated with skin grafting. A high index of suspicion must always be maintained in dealing with chronic wounds and adherence to highly active antiretroviral therapy (HAART) for HIV/AIDS should be encouraged and emphasized.

Though skin cancer is less prevalent in dark-skinned Africans the prognosis is often worse compared to Caucasians. This likely may be due to atypical clinical presentation, advanced stage at presentation and biologically aggressive nature of the tumour.[9, 36-38, 40; 57]

CONCLUSION

Skin cancers have several common risk factors in dark-skinned Africans including immunosuppression, poor wound healing, chronic inflammation, and solar radiation. The knowledge of these modifiable risk factors is of public health importance in curbing the incidence of skin cancers through raising public awareness, disease surveillance and instituting preventive measures at all levels.

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