

ORIGINAL ARTICLES

MALIGNANT SKIN TUMOURS IN KUMASI: A FIVE YEAR REVIEW

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Abstract

Introduction: Ultraviolet radiation is the primary aetiological agent in malignant melanoma (MM), squamous cell carcinoma (SCC) and basal cell carcinoma (BCC). Its effect on carcinogenesis can be influenced by endogenous and exogenous factors.

Objective: To document the clinical and epidemiological features of patients presenting with malignant skin tumours at Komfo Anokye Teaching Hospital (KATH), from January 2009 to December 2013.

Patients and Methods: Records of patients treated for malignant skin tumours at KATH were retrieved from the surgical out-patient department and theatre records and analysed.

Results: 38 patients comprising 16 males and 22 females were treated for malignant skin disease from January 2009 to December 2013. Their ages ranged from 12 to 84 years (mean 48.4, SD=20.2). Predominant lesions were SCC (17 cases), MM (12

cases), and dermatofibrosarcoma protuberans (DFSP), (four cases). SCC were located on the scalp (eight cases), lower limbs (six cases), upper limb (two cases) and trunk (one). All MM lesions were located on the foot. DFSP lesions were found on the leg (one case), trunk (one case), and shoulders (two cases). Basosquamous carcinoma (BSC) was found on the trunk of an albino.

All patients were treated surgically (48 procedures); three SCC patients had radiotherapy; one MM patient had chemotherapy.

Conclusion: SCC, MM and DFSP were the main malignant skin tumours managed. Chronic wounds, scars and skin bleaching were the exogenous factors; whilst albinism and xeroderma pigmentosum were the endogenous factors identified. For prevention, early case detection, adequate treatment of wounds and sun avoidance are advocated.

Key Words: Squamous cell carcinoma, basal cell carcinoma, malignant melanoma, xeroderma pigmentosum, Dermatofibrosarcoma

Introduction

Malignant tumours of the skin are either primary or secondary. Primary malignant skin tumours arise from the skin and its appendages. A secondary malignant skin tumour originates from a deeper tissue and spreads to involve the skin¹.

Ultraviolet radiation (UVR) is considered to be the primary aetiological agent involved in cutaneous carcinogenesis². It is known to have a causative effect related to malignant melanoma (MM), squamous cell carcinoma (SCC) and basal cell carcinoma (BCC). Both familial and environmental factors play a role in the aetiology of MM.

The familial/genetic factors include skin type, number of naevi, having atypical naevi, and having a family history of skin cancer. Intermittent exposure to UVR is the major environmental factor for MM, especially in combination with the endogenous factors³. MM is

uncommon in black Africans⁴ and Asians⁵ due to a better protection afforded by a larger amount of melanin pigment in the skin⁶. MM appears more often on the non-pigmented areas of the skin in non-Caucasians, are often of the acral lentiginous type and appear on the palms of the hands, soles of the feet and under the nails⁷.

UVR especially ultraviolet B (UVB) contributes to the formation of SCC⁸ and BCC⁹. These tumours develop through a multistep process involving activation of proto-oncogenes and/or inactivation of tumour suppressor genes in the human skin keratinocytes. High doses of UVR also lead to skin cancers by inducing reactive oxygen species that play an important role in tissue injury¹⁰. Common exogenous carcinogenic agents for SCC and BCC include tobacco use, human papilloma virus¹¹, previous burns¹², immunosuppression¹³, inflammatory lesions and ulcers of long standing¹⁴.

Since melanin pigment protects against the effects of UVR⁶ the malignant skin tumours seen in pigmented races are more likely to be due to these exogenous carcinogenic agents. Moreover genetic conditions such as albinism¹⁵ and xeroderma pigmentosum¹⁶ which predispose to skin cancer formation are also prevalent amongst Ghanaians.

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There have been some publications about primary malignant skin tumours in Ghanaians¹⁷ including those developing from exogenous causes¹⁸. However there has been no publication about the aetiology, and the epidemiology of malignant skin lesions in Kumasi or in the catchment area of Komfo Anokye Teaching Hospital.

The objective of the study was to document the clinical and the epidemiological features of patients presenting with malignant skin tumours at Komfo Anokye Teaching Hospital in Kumasi between the period from January 2009 to December 2013. This knowledge could shed some light on the risk factors for malignant skin disease in Ghana and help to institute preventive measures.

Patients and Methods

This is a retrospective study. The records of patients treated for malignant skin lesions at Komfo Anokye Teaching Hospital in Kumasi between January 2009 and December 2013 were retrieved from the records of the surgical out-patient department and from operating theatre records and analysed. Patients were included in the study only if their lesions had been confirmed histologically as malignant. Data recorded included the name, age and sex of the patients, the occupation, the site of the lesion, any previous illness, any previous surgery, the surgical procedure performed, the outcome of treatment and the histological diagnosis. Data was also collected on any adjuvant therapy given to the patient.

As a departmental policy, patients presenting with skin tumours at the Plastic Surgery Unit of Komfo Anokye Teaching Hospital were examined clinically; the lesion was staged and clinical photographs taken. The lesion was excised with either direct closure of the defect, skin grafting, flap repair, or left to heal by secondary intention as appropriate. Since most cases of MM were advanced at presentation (Breslow thickness >2mm) a minimum excision margin of 2cm was used¹⁹. SCC lesions were excised with 0.5 to 1cm excision margins²⁰. BCC lesions were excised with 2 to 3mm margins because of their location on the face. All other malignant lesions were excised with a minimum margin of 3cm, depending on the location and availability of local tissue. Block dissection of palpably enlarged regional lymph nodes was also performed where indicated. Patients requiring chemotherapy and/or radiotherapy were referred to the oncologist or radiotherapist for the appropriate treatment. The patients were followed up monthly for six months; three monthly for one year, and thereafter six monthly.

Ethical approval for the study was obtained from the Committee on Human Research Publications and Ethics (CHRPE) of the School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi. Consent to participate in the study was obtained from all the patients, and from the parents or guardians, in the case of children during the

postoperative follow ups. All the patients consented to undergo the surgical procedures required for the treatment of their disease as a requirement of the hospital.

Results

A total of 38 patients were treated for malignant tumours of the skin. They were made up of 16 males and 22 females, giving a male to female ratio of 1:1.4. Their ages ranged from 12 to 84 years with a mean age of 48.4 (SD=20.2) with a median age of 49.2. The age distribution of the patients is depicted in Fig. 1.

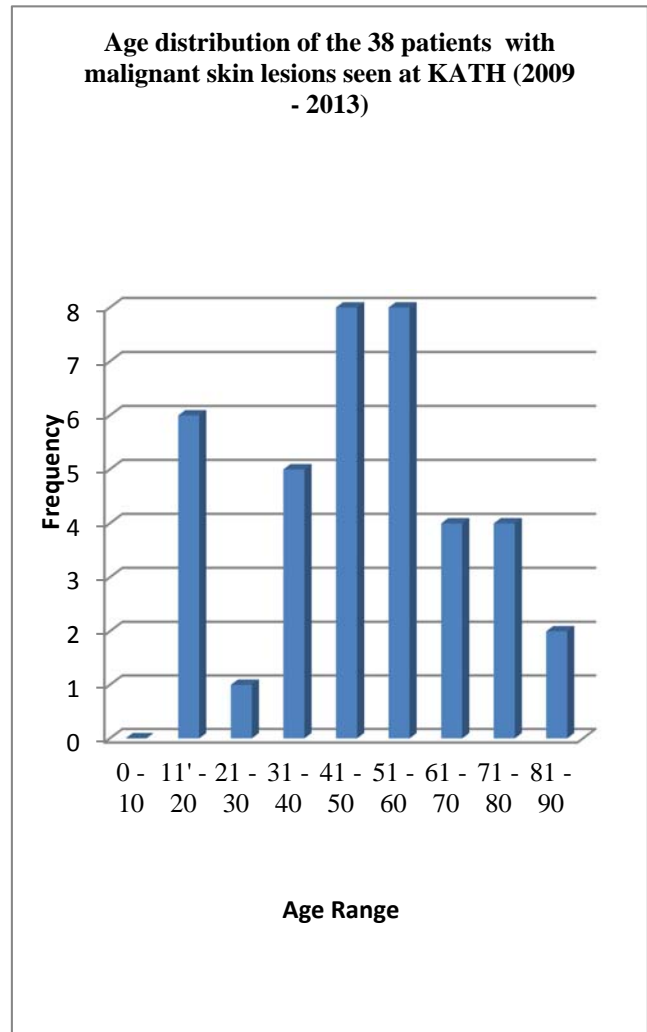


Fig. 1: Age distribution of 38 patients with malignant skin lesions seen at KATH (2009 – 2013)

The types and frequency of skin lesions treated during the study period, and the sex distribution are shown in Figs. 2 and 3. The youngest patient, a boy aged 12 years presented with a myxoid liposarcoma involving the left big toe, whilst the oldest patient was an 84 year old man with MM of the sole of the left foot.

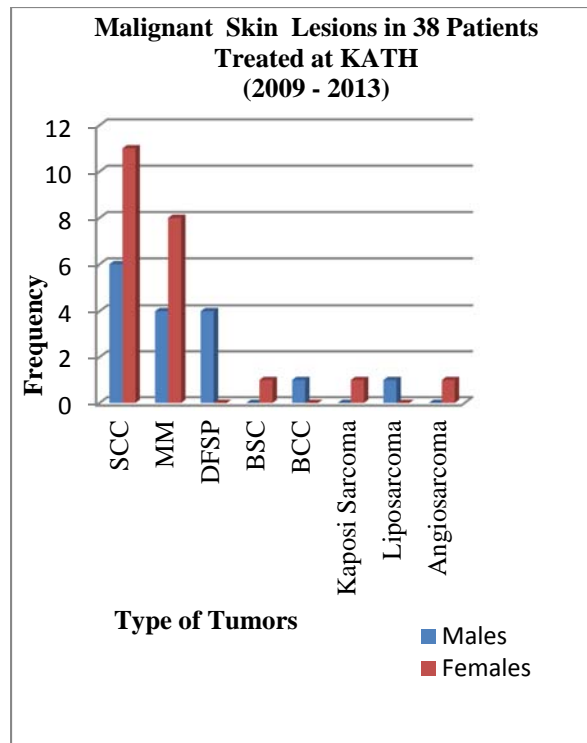


Fig. 2: Malignant skin lesions in 38 patients treated at Komfo Anokye Teaching Hospital from 2009 to 2013.

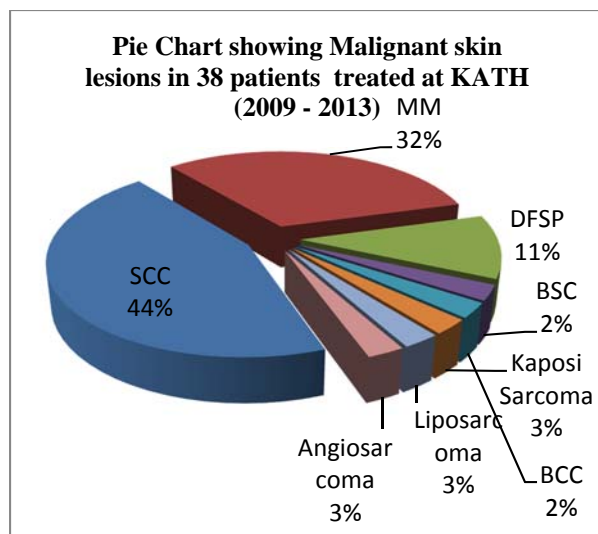


Fig. 3: Types of malignant skin tumours treated at Komfo Anokye Teaching Hospital from 2009 to 2013.

The predominant lesions were SCC (N=17) and MM (N=12). The age and sex distribution of these two lesions are shown in table 1.

The mean age for the patients with SCC was 45.0 (SD=15.2), whilst the mean age for MM was 65.5 (SD=15.4). Four of the cases of SCC arose de novo from normal skin; four of the cases developed from chronic traumatic wounds (Fig. 4), two from chronic burn wounds, two from Buruli ulcers, and two from atrophic skin resulting from skin bleaching.

Table 1: Age distribution for patients with squamous cell carcinoma and malignant melanoma (N=29).

Age range	SCC			MM		
	Male	Female	Total	Male	Female	Total
0 - 10	0	0	0	0	0	0
11 - 20	2	0	2	0	0	0
21 - 30	0	1	1	0	0	0
31 - 40	1	1	2	0	1	1
41 - 50	3	2	5	0	1	1
51 - 60	0	5	5	1	1	2
61 - 70	0	2	2	2	1	3
71 - 80				1	2	3
81 - 90				0	2	2
Total	6	11	17	4	8	12

Three of the patients who had the hereditary condition of xeroderma pigmentosum presented with two SCC lesions each. The distribution of the SCC lesions on various parts of the body was as follows: eight on the scalp, six on the lower limb, two on the upper limb and one on the trunk. All the 12 patients who presented with MM had their primary lesion on the foot, especially on the sole.



Fig 4: SCC (Marjolin’s ulcer) developing from a chronic traumatic wound : (a) before and (b) after excision and skin grafting.

Dermatofibrosarcoma protuberans (DFSP) occurred in four male patients on the leg, trunk, and shoulder (two cases) respectively (Fig. 5). All the DFSP lesions were recurrent; three were excised three times; the fourth patient had a fourth excision and undergone radiotherapy.

Pre-operative**After excision and skin grafting**

Figs. 5a & 5b: Dermatofibrosarcoma protuberans of the shoulder in an adult male, before and after excision and skin grafting.

A female albino presented with basosquamous carcinoma (BSC) of the back of the trunk which was treated by excision and skin grafting.

A total of 48 surgical procedures were performed for the patients with malignant skin lesions. Excision was the commonest (N=41) surgical procedure; this was combined with partial thickness skin grafting in 25 cases. One 79 year old Caucasian who had BCC of the nose had the lesion excised and the defect reconstructed with a bilobed flap. Direct closure of a defect after excision was not possible in any of the patients owing to the larger sizes of the tumours presented; post excision defects were either skin grafted, covered with a flap, or left to heal by secondary intention (Table 2).

Table 2: Surgical procedures performed for patients with malignant skin tumours at KATH

Surgical procedure	Number of patients	Total
EXCISION		41
Excision & STSG	25	
Excision	15	
Excision & flap repair	1	
AMPUTATION		3
Below elbow	1	
Above knee	1	
Below knee	1	
BLOCK DISSECTION		3
Groin	2	
axilla	1	
INCISION		1
Incision biopsy	1	

Block dissection of the inguinal lymph nodes was performed for two female patients who had metastatic MM. Block dissection of the axillary lymph nodes was performed for one patient who had Marjolin's ulcer of the right forearm from a previous burn scar, the primary lesion having been excised and the defect skin grafted. The details of the surgical procedures performed are depicted in table 2. Three of the patients who had recurrent SCC also underwent radiotherapy; one patient with disseminated MM also had chemotherapy. Two cases of DFSP and two of SCC did not have clear excision margins from the pathology report. The former underwent re-excision; the latter had radiotherapy.

Discussion

The incidence of malignant skin tumours has been observed to be increasing worldwide; this increase is evenly distributed between developing and developed countries¹. The effects of the various aetiological factors may differ from one geographical area to another⁷, and this may affect the incidence and pattern of the disease.

In the current study malignant skin tumours did not occur in any patient younger than eleven years (Fig.1) even though some of the predisposing factors such as xeroderma pigmentosum and albinism were found in this age group. This emphasizes the significance of a minimum period of exposure to the carcinogenic agents required for the development of malignant skin disease.

SCC the commonest tumour tend to occur in the younger age group (mean age = 45years) than MM (mean age = 65years). This is because most of the cases of SCC were Marjolin's ulcers developing from chronic wounds resulting from trauma (four), burns (two) and Buruli ulcer (two). These conditions tend to occur more commonly in young adults than in the elderly. In addition, two middle-aged women presented with SCC developing from atrophic skin due to skin bleaching, a practice known to be carcinogenic in Ghana since the agents used contain hydroquinone¹⁸. The distribution of the SCC lesions showed a higher predilection for the scalp (47%) than the lower limbs (35%). Whilst several studies in the West African sub-region indicate SCC as the commonest malignant skin tumour, most of them identify the lower limbs as the commonest site, due to the higher incidence of injuries, ulcers and scars at this site^{21, 22, 23}. The higher number of these lesions on the scalp, as compared to the lower limbs in the current study could be due to the number of cases arising from old burn scars on the scalp, the three cases of xeroderma pigmentosum who had scalp lesions (Fig. 6), and cases arising de novo from the scalp.

SCC lesions on scalp Hyper and hypopigmented macules on hands



Figs. 6a & 6b: Adult female patient with two SCC lesions on the scalp with hyper and hypo-pigmented macules on the scalp and arms, typical of xeroderma pigmentosum.

MM comprised 32% of the malignant skin tumours (Fig. 3), second only to SCC (44%). MM occurred in the older age group (mean age=65), with a female preponderance (male to female ratio=1:2). The average duration of the primary lesion at presentation was 3.4 years. Most of the patients presented with advanced disease, most of which had already metastasized (Fig. 7). About 60% of the patients with MM had died of disseminated disease by the end of the study period whereas all of the SCC patients were alive. This apparent high mortality for MM could be explained by the late presentation, and the histological finding that most (75%) of the lesions were of the acral- lentiginous type, which is notorious for a poorer prognosis in black Africans²⁴.



Figs.7a&7b: Malignant melanoma on the sole of the left foot of an adult female patient with left inguinal lymph node metastasis.

Conclusion

Squamous cell carcinoma, malignant melanoma and dermatofibrosarcoma protuberans are the common malignant skin tumours seen in Kumasi. Though most of them arose de novo from normal skin, chronic wounds, scars and skin bleaching, as well as xeroderma pigmentosum and albinism are some of the aetiological factors identified. Prevention can be achieved by early case detection and treatment, prompt and adequate management of all wounds, education on sun

avoidance and protective clothing by the susceptible hereditary groups.

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