

## The Site Distribution of Neoplastic Skin Tumours Seen at the University of Benin Teaching Hospital Over a Ten-Year Period

Running Title: The body-site distribution of skin tumours in UBTH

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### ABSTRACT

*Knowing the distribution of skin neoplastic lesions across body sites and their patterns can assist in identifying potential causes, guiding a diagnosis, and choosing the best course of treatment. Despite this, there is a paucity of research in Nigeria that is only concerned with the distribution of neoplastic skin lesions by body site. This study was aimed to determine the body-site distribution of neoplastic skin lesions at the University of Benin Teaching Hospital over a ten-year period. This is a retrospective study of all cases of histologically diagnosed neoplastic skin lesions with documented specified body sites over a 10-year period at the Department of Anatomic Pathology, University of Benin Teaching Hospital. The results showed that the malignant skin tumours were preferentially seen in the lower limbs followed by the head and neck region while the benign skin lesions were preferentially seen in the head and neck region followed by the lower limbs. The anogenital region was the least common body site in both malignant and benign lesions. In summary, the baseline data for body-site distribution of neoplastic skin tumours in our environment has been elucidated. We anticipate that this will supply priceless information for future comparative research while also aiding the dermatologist and pathologist in arriving at a definitive diagnosis.*

**Keywords:** Body-Site, Distribution, Tumours, Skin

### INTRODUCTION

Cutaneous tumours consist of a wide array of malignant and benign pathologic entities.<sup>1,2</sup> Histopathological study is considered the gold standard for diagnosis of skin diseases.<sup>3</sup> The practice of dermatology therefore requires skin biopsy for histology as a common procedure.<sup>4</sup> However, an understanding of the patterns and the body-site distribution of neoplastic skin lesions can provide aetiological clues and may help inform possible diagnosis and appropriate management.<sup>5</sup>

Despite this, we notice the scarcity of research work devoted solely to the pattern of body-site distribution of neoplastic skin lesions in Nigeria. Previous studies on

skin tumours in our environment in particular and Nigeria in general were skewed in favour of the pattern of either malignant or benign cutaneous neoplastic lesions, while a few studies bring to fore body-site distribution of skin tumours as a minute part of their research work.<sup>6-46</sup> This research data would be relevant for research, records and ultimately provide the baseline data of body-site distribution of neoplastic skin lesions in this environment which will aid the dermatologist and pathologist in arriving at a diagnosis in this environment. The aim of this study was therefore to determine the body-site distribution of skin neoplastic lesions at the University of Benin Teaching Hospital over a 10-year period.

### MATERIALS AND METHODS

This was a retrospective study. The targets of this study were all cases of skin tumours diagnosed histologically between January 2004 and December 2013 in the Department of Anatomic and Forensic Pathology, University of Benin Teaching Hospital. The department receives skin

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Date manuscript was received: 7/6/24

Date manuscript was accepted: 24/7/24

biopsies from Dermatology and General Surgery Departments in University of Benin Teaching Hospital, Secondary and Primary Health Care Centres within the Benin City metropolis, neighbouring towns and villages in Edo State, as well as neighbouring states of Ondo and Delta.

Information for this study was obtained from the surgical pathology registers, histology request cards and duplicate copies of histology reports in the departmental archives.

The surgical pathology registers, histology request forms and duplicate copies of the histology report and patient case notes were useful in providing information on the age, sex, nature of specimen, hospital number, histology laboratory number, clinical presentation including site of the neoplastic skin lesion, and clinical diagnosis of each patient/case. The data obtained were recorded against the corresponding patient's name on a data spreadsheet.

The data obtained was analysed using the Statistical Package for Social Sciences, version 16 (SPSS 16, SPSS Inc. Chicago, Illinois, United States of America). For categorical variables (sex and body-site distribution) the frequency and

corresponding rates in percentages were analysed while for the continuous variable (age), the age range, mean age, standard deviation and peak age were analysed.

Ethical approval was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital. Neoplastic skin lesions with documented body-site distribution were included in this study. Those lesions without documented body sites were excluded from this study. This is a limitation of this study.

## RESULTS

A total of 375 cases diagnosed as skin tumours were seen during the study period. The ages of those patients ranged from 1 to 111 years. While the mean age was 38.3 years (SD = 19.4), the median and modal ages were 35.0 and 27.0 respectively. The peak age of skin tumours was in the 4<sup>th</sup> decade and it accounted for 23.2% of cases (87 cases). The peak ages in females and males were in the 3<sup>rd</sup> and 4<sup>th</sup> decades. Overall, there was a slight female preponderance. There were 192 females (51.2%) and 183 males (48.8%) giving a female-to-male ratio of 1.05:1. (Tables 1A)

**Table 1A: Sex and age distribution of patients with skin tumours**

Sex	No. (%)	Age range (years)	Mean age (years)	Standard deviation	Peak age (years)
FEMALE	192 (51.2)	1 – 85	37.03	18.77	20 – 29
MALE	183 (48.8)	2 – 111	39.61	19.99	30 – 39
STUDY POPULATION	375 (100)	1 – 111	38.32	19.38	30 – 39

The mean age for benign and malignant skin tumours in this study was  $31.7 \pm 18.2$  and  $45.0 \pm 17.5$  years respectively. Benign skin tumours occurred at about the same mean age in males and females. Malignant skin tumours occurred at a relatively similar comparative

mean age in males and females. Benign and malignant skin tumours had a wide age range that spanned from the 1<sup>st</sup> decade to the 9<sup>th</sup> (benign) and 12<sup>th</sup> (malignant) decades, (Table 1B).

**Table 1B: Frequency, sex and age distribution of patient with benign and malignant skin tumour**

Skin tumours	No. of cases	Mean age $\pm$ sd (years)	Age range (years)	Mean age $\pm$ SD (years)	
				Male	Female
<b>BENIGN</b>	188	31.70 $\pm$ 18.20	1-84	31.28 $\pm$ 18.82	32.20 $\pm$ 19.15
<b>MALIGNANT</b>	187	44.97 $\pm$ 17.54	3-111	48.13 $\pm$ 17.55	41.97 $\pm$ 17.08

Of the 375 cases of skin tumours, 49.9% (187 cases) were malignant skin tumours while 50.1% (188 cases) were benign skin tumours, (Table 1B). Forty-six percent (46.0% or 86 cases) of the former had specified body sites while 52.7% (99 cases) of the latter had their body sites specified.

Table 2 shows the body-site distribution of malignant skin lesions that were seen in this study. The most and least common body sites were the lower limbs and the anogenital region accounting for 41.9% (36 cases) and 4.7% (4 cases) respectively. The distributions of other malignant skin lesions are shown in Table 2.

**Table 2 Body-site distribution of malignant skin tumours**

Skin tumour	Head/neck	Anogenital	Trunk	Lower limb	Upper limb	No. of cases with specified site
<b>Malignant keratinocytic tumours</b>						
Squamous cell carcinoma	19	3	2	10	2	36
Basal cell carcinoma	3	0	0	1	0	4
<b>Melanocytic tumours</b>						
Malignant melanoma	3	0	2	13	2	20
<b>Soft tissue tumours</b>						
Kaposi's sarcoma	1	0	2	9	3	15
Malignant Melanoma	1	1	2	3	0	7
Angiosarcoma	2	0	0	0	0	2
<b>Others</b>						
Metastatic carcinoma	1	0	1	0	0	2
<b>Total</b>	<b>30</b>	<b>4</b>	<b>9</b>	<b>36</b>	<b>7</b>	<b>86</b>

Table 3 shows the site distribution of benign skin tumours in this study. The head

and neck were the most common site accounting for 13.1% (13 cases), while the

anogenital region was the least common site with 1.0% of cases (a case). The distributions of other benign skin lesions are shown in Table 3 below.

**Table 3: Body-site distribution of benign skin tumours**

Skin tumour	Body site					No. of cases with specified site
	Head/neck	Anogenital	Trunk	Lower limb	Upper limb	
<b>Benign keratinocytic tumours</b>						
Verrucae	5	2	5	4	1	17
Seborrheic keratosis	1	0	0	2	2	5
<b>Melanocytic tumours</b>						
Melanocytic naevi	1	0	0	0	1	2
<b>Adnexal tumours</b>						
Eccrine Poroma	1	0	0	1	1	3
Hidradenoma	0	0	1	0	0	1
<b>Soft tissue tumour</b>						
Haemangioma	14	2	1	2	2	2
Dermatofibroma	7	0	1	8	0	16
Lymphangioma	5	0	1	0	0	6
<b>Neural tumours</b>						
Neurofibroma	13	1	5	5	4	28
<b>Total</b>	<b>47</b>	<b>5</b>	<b>14</b>	<b>22</b>	<b>11</b>	<b>99</b>

## DISCUSSION

The skin tumours seen in this study were considered under their respective broad groups. These were the keratinocytic, melanocytic, appendageal and soft tissue tumours.<sup>53</sup> Tumours from the broad group, haematolymphoid tumours, were not observed in this study.<sup>53</sup>

The malignant keratinocytic tumours seen in this study were squamous cell carcinoma (SCC) and Basal cell carcinoma (BCC). The head and neck region was the most common site of SCC in this study which is similar to the reports of studies done in Nigeria, Tanzania and India.<sup>17, 23, 47, 48</sup> This is contrary to other reports from studies done in Nigeria.<sup>11, 23</sup> The head and

neck region was the most common site of BCC in this study, which is similar to the reports of previous studies done in Nigeria, Tanzania, India and Croatia.<sup>17, 23, 35, 47-49</sup> This consistently observed prevalence of BCC in the head and neck region may be attributed to the fact that the head and neck region that is persistently exposed to ultraviolet light in contrast to most other parts of the body that are usually covered and protected by clothes or shoes. The reason for this disparity is the risk associated with the development of the tumour in Caucasians with outdoor occupation that exposes their skin to ultraviolet (UV) radiation from the sun is higher than that in Blacks.<sup>50, 51</sup>

In this study, verrucae and seborrhoeic keratosis were the benign keratinocytic skin tumours seen. The former had a lesion each in the head and neck region, lower limb and upper limb, while the latter had one lesion on the trunk. Paucity of data on site distribution for these lesions from previous studies has limited comparison of our findings with that of other research work.<sup>6-46</sup>

Malignant melanoma (MM) is the malignant melanocytic tumour seen in this study. The lower limb was the most common site of MM in this study, which is similar to the reports of studies done in Nigeria<sup>16, 17, 23, 25, 34, 39</sup> Melanocytic Naevi (MN) is the benign melanocytic tumour seen in this study. Paucity of data on MN has limited the comparison of the findings of this study with other studies, particularly in our environment.<sup>6-46</sup> However, 2 cases were noted in this study, one in the head and neck region and the other in the upper limb, both sites being sun-exposed areas of the body. This is in keeping with the high prevalence of MN seen in sun-exposed areas of the body in Caucasians of Australian nationality that are exposed to high levels of UV radiation thus increasing the risk for developing melanocytic naevi.<sup>52</sup>

In this study, eccrine poroma and hidradenoma were the adnexal skin tumours seen, both lesions are benign. The former had a lesion each in the head and neck

region, lower limb and upper limb, while the latter had one lesion on the trunk. Paucity of data on site distribution for these lesions from previous studies has limited comparison of our findings with that of other research work.<sup>6-46</sup>

Kaposi's sarcoma (KS) is a soft tissue malignant tumour. The lower limb was the most common site of KS in this study which is similar to the reports of previous studies done in Nigeria.<sup>34, 36</sup> Dermatofibrosarcoma protuberance (DFSP) in this study is a malignant soft tissue tumour of the skin. The lower limbs, followed by the trunk were the most common sites of DFSP in this study. This is in contrast to a report from Maiduguri by Ngadda et al who reported that the trunk followed by the lower limbs were the most common sites of DFSP in their study.<sup>26</sup> Paucity of data on-site distribution for these lesions from previous studies has limited comparison of our findings with that of other research work.<sup>6-46</sup>

In this study, cutaneous angiosarcoma, a soft tissue tumour was a rare finding. The two cases seen in this study occurred in the head and neck region of the elderly. Paucity of data on site distribution for these lesions from previous studies has limited comparison of our findings with that of other research work.<sup>6-46</sup>

In this study, the head and neck region overwhelmingly accounted for the most common body-site of haemangioma, a benign vasoformative soft tissue tumour. Paucity of data on site distribution for these lesions from previous studies has limited comparison of our findings with that of other research work.<sup>6-46</sup>

Dermatofibroma is a benign fibrohistiocytic soft tissue tumour of the skin.<sup>53</sup> In this study, most cases of this lesion were seen in the lower limbs, followed closely by the head and neck region. Paucity of data has limited the discussion on the findings of this study, more so that most previous studies done on skin tumours, particularly in Nigeria are on malignant skin tumours.<sup>6-46</sup>

Lymphangioma is a benign vasoformative tumour of the skin tissue.<sup>53</sup> The head and neck region were the most common site of this tumour in the study. The paucity of data has limited the discussion on the findings of this study, more so that most previous studies done on skin tumours, particularly in Nigeria are on malignant skin tumours.<sup>6-46</sup>

Neurofibroma (NF) was the only benign neural tumour seen in this study. The head and neck region were the most common site of this tumour in the study. The paucity of data has limited the discussion on the findings of this study, more so that most previous studies done on skin tumours, particularly in Nigeria are on malignant skin tumours.<sup>6-46</sup>

Metastatic carcinoma accounted for 2 cases of malignant skin tumours in this study, one was seen on the head and neck region, and the other on the trunk. Previous studies from this environment in particular and Nigeria in general did not report a case of metastatic carcinoma to the skin, thus limiting discussion on this.<sup>6-46</sup>

## CONCLUSION

From the foregoing, this study served to generate baseline data for the body-site distribution of malignant and benign skin tumours in Benin City. The head and neck region were the most common body-site of benign skin tumours while the lower limb was the most common body-site or malignant skin tumours. The anogenital region is the least common body-site of skin tumours be it malignant or benign.

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