

## HISTOPATHOLOGICAL PATTERN OF SKIN LESIONS IN USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL SOKOTO, NIGERIA

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### ABSTRACT

**Aim:** Skin diseases are a common and important cause of morbidity globally. However, there is no study on skin lesion available in Sokoto to add to the existing dermatological knowledge in the sub-Saharan region. This research aims to determine the histopathological pattern of skin lesions in Sokoto.

**Methods:** A total of 329 skin samples were thoroughly analysed in the study. 28 had inadequate data ranging from indeterminate gender to unspecified age and were hence not used. 301 samples were therefore used for the study.

**Results:** Pre-malignant and malignant tumours accounts for 26.25% of all skin lesions followed by tumours of the dermis with 22.92%. The age group, 20-29 years presented the highest frequency of Skin pathology with 20.60%. Skin pathology was slightly higher in males than in females. The average rate of neoplastic lesion was 67.1% and malignant conditions accounted for 43.6% of such cases. Chronic inflammatory dermatoses was the most frequent skin lesion with 16.9%

**Conclusion:** Chronic inflammatory dermatoses is the highest occurring skin lesion in Sokoto, Nigeria.

**Key Words:** Skin, Pathology, Malignant, inflammation

### INTRODUCTION

The skin is a soft outer covering of an animal, in particular the vertebrate. The adjective cutaneous literally means "of the skin" (from Latin *cutis*, skin). In mammals, the skin is the largest organ of the integumentary system made up of multiple layers of ectodermal tissue, and guards the underlying muscles, bones, ligaments and internal organs. The integumentary system constitutes of the skin (integument) together with its accessory organs (hair, glands, and nails) (Van de Graff, 2001). Functions of the skin includes: protection (Proksch *et al.*, 2008), sensation, heat regulation, control of evaporation (Madison, 2003), storage and synthesis, absorption (Connor, 2006), water resistance, metabolic functions and sexual attractant (Young *et al.*, 2007). We are more

aware of the integumentary system than perhaps any other system of our body. The skin is a buffer against the external environment and is therefore subject to a variety of disease-causing microorganisms and physical assaults (Van de Graff, 2001). Diseases of the skin vary from inflammatory disorders to highly malignant neoplasm (Kemp *et al.*, 2008). There are many conditions affecting the integumentary system composed of skin, hair, nails and related muscle and glands (Miller and Marks, 2006). Skin Lesions can be classified into the following: Disorders of Pigmentation and Melanocytes, Benign Epithelial Tumours, Premalignant and Malignant Epidermal Tumours, Tumours of the Dermis, Tumours of Cellular Immigrants to the Skin, Disorders of Epidermal Maturation, Acute Inflammatory Dermatoses, Chronic

Inflammatory Dermatoses, Blistering (Bullous) Diseases, Disorders of Epidermal Appendages, Panniculitis, Infection and Infestation (Kumar *et al.*, 2015). The WHO Classification of skin tumours editorial and consensus conference in Lyon, France classified skin tumours into: Keratinocytic Tumours, Melanocytic Tumours, Appendageal Tumours, Haematolymphoid Tumours, Soft Tissue Tumours, Neural Tumours, Inherited Tumour Syndromes (Le Boit *et al.*, 2006). This Classification of the WHO does not take into consideration other skin lesions such as inflammatory, pigmentation, parasitic, bacterial and viral conditions of the skin. According to the WHO Classification of tumours, the lifetime risk for the development of skin cancer in the USA is 1 in 5 (Le Boit *et al.*, 2006). Of all skin lesions, melanoma is the most important. About 104,000 new cases of malignant melanoma is diagnosed yearly in Europe with a reported death rate of 23,000 annually. The incidence is also increasing at a rate of 3 - 7% in many European countries. The annual incidence rate of melanoma is 1 per 100,000 in blacks, 4 per 100,000 in Hispanics and 25 per 100,000 in non-hispanic whites. On a global scale, malignant melanoma was the 5<sup>th</sup> and 7<sup>th</sup> most commonly diagnosed cancer in males and females respectively (Ferlay *et al.*, 2013). In addition, non-melanoma skin cancer is the most common malignancy whose public health significance is often unrecognized (Eisemann *et al.*, 2014) and accurate incidence is difficult to

obtain (Lomas *et al.*, 2012). Most skin lesions have a low mortality rate (Weinstock, 1997). Melanoma is one of the most important cancers when considered as a cause of loss of life as it is commonly diagnosed in relatively young people (Brochez *et al.*, 1999). Treatment of non-melanoma skin cancers increased by nearly 77% from 1992 to 2006. In 2002, around 22,000 males and 19,000 females died of the disease worldwide (Ferlay *et al.*, 2013). This research was carried out at the Department of Histopathology, Usmanu Danfodiyo University Teaching Hospital, Sokoto. The hospital serves as a reference centre to patients from Sokoto, Kebbi and Zamfara States. The research aims to establish a baseline data for skin lesions in the area.

### MATERIALS AND METHODS

This is an eight year retrospective study of skin lesions carried out at the Department of Histopathology, Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto from 1999 – 2006. Demographic data such as age, sex and site of the biopsies were obtained from patients' Histology request cards and Histology registers. Stained Haematoxylin and Eosin (H&E) slides were reviewed, where slides could not be traced, their paraffinized blocks were re-cut and re-stained using the H&E staining method and reviewed under light microscopy. The data obtained were analysed statistically with Graphpad Prism version 5.0

### RESULTS

A total of 329 samples were thoroughly analysed in the study. 28 had inadequate data ranging from ranging from unspecified gender or indeterminate age and were hence not used. 301 samples were therefore used for the study.

Table 1: Incidence of the Various Categories of Skin Lesions within the Study Period

SKIN LESION DIAGNOSES	FREQUENCY OF LESIONS	%
Disorders of Pigmentation	23	7.64
Benign Epithelial Tumours	65	21.60
Premalignant and Malignant Tumours	79	26.25
Tumours of the Dermis	69	22.92
Tumours of Cellular Immigrants	10	3.32
Inflammatory Dermatoses	55	18.27
TOTAL	301	100

Table 2: Sex Distribution and Incidence of Neoplastic & Non-Neoplastic Skin Lesions in the Various Years of the Study Period

YEAR	NEOPLASTIC SKIN LESIONS (%)			Non Neoplastic Skin Lesions (%)	GENDER		Total
	Benign Tumours (%)	Malignant Tumours (%)	Sub-Total (%)		Male	Female	
1999	11 (52.4)	10 (47.6)	21 (65.6)	10 (34.4)	18	13	31
2000	11 (61)	7(39)	18 (51.4)	17 (48.6)	19	16	35
2001	16 (88.9)	2 (11.1)	18 (72.0)	7 (27.0)	15	10	25
2002	10 (62.5)	6 (37.5)	16 (59.3)	11 (40.7)	13	14	27
2003	11 (40.7)	16 (59.3)	27 (72.0)	10 (27.0)	17	20	37
2004	19 (48.7)	20 (51.3)	33 (76.7)	10 (23.3)	22	21	43
2005	23 (62.2)	14 (37.8)	43 (69.4)	19 (30.6)	36	26	62
2006	13 (50)	13 (50)	26 (63.4)	15 (36.6)	21	20	41
TOTAL	114 (56.4)	88 (43.6)	202 (67.1)	99 (32.9)	161	140	301

Table 3: Frequency Distribution of Neoplastic Skin Lesions within the Study Period

NEOPLASTIC SKIN LESIONS	FREQUENCY	%
Keratinocytic Tumours	67	33.17
Melanocytic Tumours	22	10.89
Appendageal Tumours	28	13.86
Haematolymphoid Tumours	3	1.49
Soft Tissue Tumours	63	31.19
Neural Tumours	18	8.91
Inherited Tumour syndromes	1	0.50
TOTAL	202	100

Table 4: Frequency Distribution of Diagnosis within the Study Period

DIAGNOSIS	NUMBER	%
Chronic Inflammation	51	16.9
Squamous Cell Carcinoma	46	15.3
Epidermoid Cyst	23	7.6
Malignant Melanoma	21	7.0
Haemangioma	21	7.0
Neurofibroma	19	6.3
Pyogenic Granuloma	11	3.7
Others	109	36.2
TOTAL	301	100

Table 5: Distribution of Skin Lesions According to Various Age Groups

AGE (YR)	FREQUENCY	%
0 – 9	36	11.96
10 – 19	47	15.62
20 – 29	62	20.60
30 – 39	41	13.62
40 – 49	52	17.28
50 – 59	40	13.29
60 – 69	17	5.65
70 – 79	6	1.99
TOTAL	301	100

## DISCUSSION

A total of 301 samples were reviewed thoroughly in this study. From Table 4, chronic inflammation was noted in 51 (16.9%) cases. These lesions persist for months to years and often show significant components of altered epidermal growth (atrophy or hyperplasia) or dermal fibrosis. A good number of these were non-specific arising from ulcers. These findings were in agreement with the work of Majno (1998), where he related chronic inflammation to angiogenesis and fibrosis in wound healing. A rare case was found in a vulva biopsy where granulation was seen, 8 (15.7%) of the cases were caused by fungi with the remaining being non-specific. Squamous Cell Carcinoma with 46 (15.3%) was the 2nd most diagnosed skin lesion and the highest neoplasm seen so far (Read Table 4). This is in agreement with Brand and Ackerman in (2000) as well as works of Wassberg *et al.* in (2001) who independently asserted the growing incidence of squamous cell carcinoma in most countries. This work is at variance to data by the Skin Cancer Foundation who quoted that Basal Cell Carcinoma was the most common skin cancer; though their work was carried out on Caucasians (Skin Cancer Foundation, 2010). This view was also shared by Boyd *et al.* (2002) only as far as Caucasians and people living in low latitudes. Ultraviolet-B radiation is the most important etiological factor. Less important factors include radiation therapy, previous burns, arsenic, coal tar; industrial carcinogens, immunosuppression, HPV infection (Karagas *et al.*, 2010), and inflammatory lesions and ulcers of long standing. The reason for the preponderance of squamous cell carcinoma in this region is not known but chronic wounds especially leg ulcers and poorly managed scars may be an important risk factors. A study in Nigeria has shown that squamous cell carcinoma accounts for 32.7% of all malignant skin lesions (Ganiyu *et al.*, 2015). Epidermoid Cyst consisting of 23 (7.6%) cases is usually a spherical, unilocular cyst of the dermis, composed of encysted keratin and sebum; the cyst is lined by a keratinizing epithelium resembling the epidermis derived from the follicular infundibulum. This neoplasm is more common in women than men with a preponderance of forming a tricholemmal tumour or undergoes malignant transformation. Sau *et al.* (1995) analyzed 96 cases noting that 90% of cases were in the scalp. This contradicted with my findings where only 3 (13%) occurred in the scalp. Malignant

Melanoma is one of the most important cancers when considered as a cause of loss of life as it is commonly diagnosed in relatively young people. It accounted for 21 (7%) of cases and is the second most frequent malignant condition diagnosed (Table 4). This is not in agreement with the compilation of Ferlay *et al.* (2013) whose 2012 data on the incidence of cancer states it a less common cancer. Though, it is the most significant skin cancer in terms of mortality (Brochez *et al.*, 1999). The most important aetiological factor is exposure to UV light (LeBoit *et al.*, 2006) but it is most likely not the case in this locality as 17 (81%) of the 21 cases were from foot biopsies. Majority of those diagnosed 15 (71%) were in the range of 40 years and above; this was most likely due to lack of BCG and/or vaccinia vaccine in childhood. This was asserted by Krone *et al.* (2005) and Kolmel *et al.* (2005) independently on different studies that these vaccines decrease the risk of melanoma development. Accounting for 21 (7%) cases were haemangiomas of various types including lipoma. They are anomalies, in which proliferation of blood vessels leads to a mass that resembles a neoplasm; it can occur anywhere in the body but is most frequently noticed in the skin and subcutaneous tissues. Aetiology is usually unknown as of other soft tissue tumours like Pyogenic Granuloma with 11 (3.7%) cases. De Aloe *et al.* (2001) are of the view that pyogenic granuloma is a hyperplastic rather than a neoplastic condition; this contradicts my classification of the condition as a soft tissue tumour which was the second highest neoplastic tumour in this finding. Neurofibroma with 19 (6.3%) cases is a benign, encapsulated tumour resulting from proliferation of Schwann cells. It also serves as a marker for other conditions such as pleomorphic fibromas, schwannoma and other neural tumours (LeBoit *et al.*, 2006). Seven cases of Dermatofibrosarcoma Protuberans were also noted. There were no cases of panniculitis, blistering disease, disorders of epidermal maturation e.g. ichthyosis and disorders of epidermal appendages most notably acne. Acne affects majority of teenagers but was never diagnosed because most teens go for cosmetic rather than medical solutions to their conditions (Young *et al.*, 2007). Also, only a patient presented with a nevus which is a congenital lesion seen in most people and are regarded as mundane (Kumar *et al.*, 2015). Three cases of mycosis fungoides were seen indicating evidence of lymphoma in

some patients. Adnexal tumours were not infrequent with 20 (90%) being benign; Le Boit *et al.* in his WHO Classification of tumours dated 2006 did not analyse preponderance of the benign to malignant conditions. Seven cases of verrucae were diagnosed indicating a rising concern of Human Papilloma Virus (HPV) infection. HPV infection occurs by direct contact with individuals who harbour clinical or subclinical HPV-associated lesions, or indirectly via contaminated surfaces and objects. Autoinoculation from the lesion to surrounding skin is frequently observed. (Moore, 2001; Kirnbauer *et al.*, 2003). A total of 9 (3%) keloid samples were reviewed and were all confirmed. Seven (78%) of them were recurrent and is in agreement with the research of Niessen *et al.* (Niessen *et al.*, 1999). Leishmaniasis accounted for 6 (2%) samples indicating increasing concern for increased sanitation. Molluscum contagiosum accounted for another 6 (2%) indicating previous infection with pox virus as attested by Jessner and Kanof (1995). Le Boit *et al.*, 2005 agrees with them and states it is still valid today (LeBoit *et al.*, 2006).

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