Morphological Pattern of Benign Skin Tumors in a Teaching Hospital in Southeast Nigeria

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Abstract

Background: Benign skin tumors are non-malignant neoplasms of skin origin. They are not uncommon and some have the dreaded propensity for malignant transformation. **Aim:** The aim of this study is to determine the morphological pattern and distribution of benign skin tumors in a tertiary hospital in southeast Nigeria. **Methods:** This is a retrospective review of all histologically diagnosed benign skin tumors at a teaching hospital in southeast Nigeria between 2009 and 2019. Information was gathered from the patients' clinical notes and registers on age, sex, region of body involved, and histological diagnoses. **Results:** One hundred and seven benign skin tumors were seen within the 11 years of this study. The mean age of the patients was 36±18 years with a male-to-female ratio of 1:1.14. Benign soft tissue skin tumors (comprised mostly dermatofibromas and keloids) were the commonest benign skin tumors (61.5%) followed by keratinocytic tumors (27.5%), appendageal tumors (7.0%), melanocytic tumors (3.0%), and neural tumors (1.0%). There was no case of hematolymphoid tumors or inherited tumor syndromes. The modal age range of benign skin tumors was 20–29 years. **Conclusion:** Benign soft tissue skin tumors (dermatofibromas followed by keloids) were the commonest benign skin tumors. Skin adnexal tumors and keloids were seen mostly on the head and neck region.

Keywords: Appendageal skin tumors, Benign skin tumors, Dermatofibroma, Keloid, Melanocytic tumors, Soft tissue skin tumors

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Introduction

Benign skin tumors are commoner than malignant skin tumors and tend to occur more in females than in males (1-3). A study conducted in India by Khandpur and Ramam demonstrated that the vast majority of skin

tumors were benign and skin tumors developed as a result of abnormal proliferation of cells of a single or multiple components of the skin (4). They range from benign lesions that merely cause cosmetic concern to premalignant lesions and aggressive tumors.

Classification of skin tumors including benign tumors was depicted in the World Health Organization (WHO) Classification of Tumors (5). This classification was based on cell of origin, and they comprised keratinocytic tumors, melanocytic tumors, appendageal tumors, hematolymphoid tumors, soft tissue tumors, neural tumors, and inherited tumor syndromes.

Keratinocytic tumors are derived from epidermal and adnexal keratinocytes and comprise a large spectrum of lesions (6). Fibroepithelial polyp has many names (acrochordon, squamous papilloma, skin tag) and is one of the most common cutaneous lesions (7). Abubarka et al. demonstrated seven cases of verrucae indicating the association and presence of human papillomavirus infection among the patients (8). Seborrheic keratosis arises spontaneously and is particularly numerous on the trunk, although the extremities, head, and neck may also be involved (7).

Benign melanocytic tumors are those non-atypical neoplasms derived from melanocytes (9).

Appendageal tumors are neoplasms that arise from adnexal structures of the skin and, depending on their origin, are categorized into those with apocrine, eccrine, follicular, and sebaceous differentiation (10). Sweat gland tumors seem to be the most preponderant of appendageal tumors in several series (11-13).

Some of these tumors have a high propensity for malignant transformation, for example, the sebaceous of Jadassohn can transform into sebaceous carcinoma and basal cell carcinomas (14, 15). Similarly, some keratinocytic tumors such as actinic keratosis can transform into early basal cell carcinomas (16, 17).

Neural skin tumors represent a small but important part of the cutaneous neoplasms. Granular cell tumor (GCT), a benign neural skin tumor, affects mainly adults (age 30–50 years) but can occur at any age (18).

Benign skin tumors are commonly asymptomatic, and they may exert pressure on surrounding structures. Cosmetic concerns of these lesions are significant to the informed elites, especially females. The most dreaded consequence of benign skin lesions is the possibility of malignant transformation (14-16). Thus, the importance of histological diagnosis of any skin lesion cannot be overemphasized. Therefore, this study aims to assess the pattern in terms of types and body distribution of histologically diagnosed benign skin lesions in a teaching hospital in southeast Nigeria as no such study has been performed in this region. This is expected to provide baseline data and a basis for research and management policies toward these often-neglected lesions.

Materials and Methods

This is a retrospective study of histopathologically confirmed benign skin tumors seen in Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State, southeast Nigeria, from January 2009 to December 2019. Ethical approval was obtained from the Research and Ethics Committee of the hospital with approval references REC approval number 17/08/2020–02/09/2020.

All the skin tumors that were histologically diagnosed in the hospital over the study period were reviewed, and the benign skin tumors were isolated for the study. Information was obtained from histopathology registers and patients' case notes. Patients' data such as sex, age, anatomical location, and their histopathological types were extracted. Those cases with incomplete data were excluded. Skin tumors diagnosed clinically but not confirmed histologically were all excluded. Only benign skin tumors were considered for the study. The tumors were classified according to World Health Organization (WHO) Classification of Tumors (5).

Data collected and collated were entered and analyzed using the Statistical Package for the Social Science Version 20 (SPSS 20, IBM Corp, Armonk, NY, USA). The results are presented as frequencies and percentages in Tables 1–4.

Table 1. Classification of benign skin tumors with reference to World Health Organization Classification of Tumors (5)

Benign skin tumors	Number of cases	%
Keratinocytic tumors		
i. Fibroepithelial polyp	12	11.0
ii. Verruca (skin warts)	11	10.0
iii. Seborrheic keratosis	4	3.7
iv. Actinic keratosis	2	1.8
v. Benign lichenoid keratosis	1	1.0
Melanocytic tumors		
i. Junctional nevus	1	1.0
ii. Compound nevus	1	1.0
iii. Lentiginous simplex	1	1.0
Appendageal tumors		
i. Hidradenoma papilliferum	1	1.0
ii. Eccrine poroma	1	1.0
iii. Sebaceous cyst tumor	1	1.0
iv. Nevus sebaceous of Jadassohn	1	1.0
v. Sebaceous adenoma	1	1.0
vi. Trichoepithelioma	1	1.0
vii. Chondroid syringoma	1	1.0
Soft tissue tumors		
i. Dermatofibroma	29	27.1
ii. Keloid	14	13.0
iii. Neurofibroma	10	9.3
iv. Hemangioma	10	9.3
v. Pyogenic granuloma	3	2.8
Neural tumors		
i. Granular cell tumor	1	1.0
Hematolymphoid tumor	0	0
Inherited tumor syndromes	0	0
Total	107	100

Table 2. Sex distribution of skin tumors

Skin tumors	Male	Female	Total
Dermatofibroma	7	22	29
Keloid	9	5	14
Fibroepithelial polyp	6	6	12
Verruca (skin warts)	8	3	11
Hemangioma	7	3	10
Neurofibroma	6	4	10
Seborrheic keratosis	1	3	4
Pyogenic granuloma	Nil	3	3
Actinic keratosis	1	1	2
Cystic sebaceous tumor	1	Nil	1
Others	4	7	11
Total	50 (46.7%)	57 (53.3%)	107 (100%)

Table 3. Age distribution of benign skin tumors

Skin tumors	Age (years)								
	0–9	10–19	20–29	30–39	40–49	50–59	60–69	≥70	Total
Dermatofibroma	—	1	9	4	4	6	3	2	29
Keloid	2	2	4	4	—	—	1	1	14
Fibroepithelial polyp	—	—	4	1	3	3	1	—	12
Verruca (skin warts)	—	1	1	3	1	4	1	—	11
Hemangioma	2	2	2	—	1	2	—	1	10
Neurofibroma	1	—	6	2	1	—	—	—	10
Seborrheic keratosis	—	1	—	—	2	1	—	—	4
Pyogenic granuloma	—	1	—	—	—	—	2	—	3
Actinic keratosis	—	—	—	—	—	—	1	1	2
Cystic sebaceous tumor	—	—	1	—	—	—	—	—	1
Others	—	3	4	1	1	2	—	—	11
Total	5	11	31	15	13	18	9	5	107

Table 4. Site distribution of benign skin tumors

Skin tumors	Head and neck	Trunk and perineum	Upper limb	Lower limb	Total
Dermatofibroma	3	6	6	14	29
Keloid	10	3	—	1	14
Fibroepithelial polyp	3	7	1	1	12
Verruca (skin warts)	1	3	1	6	11
Hemangioma	4	2	2	2	10
Neurofibroma	2	1	2	5	10
Seborrheic keratosis	1	—	1	2	4
Pyogenic granuloma	—	2	1	—	3
Actinic keratosis	—	—	—	2	2
Cystic sebaceous tumor	1	—	—	—	1
Others	5	3	—	3	11
Total	30	27	14	36	107

Results

There were 107 benign skin tumors, histologically confirmed during the study period and classified according to WHO Classification of Tumors (Table 1). Males constituted 46.7% (n=50) while females constituted 53.3% (n=57) in the ratio of 1:1.14 (Table 2). The age range of our patients was 0–84 years with a mean age of 36±18 years. The modal age range of occurrence was 20–29 years (Table 3). The least number of cases was seen at both extremes of the ages (0–9 and ≥70 years), and they constituted 4.7% each. Dermatofibromas (n=29, 27.1%) outnumbered other benign skin tumors followed by keloids (n=14, 13.0%) (Table 1). The lower limb (n=36, 33.6%) was the commonest site of occurrence of benign skin tumors followed by the head and neck (n=30, 28.0%) (Table 4). Soft tissue skin tumors occurred more in the trunk than in any other part of the body. Benign skin melanocytic tumors were junctional (n=1, 1.0%) and compound (n=1, 1.0%) nevi as well as simple lentiginous skin tumors (n=1, 1.0%). One case of benign neural skin tumor (GCT) was recorded.

Discussion

Benign skin tumors are common. They are mostly asymptomatic and may only be of cosmetic concern.

Benign soft tissue skin tumors were the most prevalent benign skin tumors in our series (61.5%) with dermatofibromas also known as benign fibrous histiocytomas (27.1%) being the commonest. Dermatofibromas have a female preponderance with a female-to-male ratio of 3.1:1 and were seen mostly among patients within the age range of 20–29 years. Abubakar et al. reported that hemangiomas were the commonest benign skin tumors in their study (8). Dermatofibromas have a predilection for the lower limb compared to the other parts of the body. This is similar to the findings by Luba et al. (19). The explanation for this is not clear but may be linked to the large body surface area of the lower limbs. However, keloids (another soft tissue skin tumor) were found to have a predilection for the head and neck region as found by Blackburn and Cosman in their series (20). This region of the body is usually exposed and of cosmetic concern. Abubakar et al., in their study, reported that in Sokoto, northern Nigeria keloids were the least common benign skin tumor (8). This may be linked to the dressing style which covers the head and neck region leaving only the face exposed. This dressing pattern is commonly adopted in that part of Nigeria, which may obviate most of the lesions noted to be more common in the head and neck region, thus reducing the cosmetic need for presentation to the hospital.

Fibroepithelial polyps (11.0%) are the commonest benign keratinocytic skin tumors followed by skin warts (verruca vulgaris, verruca plantaris, and verruca plana) and then seborrheic keratosis. Fibroepithelial polyps are derived from the ectoderm and mesoderm and represent a hyperplastic epidermis (17). These tumors were the third commonest benign skin tumors in our study, and were located mostly in the trunk and perineum as well as the head and neck. These findings are similar to those by Luba et al. who showed that fibroepithelial polyps were common in the axilla, neck, and inguinal regions (16). The commonest sites for skin warts were the lower limb and perineum, and the majority (90%) of them were seen among those aged <60 years. Other benign keratinocytic tumors were seborrheic keratosis and actinic keratosis.

Appendageal skin tumors are tumors from skin appendages. They constituted 7% of the tumors in this study with varying distributions. Tumors of the sebaceous gland which comprise cystic sebaceous tumor, sebaceous adenoma, and nevus sebaceous of Jadassohn as well as tumors of the sweat gland which comprise the eccrine gland tumor, hidradenoma papilliferum, and benign mixed tumor (chondroid syringoma) were seen in our series. Trichoepithelioma, a tumor of follicular origin in our series, was also of low occurrence. The study by Samaila in Zaria, northern Nigeria, showed a higher prevalence of appendageal tumors, with the sweat gland tumors being the commonest, and comprised predominantly eccrine acrospiroma (32.0%) followed by nevus sebaceous of Jadassohn (11.6%, a tumor of sebaceous gland) (11). The explanation for this overt higher difference may be linked to the obvious hotter weather of northern Nigeria due to increased activity of sweat and other appendageal glands. Significant occurrence of benign skin appendageal tumors was also found in India by Sharma et al. and other studies (21). Sweat gland tumors were also found to be the commonest benign appendageal skin tumors in other studies (11-13). Further study is needed to explain the relatively low occurrence in our series. The commonest site of occurrence of benign Appendageal skin tumors is the head and neck region, which corresponds with the findings in other studies (11, 21). This could be due to the nature of the skin in the region of the head and neck which is rich in skin appendages such as hairs and sweat glands.

Melanocytic skin tumors constituted only 3% of the benign skin tumors in our series. Nevi are common in our environment but may not have been of concern because of the poor socioeconomic background limiting cosmetic concerns and presentation to the hospital in the study area. These benign tumors have varying propensities for transformation to melanoma. The only case of simple lentiginous skin tumor seen in our study was in a child, and this corresponds with the study done by Alexander and George who found that lentiginous simplex is seen mostly in infancy and childhood (9). Duduyemi et al. reported that nevi were seen more in

females in their study (13). This can be explained by the overt cosmetic concerns of females more than males.

Benign skin neural tumors did not appear prominent in our series. Only a case of GCT was recorded. It is an uncommon tumor and is poorly understood and usually misdiagnosed (22).

We neither had a record of benign hematolymphoid skin tumors nor inherited tumor syndromes involving the skin. These are rather uncommon and the latter is usually a pointer to a more serious clinical condition of hereditary significance that needs diligent follow-up with serial screening programs for the patient and relations (23). Interdisciplinary management of patients will improve the identification of inherited tumor syndromes.

Benign skin tumors have been severally reported to be common, relatively asymptomatic, and mostly of aesthetic concern (1-3). However, several studies have shown that some benign skin tumors have the propensity for malignant transformation (14-16, 24). This is associated with devastating effects of local and systemic consequences of the malignancy which is preventable by early detection from biopsy and prompt adequate treatment. This calls for improvement in education and health awareness among the study population for early detection and follow-up of benign skin tumors.

Limitations to the study

This was a single-center study; a multicenter series will give a broader picture. A prospective study would have also given the researchers more control of the data/records collected thereby limiting incomplete or lost records.

Conclusion

Dermatofibromas, followed by keloids, were the commonest benign skin tumors affecting mostly the younger age group. The lower limb was the commonest site of occurrence of benign skin tumors, followed by the head and neck. Keloids and benign adnexal skin tumors occurred mostly in the head and neck region. Benign skin tumors may cause significant pressure symptoms and cosmetic concerns and thus the need to include them in health promotion.

Author contributions

UUN led in the conceptualization, Supervision and in writing, review & editing of the original draft. All authors equally contributed to data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, validation and visualization.

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