A Review of Histologically Diagnosed Neurofibroma; an Institution Based Study Spanning a Decade

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Abstract

Introduction*: Neurofibromas are common cutaneous benign tumours. They have the potentials to become malignant and are of great cosmetic concern with associated morbidity. These are potential health burden to both human and capital resources. The aim of this study is to determine the frequency, age and sex distribution of histologically diagnosed Neurofibroma at the University of Benin Teaching Hospital over a 10year period.* ***Methodology:*** *A 10 year histologically confirmed cases of Neurofibroma from 1st of January, 2004 to 31st December, 2013 were the subjects of interest. The stained Haematoxylin and eosin slides of each subject were retrieved and examined. The data obtained was analysed using the Statistical Package for Social Sciences, version 16.* *Results: There were 46 cases of neurofibroma. The male to female ratio was 1.5:1. The mean age was observed in the 3rd decade while the peak age was in the 4th decade. The mean ages for neurofibroma in males and females were in the 3rd decades. The head and neck was the most common site in the cases with specified anatomic sites.*

Conclusion: *Neurofibromas are common cutaneous benign tumour with a predilection for males and a peak in the 3rd decade.*

Keywords

Cutaneous Neurofibroma, potential health burden, histopathology data pool, most common benign cutaneous tumour.

I. INTRODUCTION

Cutaneous neural tumours represent a small but important part of the cutaneous soft tissue neoplasms.[1] The benign tumours typically fall into the groups of neurofibroma (NF) and neurilemoma (schwannoma).[2] The former are common cutaneous tumours,[3] while the latter are usually found in the deep soft tissue and viscera.[4]

Neurofibroma are benign neural tumours[5, 6] derived from schwann cells of peripheral nerves or neurocutaneous end organs.[5] Cosmetic concerns are considered a major morbidity,[7] however malignant transformation can arise on a background of Neurofibromas.[4, 5, 7-9] These could pose a health burden on both human and capital resources.

In the light of this, the aim of this study is to determine the frequency, age and sex distribution of histologically diagnosed Neurofibroma at the University of Benin Teaching Hospital (UBTH) over a 10year period. This will make available the histopathology data pool of cutaneous NFs in our environment over the period of study under review. This is important because histopathology data pool has been tagged to be vital in epidemiological analysis,[10] more so that previous studies from Nigeria looked at the subject matter in combination with the clinical perspective, as a component of Neurofibromatosis.

II. METHODOLOGY

A 10 year histologically confirmed cases of Neurofibroma between January 2004 and December 2013 in the Department of Morbid Anatomy, University of Benin Teaching Hospital were the subjects of interest. The histopathology reference number, biodata and clinical diagnosis of each subject were obtained from the departmental records. The corresponding Haematoxylin and eosin stained slides of each subjects were retrieved, examined and the diagnosis was recorded against the corresponding patient's name on a data spread sheet. The data obtained from this study was analysed using the SPSS statistical package (V.16.0) Ethical clearance was obtained from the University of Benin Teaching Hospital Ethical Review Committee**.**

III. RESULTS

One hundred eighty eight (188) benign cutaneous tumours were encountered retrospectively over the 10 year study period. Their mean age was 31.70 ± 18.20 years. They occurred about the same mean age in both sexes with a wide age range that spanned from the 1st to the 9th decade, Table 1.

Forty six cases were NF, which accounts for 24 % of benign cutaneous tumours. Twenty eight (28) cases occurred in males while 18 cases occurred in females giving a male to female ratio of 1.5:1.

The mean age was 28.00 years (SD = 13.71) with an age range of 4–65 years and a peak in the 4th

decade. The mean ages for neurofibroma in males and females were 28.46 years (SD=13.22) and 27.28 years (SD=14.80) respectively. The age and sex distribution is as shown in Table 3.

The peak incidence in females and males were in the 3rd and 4th decades respectively.

The head and neck was the most common site for neurofibroma in 13 out of the 28 cases with specified anatomic sites. The trunk (5 cases), lower limb (5 cases), upper limb (4 cases) and anogenital region (1 case) were other anatomic sites for neurofibroma in this study.

See figure 1a-d; photomicrograph of neurofibroma showing schwann cells with wavy nuclei, fibroblast, fibro collagenous and myxoid stromal.

Table 1 Frequency, mean age and age range of benign skin tumour

SKIN TUMOURS	NO. OF CASES	MEAN AGE ± SD (YEARS)	AGE RANGE (YEARS)	MEAN AGE±SD(YEARS) MALE	FEMALE
BENIGN	188	31.70±18.20	1-84	31.28±18.82	32.20±19.15

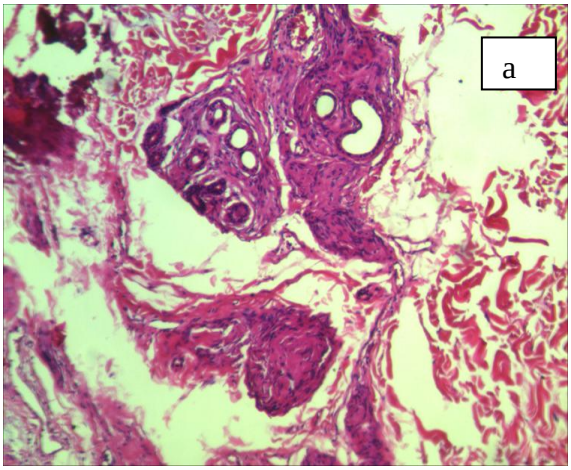
Table 2 showing the frequency, mean age and age range of cases with Neurofibroma.

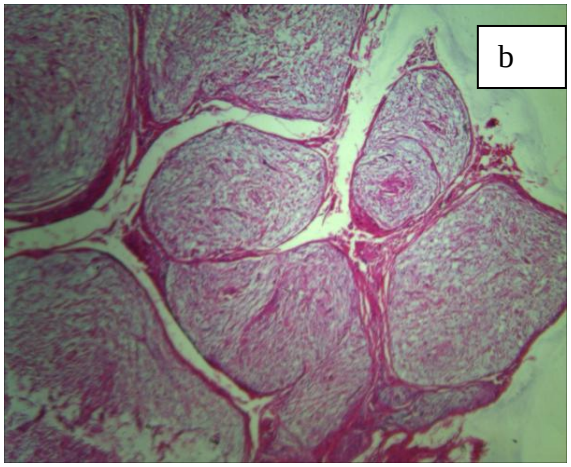
Tumour	No of Cases	Mean age(Years)	Range (Years)	Mean age(Years) Male	Female
Neurofibroma	46	28.00	4-65	28.46	27.28

Table 3 Age group and sex distribution of Neurofibroma

AGE	NF M	NF F	TOTAL
0 – 9	2	1	3
10 – 19	5	3	8
20 – 29	7	6	13
30 – 39	10	4	14
40 – 49	2	2	4
50 – 59	1	2	3
60 – 69	1	-	1
TOTAL	28	18	46

KEY: NF = Neurofibroma





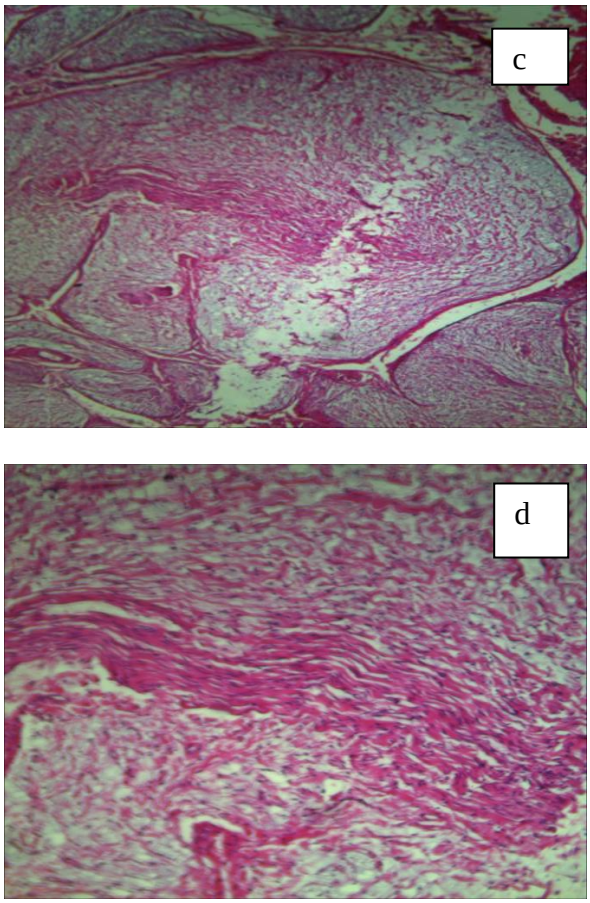


Fig 1. Photomicrographs a-d shows neurofibroma. Photomicrograph (a) show neural cells surrounding sweat glands in the reticular dermis. Photomicrographs b-d shows plexiform neurofibroma consisting of schwann cells with wavy nuclei on a myoxoid background. Haematoxylin and eosin stain. (a) x 100 magnification, (b) x40 magnification, (c) 100 magnification and (d) x400 magnification.

Table 4 Frequency of Specified anatomic site

Anatomic site	Frequency
Head and Nec	13
Trunk	5
Lower limb	5
Upper limb	4
Anogenital	1
Total	28

The prevalence of Neurofibroma amongst benign skin tumours present during period of study is shown in Table 5 below.

Table 5. Prevalence of Neurofibroma

BST	Percentage (%)
Neurofibroma	24
Verrucae	22
Haemangioma	14
Seborrhoeic keratosis	13
Dermatofibroma	11
Naevi	9
Lymphangioma	4
Adnexal tumours	3
Total	100

BST: Benign skin tumours

IV. DISCUSSION

Benign neural neoplasms of cutaneous origin are common benign mesenchymal tumours,[11] while the neurofibromas (NF) stand out as common cutaneous neural tumours[3, 12] in comparison to schwannomas that are deep seated in the somatic soft tissue or viscera.[4]

Neurofibromas (NF) were the only cutaneous neural tumours found in this study, thus giving credence to previous documentation that reported that this lesion is confined more to the skin than the soft tissue or viscera.[3, 4, 12] To this end, Odebode et al[13] from Ilorin, north central part of Nigeria reported that cutaneous NFs were more common than their subcutaneous or soft tissue counterpart. Aside being the only cutaneous neural tumour seen in this study, NFs also doubles as the most common benign cutaneous tumour accounting for 24% of cases.

The males were more affected in this study than the females. This is in agreement with 2 previous studies done in Lagos, in the south-western part of Nigeria and in Benin City, in the south-southern part of Nigeria by Ademiluyi et al[14] and Onunu et al[15] respectively. Onuigbo[16] from Enugu, south eastern part of Nigeria reported a male predominance,

although his findings were limited to infancy and childhood unlike this study that spanned from pre-school age, through the young age group, to the middle ages. Nyandaiti et al[17] from north eastern part of Nigeria reported that there were no sexual predilection. We observed a mean age in the 3rd decade (28.00 years), this is comparatively similar to that of previous studies done in Maiduguri (27.85 years) and in our own environment (26.15 years) by Nyandaiti et al[17] and Onunu et al[15] respectively. Nyandaiti et al[17] and Onunu et al[15] looked at cases of neurofibromatosis type 1 which also had associated cutaneous NFs, while our own study made histological diagnosis of the subject matter in cases with or without association to neurofibromatosis. These bring to fore their sporadic origin or their association with neurofibromatosis type I or II syndromes.[18] It is important to note that the histopathology of the NFs as a solitary lesion or in association with neurofibromatosis is similar.[5] The head and neck was the most common site of this lesion in the specified cases. This site is consistent with the previous reports of from Maiduguri and Enugu by Nyandaiti et al[17] and Onuigbo[16] respectively.

V. CONCLUSION

In conclusion, we have observed that Neurofibromas are common cutaneous benign tumour with a predilection for males and a peak in the 3rd decade. The head and neck region is a common site of presentation. This information is now available as part of the data pool of various tumours in our own environment from the Histopathologist perspective.

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