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Original Research Article

A two years study of histopathological spectrum of skin adnexal tumors in a tertiary care centre of Southern Assam, India

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ABSTRACT

Background: Skin adnexal tumors (SAT) encompass a wide spectrum of benign and malignant tumors that differentiate toward one or more adnexal structures found in normal skin. Overall incidence of SATs is low yet they can be challenging to diagnose. Our study aims at analysis of histopathological spectrum of various SATs according to age, sex and anatomic locations along with histopathological features.
Methods: It was a retrospective cross-sectional study conducted over a period of 2 years from June 2017 to May 2019. All cases were retrieved from department registries and analyzed.
Results: Out of the total 4013 biopsies, 25 cases were diagnosed as SATs comprising 44% of tumors with eccrine sweat gland differentiation followed by tumors showing hair follicle differentiation (32%), sebaceous differentiation (16%) and apocrine gland differentiation (8%). The age ranged from 4 years to 68 years and male: female ratio was 1:1.5. Most of the tumors were benign (84%) while only 16% were malignant. Pilomatricoma (19%) was the most common benign tumor while sebaceous carcinoma (75%) was the most common malignant tumor.
Conclusions: Skin adnexal tumors are relatively rare neoplasm. Malignant cases are less common than benign ones. Histopathology is quite essential for diagnostic point of view.

Keywords: Histopathology, Pilomatricoma, Sebaceous Carcinoma, Skin adnexal tumors

INTRODUCTION

Adnexal tumors (ATs) includes a large spectrum of skin epithelial tumors including hamartoma, hyperplasia, benign, and malignant tumors that originate from or show differentiation toward adnexal epithelial structures, namely, pilosebaceousunit, eccrine and apocrine.[1] Cotton D termed these skin adnexal tumors as "troublesome tumours" due to the difficulty in classifying them on clinical basis alone.[2]

These tumors are known to arise from multipotent stem cells present within epidermis or its appendageal structures. However, these tumors are relatively uncommon. As their clinical presentation is very non-specific, diagnosis principally depends on histopathology and they are classified according to the morphological component which is predominantly present.

Exact categorization of benign tumors was believed to be purely academic and not affecting clinical management. However, some of these tumors can be markers of internal malignancy, for example, multiple trichilemmomas in Cowden syndrome, sebaceous adenomas in Muir-Torre syndrome.[3]

Skin adnexal tumors are mostly benign and can be cured by simple excision, however, their malignant counterparts

are very rare, which are locally aggressive with propensity for nodal and distant metastasis with poor clinical outcome.

Diagnosis of these malignant tumors becomes doubly important with a view towards treatment and prognosis.[4] The diagnosis is solely depends on histopathological examination with IHC have a limited role. Our present study is a retrospective one to study the distribution of various skin adnexal tumors according to age, sex and anatomic locations along with histopathological features.

METHODS

The present study was a retrospective, cross-sectional descriptive study conducted in the Department of Pathology at a tertiary care health centre in the southern part of Assam over a period of 2 years from June 2017 to May 2019. A total of 25 cases diagnosed as SATs on histopathology were included in this study. Histopathological analysis was carried out on 10% formalin fixed, paraffin embedded tissue sections which were stained with hematoxylin and eosin stain and examined under microscpe. Tumors were analysed based on their anatomic site, age, gender, behaviour, histologic type and line of differentiation.

Inclusion criteria

- Only skin adnexal tumors were included in this study.

Exclusion criteria

- Other epidermal tumors of skin and infective lesions of epidermis and skin adnexa were excluded.

RESULTS

Out of a total of 4013 biopsies which were received over a period of 2 years, 25 cases were diagnosed as SATs. Out of 25 cases, we found that females outnumbered males (10 males and 15 females). The male: female ratio was 1:1.5 and the same was shown in Figure 1.

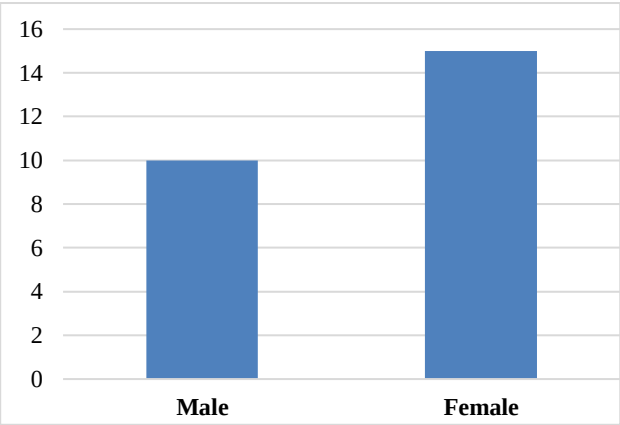

Figure 1: Sex wise distribution of cases.

In this study, the age ranged from 4-68 years. Most common age group affected was 41-50 years and 7 out of 25 cases (28%) were found in this age group. It was followed by age group 21-30 years (6/25 cases), 11-20 years, 31-40years (4/25 cases each), 61-70years (2/25 cases) and lastly 0-10 years, 51-60 years (1/25 cases each) respectively. Age wise distribution of the cases were shown in Figure 2.

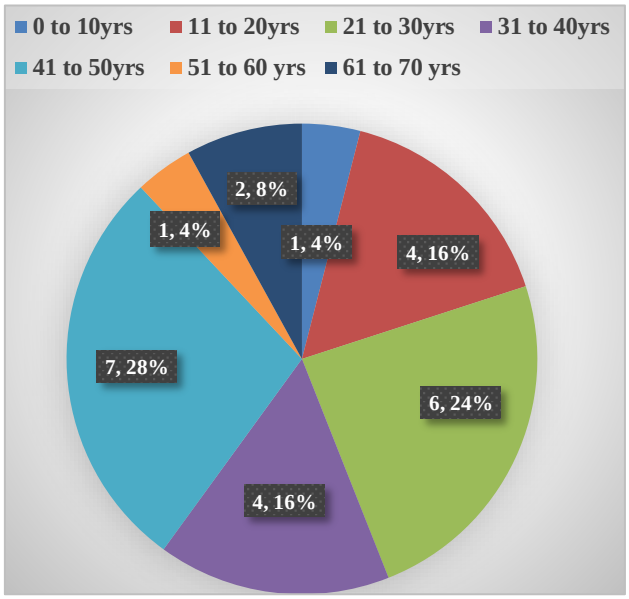

Figure 2: Distribution of cases according to age.

Authors distributed SATs with respect to various anatomical location. The head and neck region was found to be the most common site (68%) with predominance in the scalp region. This region was followed by trunk (20%) and extremity (12%) respectively. Distribution of cases according to anatomical locations are shown in Figure 3.

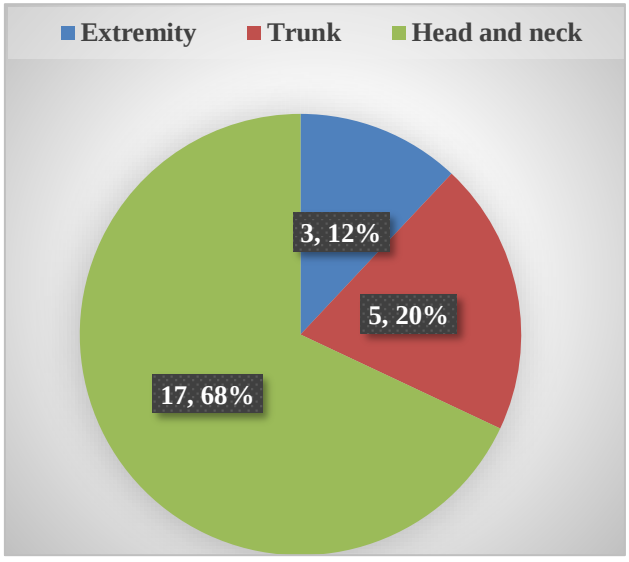

Figure 3: Distribution of cases according to anatomical locations.

Authors found that benign tumors were the most common than malignant skin adnexal tumors. Out of 25 cases, 84% (21/25) were benign adnexal tumors while 16% (4/25) were malignant tumors. The distribution of benign and malignant tumors were shown in Figure 4.

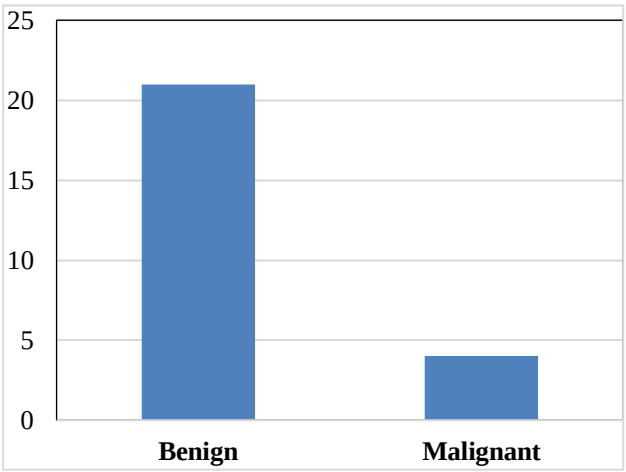

Figure 4: Distribution of cases according to benign and malignant nature.

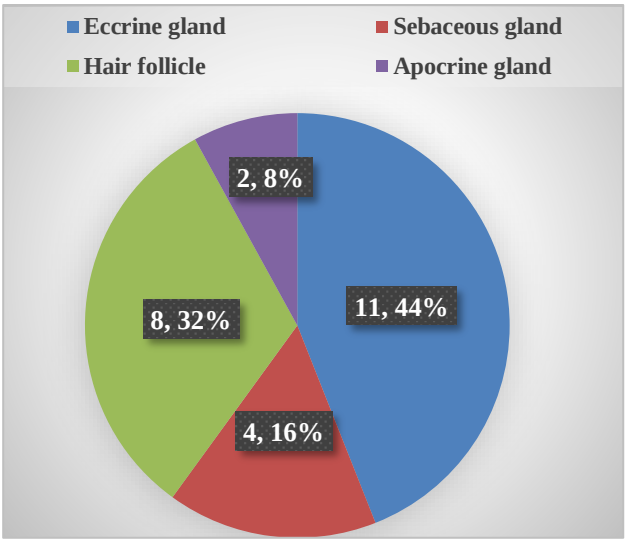

Figure 5: Distribution of cases according to their differentiation.

Tumors of eccrine sweat gland differentiation constituted the largest group with 44% (11/25 cases) in the present study. It was followed by hair follicle (8/25 cases), sebaceous gland (4/25 cases) and apocrine gland (2/25 cases) tumors respectively. Distribution of cases according to differentiation were shown in Figure 5.

In this study, the most common benign SAT tumor was found to be the pilomatricoma with 19% (4/21) was observed that children as well as adults with a wide range of 4-68 years were affected. Nodular hidradenoma and spiradenoma (14%, 3/21 cases each) forms the second most common SATs in benign category. Distribution of various benign tumor cases were shown in Table 1.

Table 1: Frequency of individual benign adnexal neoplasm.

	Benign tumors	No of cases	Percentage
Eccrine gland	Eccrine poroma	1	5%
	Hidradenoma	3	14%
	Spiradenoma	3	14%
	Syringocystadenoma papilliferum	2	9%
	Cylindroma	1	5%
Sebaceous gland	Nevus sebaceous	1	5%
Hair follicle	Trichoepithelioma	2	9%
	Trichofolliculoma	2	10%
	Pilomatricoma	4	19%
Apocrine gland	Apocrine hidrocystoma	1	5%
	Hidradenoma papilliferum	1	5%

However, malignant skin adnexal tumors were found to be rare. Authors got only 4 cases of malignant tumors in our study out of which 3 cases were sebaceous carcinoma in the sebaceous gland category making it the most common type and one case of porocarcinoma of eccrine gland category. Frequency of malignant tumors were shown in Table 2.

Table 2: Frequency of malignant adnexal tumors.

	Malignant tumors	No of cases	Percentage
Eccrine gland	Porocarcinoma	1	25%
Sebaceous gland	Sebaceous carcinoma	3	75%

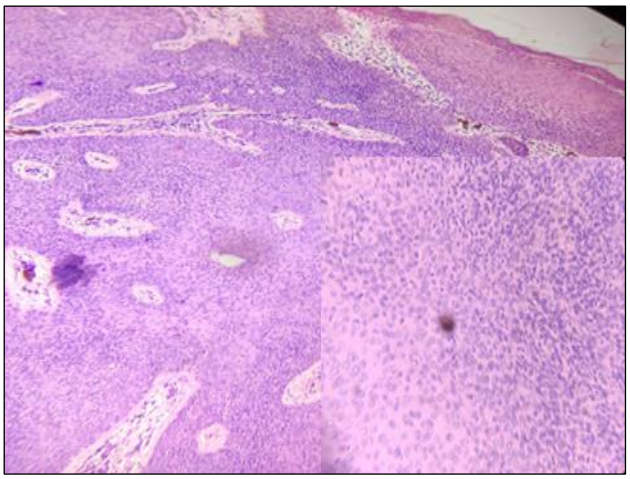

Figure 6: Eccrine poroma (10x and 40x, H and E)

Photomicrograph in the Figure 6 showing tumor arises within the lower portion of epidermis and extends downwards into the dermis which consists of cells smaller than keratinocytes. The cells have a uniform cuboidal appearance and a round, deeply basophilic nucleus, and are interconnected by bridges. However, no peripheral palisading is seen around the tumor mass.

Photomicrograph in the Figure 7 showing cystic invaginations from the epidermis, the upper portions of the invaginations are lined by squamous keratinizing cells and the lower portions have numerous papillary extensions into the lumina of invaginations which are again lined by glandular epithelium. The stroma is infiltrated by plasma cells which is very characteristics.

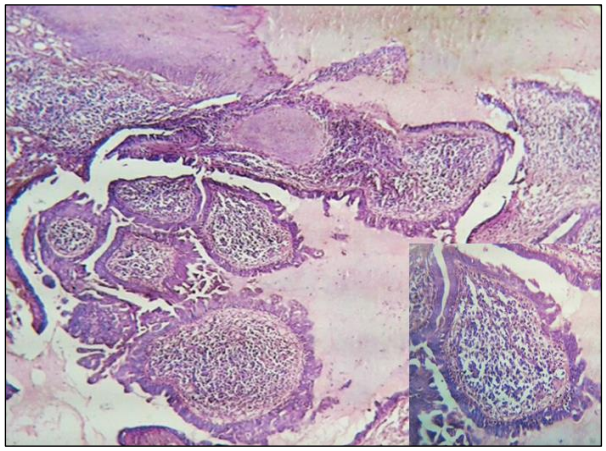

Figure 7: Syringocystadenoma papilliferum (10x and 40x, H and E).

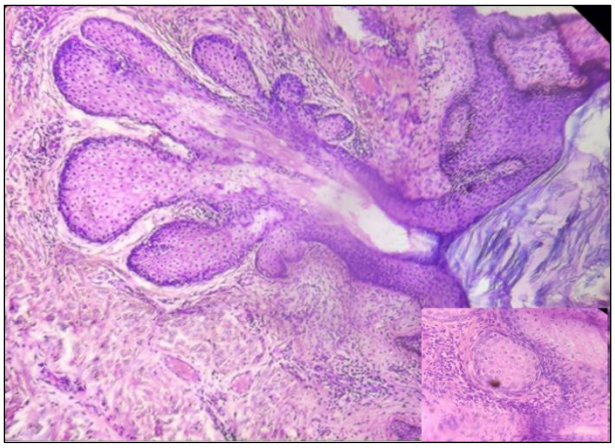

Figure 8: Nevus sebaceous (10x and 40x, H and E).

Photomicrograph in Figure 8 shows large number of hamartomatous conglomerate mature sebaceous glands and overlying papillomatous epidermal hyperplasia seen. Hair structure alongwith dilated infundibulum also present in the picture.

Photomicrograph in Figure 9 shows irregular lobular formations with many cells are undifferentiated, distinct sebaceous cells show a foamy cytoplasm present in the centre of most lobules. Cellular atypia along with brisk mitotic activity is also seen. Tumor necrosis is also seen in few areas.

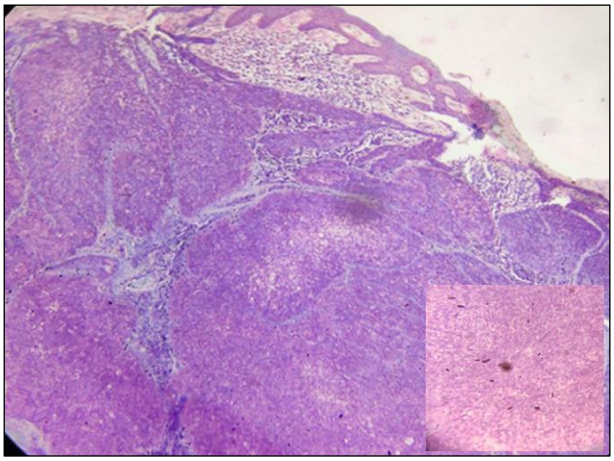

Figure 9: Sebaceous carcinoma (10x and 40x, H and E).

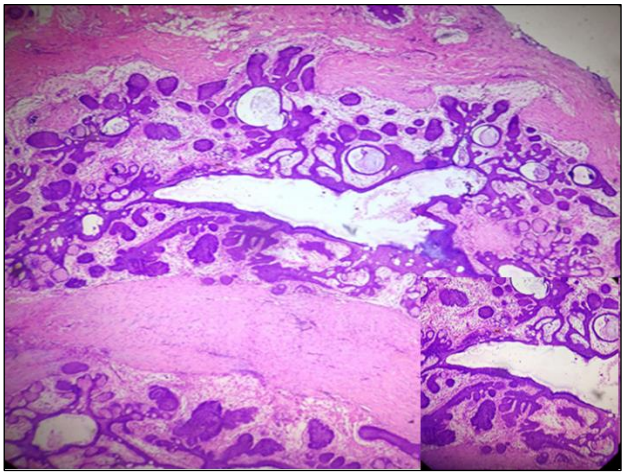

Figure 10: Trichofolliculoma (10x and 40x, H and E).

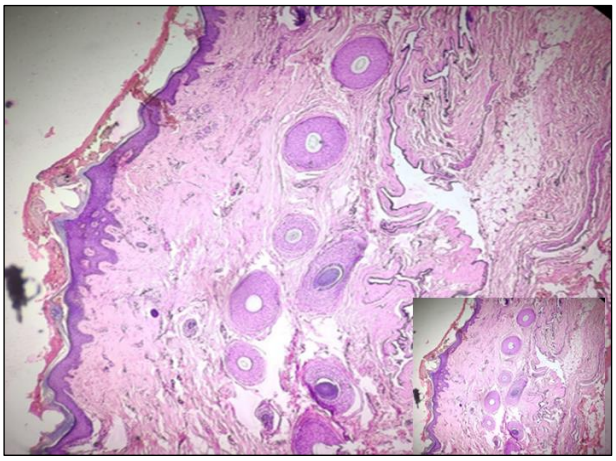

Figure 11: Apocrine hidrocystoma (4x and 10x, H and E).

Photomicrograph in Figure 10 shows dermis contains a cystic cavity lined by squamous epithelium, the cyst contains keratinized material and fragments of hair shafts. Many small well differentiated hair follicles are seen radiating from the cyst wall.

Photomicrograph in Figure 11 shows a large cystic space into which short papillary projections extends. The inner surface of the cyst and the papillary projections are lined by a row of columnar secretory cells of variable height showing decapitation secretion. Peripheral to the layer of secretory cells are elongated myoepithelial cells are seen.

DISCUSSION

Skin appendageal tumors differentiate along one or more adnexal line and their overall incidence is very low in our Indian population. Incidence of adnexal tumor was low (<1%) as compared to total surgical burden at this institute. Marla NJ et al, also found similar results for incidence of SATs.[5] Proper literature is not available regarding the racial and geographic incidence of SATs and their etiopathogenesis is also not clear.[6]

In the present study, female outnumbered male (M: F=1:1.5) which was in accordance with Radhika et al, Vani D et al., Nair PS et al, Poornima Vijayan et al, and Sridevi Sanapala et al, Radhika et al, and Vani D et al, observed that head and neck region was the most common region of SATs which was also found in the present study.[7-11] It may be explained by the presence of abundant skin adnexal structures in this region of our body.

Skin adnexal tumors show a wide range of age distribution. Vani D et al, found that 41-50 years (21.56%) age group was the most common presentation which is similar to this study (28%).[8] In previous study by Ankit et al. observed that commonest age group of presentation was 51-60 years.[11]

The incidence of benign tumors is more compared to malignant tumors. We found that 84% benign and 16% malignant cases. This result coincides with the result of Marla NJ et al, Vani D et al, and Samaila and who reported 90%, 74.5% and 88.5% benign and 10%, 25.49% and 11.5% malignant lesions respectively.[5, 8,12]

In this study, eccrine sweat gland tumors were the most common (40%) of which hidradenoma and spiradenoma were the highest in number (3 cases each). This is similar to the study done by Nair PS et al, Radhika et al, and Vani D et al. and who found sweat gland origin were the most common.[6-8] The most common benign tumor overall was Pilomatricoma (4/21) which is similar to the observation of Prasad B.V et al and Agrawal S et al.[13, 14]

Authors found that hidradenoma and spiradenoma are the second most common benign tumors with all 3 cases are of nodular variant of hidradenoma. Nodular hidradenoma was reported as the commonest benign tumor by Radhika et al, Vani D et al, and Pachori et al.[7, 8, 15]

Malignant adnexal tumors are rare.[16] Authors found only 4 malignant adnexal tumors in this study, of which sebaceous carcinoma is the most common (3 cases) and porocarcinoma with 1 case. All 3 cases of sebaceous carcinomas were located on eyelid. However, they can also be found on extraoccular sites.[17]

CONCLUSION

This study found that skin adnexal tumors are less common form of neoplasm and the overall prevalence is very low among various skin lesions encountered. These tumors are mostly prevalent in older age group, females are the most commonly affected and head & neck region is the most common site. Benign tumors are the most common form than malignant ones. In the benign category pilomatricoma is on the top position followed by spiradenoma and hidradenoma respectively. In the malignant category sebaceous carcinoma is the most common tumor. For the diagnostic point of view, SATs are a diagnostic challenge for the clinicians as well as the pathologists due to diverse clinical presentation and wide histomorphological spectrum and frequency of differentiation along different lines in the same lesion. Histopathogy remains the gold standard for diagnosis of these tumors and IHC have a limited role.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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