

## A clinicopathological study of skin adnexal tumors - an experience at a tertiary care center in South India.

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### Abstract

**Introduction:** Skin adnexal tumors (SAT) encompass wide spectrum of benign and malignant tumors that differentiate toward one or more adnexal structures found in normal skin according to embryologic and histologic features into eccrine, apocrine, follicular and sebaceous. Overall incidence of SATs is low yet they can be challenging to diagnose. **Aims:** The aim of this study is to study the spectrum and microscopic features of SATs.

**Materials and Methods:** A retrospective analysis of all SAT diagnosed in last five years from March 2015 to March 2020 was conducted. A total 60 cases were included in this study clinical details retrieved from hospital medical record. Tissue biopsies obtained are formalin fixed, paraffin-embedded sections stained with hematoxylin and eosin were used for histopathological analysis. **Results:** Among all the 60 cases, majority were benign adnexal tumors which constituted 93.3% (56/60) while 6.7% (4/60) cases were diagnosed as malignant. The overall incidence of SAT was higher among females and most affected age group being 21–30 years (41.7%, 25/60). The sweat gland tumors constituted the largest group with 41.7% (25/60) cases and hair follicle tumors 33.3% (20/60) cases. The most common affected site was head and neck (66.6%, 40) with the face being the predominant location for tumors followed by trunk region trunk (25%, 15/60). The most common benign tumors were Hidradenoma papilliferum and Pilomatricoma each represented 12 cases while sebaceous carcinoma was the most common malignant tumor (3.75%). **Conclusion:** Skin adnexal tumours are less common skin neoplasms. The most common site of SAT was head and neck and the majority were benign tumours, with hidradenoma papilliferum and pilomatricoma being the most common. Histopathology is required to differentiate between benign and malignant features because of its therapeutic and prognostic implications.

**Key Words:** skin, adnexa, tumours.

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### Introduction

Skin is a complex organ which acts as a protective barrier however, a variety of diseases develop from this including cancers. Skin adnexal tumors (SATs) are those neoplasms that differentiate towards or arise from pilosebaceous unit, eccrine sweat glands or apocrine sweat glands, and these tumors are classified into four groups that exhibit histologic features analogous to hair follicles, sebaceous glands, and eccrine glands [1].

These tumors are derived from multipotential undifferentiated cells present within the epidermis or its appendageal structures and the histologic features of a tumor are related to the activation of molecular pathways responsible for forming the mature adnexal structure [1]. Adnexal tumors are usually missed on clinical diagnosis as they include different entities with various presentations and often all of them present as asymptomatic papules or nodules. Therefore, anatomical location, number and distribution of lesions provide important clue, but histopathology is invaluable in confirmation of the diagnosis [2]. Keeping in view these facts, an attempt is made to study different varieties of tumours of skin which will bear

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impact on patient management and prognosis.

## Materials & Methods

The present study is a retrospective study conducted in Andhra Medical College, a tertiary care center in Visakhapatnam, Andhrapradesh from March 2015-March 2020. A total of 60 cases were included which were reported by the Histopathology Sections in the Department of Pathology. The clinicopathological data was taken from the registers and case files for the given period. All biopsies and resected specimens received in the histopathology section were fixed in 10% formalin. Gross features were noted followed by routine processing, slides were stained with hematoxylin and eosin stain and few special stains like PAS and reticulin were performed wherever required. The tumors were classified based on predominant pattern of differentiation into follicular, sebaceous, eccrine, and apocrine tumors, using the International Classification of World Health Organization (2006).

## Results

In the present study, the male: female ratio was 1 : 1.4 with female preponderance while the highest incidence was observed in the age group of 21–30 years (41.7%, 25/60) followed by age groups of 31–40 (25%, 15/60) and 41–50 (16.7%, 10/56) years, respectively. The head and neck region was the most common site affected (66.6%, 40/60) followed by trunk (25%, 15/60) and extremities (8.3%, 5/60). Among the head and neck region (n=40) about 50% (20/40) cases were located on the face followed by scalp in 45% (18/40) cases and neck region was least affected 5% (2/40). The benign adnexal tumors constituted 93.3% (56/60) cases and malignant adnexal tumors constituted 6.7% (4/60) cases. The sweat gland tumors constituted the largest group involving 41.7% (25/60) cases followed by the hair follicle tumors 33.3% (20/60) cases followed by sebaceous gland tumors 25% (15/60) cases (Table 1). The sweat glands tumors (n=25) are most common hidradenomapapilliferum (12/25, 48%) syringoma (3/25, 12%) cylindroma, chondroid syringoma, eccrine poroma, hidradenoma with 2 cases each (8%), and apocrine hidradenoma, syringocystadenoma papilliferum with 1 case (5.4%). The second common differentiation belong to hair follicle tumors (n=20) that are comprised of pilomatricoma (12, 60%) proliferating trichilemmal cyst (6, 30%) trichofolliculoma (1, 5%) trichilemmal carcinoma (1, 5%) followed by sebaceous gland tumors (n=15) comprised of Nevus sebaceous (9, 60%), sebaceous adenoma (3, 20%) and sebaceous

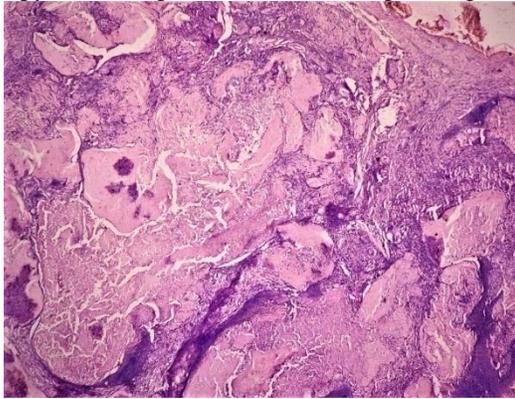
carcinoma (3, 20%). Amongst the benign tumors; Hidradenomapapilliferum and Pilomatricoma were the most common tumors representing 12 cases each, observed in age ranging from 10 to 70 years. Pilomatricoma showed peak incidence between 11 and 40 years of age and was more common in males while hidradenomapapilliferum was more common among females occurring in 20–40 age group. Among the total four malignant tumors observed, three were sebaceous carcinoma (75%) and one was trichilemmal carcinoma (25%). Of these four cases, two presented as nodulo ulcerative lesions and two as non healing ulcers.

## Discussion

The SAT are less common skin tumours as only 60 cases were reported over five year time period in the tertiary care center. Among the SATs, benign tumors were more common 93.3% (56/60) and 6.7% (4/60) tumors were malignant such similar observation was also seen in other Indian studies of Ankitsharma et al [3] Radhika et al. [4] and Samaila [5]. Ankitsharma et al [3], Nair et al [6] studies found that sweat gland differentiation to be the most common tumour, which was also observed in our study. Skin adnexal tumors have a wide range of age distribution. Ankit et al observed that commonest age of presentation was 51–60 years, Radhika et al found third decade to be the most common age of occurrence [3, 4], Vani et al [7] 41–50 years (21.56%) where as in the present study 21–30 (41.7%) year age group was most commonly involved. In our study male : female ratio is 1:1.4 with female preponderance and these results are in concordance with Radhika et al [3], Nair et al [6]. Ankit et al [3] Radhika et al [4] and Vani et al [7] observed that head and neck region was the most common site of occurrence, which was also noted in our study (66.6%). In our study, hidradenomapapilliferum, pilomatricoma were most common benign tumors with each having 12 cases and sebaceous carcinoma was the most common malignant tumor whereas syringocystadenoma had least incidence.

Hidradenomapapilliferum is common benign sweat gland neoplasm that arises in the anogenital region of women consist of a circumscribed nodule with apocrine snouts present on the apical surfaces of the cells give a “maze-like” appearance at low power [8]. Pilomatricoma/ pilomatricoma is a benign tumor that clinically presents as a firm nodule, often on the face, tend to involve any age group. Histopathologically, characterized by 2 components mixed together in a disorganized pattern (1) anucleate pink ‘ghost’ or ‘shadow’ cells (2) aggregates or sheets of small round

blue cells representing germinative/matrical epithelial component[8]. In contrast to our study, Vani et al[7], Radhika et al[4] reported nodular hidradenoma as most common benign tumour in their study. In a study by Vani et al [7] reported 4 cases of sebaceous carcinoma which are similar to the observations of our study. Microscopically, sebaceous carcinoma (Fig 4) revealed irregular epithelial lobules with an infiltrative growth pattern in the dermis. Lesional cells demonstrated marked irregular lobular growth pattern, diffuse sheets of basaloid cells, or infiltrative growth, cytologic atypia, mitotic activity and focal sebaceous differentiation[8]. SATs are relatively uncommon tumours and very few clinical studies have been done discussing various aspects like clinical presentation, microscopy, the importance of clinicopathological

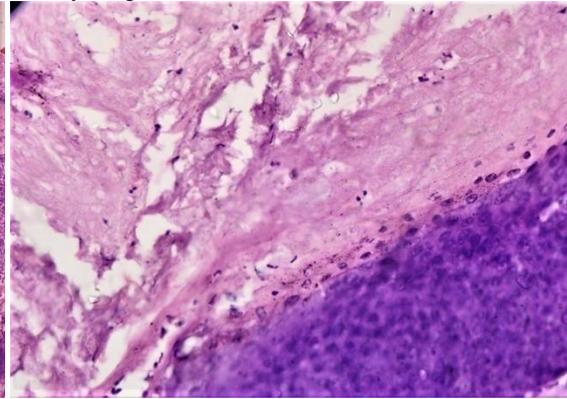


**Fig: 1: (H&E ×100) showing pilomatricoma with areas of ghost cells and aggregates of blue round cells.**

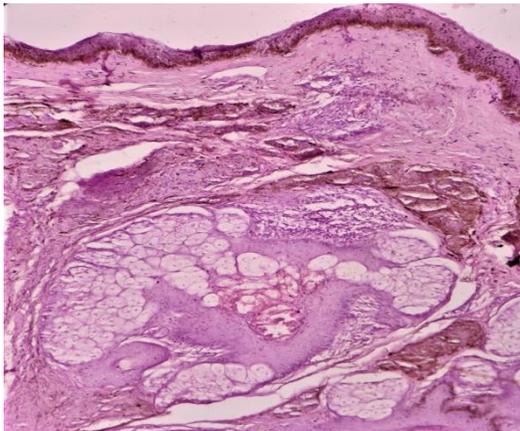
correlation, and histopathological examination as the backbone in diagnosis of adnexal neoplasms.

#### **Conclusion**

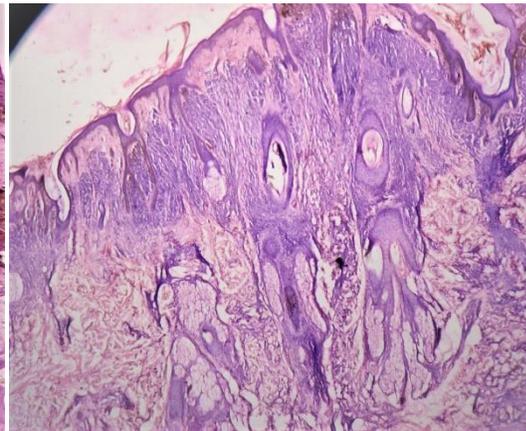
In South India, the overall incidence of skin adnexal tumors is very low where benign skin adnexal tumors are more common as wide age distribution in comparison to the malignant cases which tend to occur in older age. It's difficult to diagnose or differentiate between benign and malignant cases based on clinical findings, as most of them present with nonspecific swellings. Histopathology is the gold standard in the diagnosis of SATs especially the scanner view as it can assess the architectural features of irregular and infiltrative pattern of growth associated with necrosis to distinguish malignant lesions before evaluating cytological features.



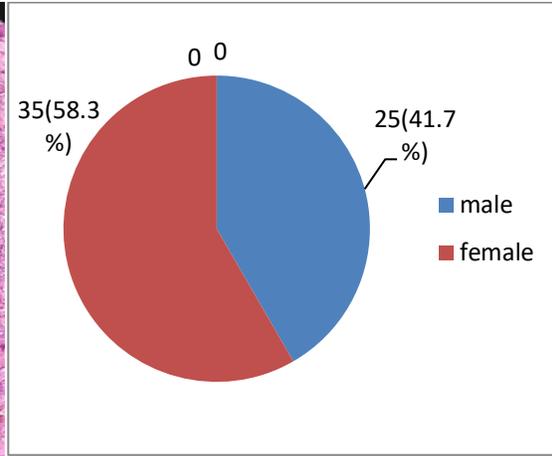
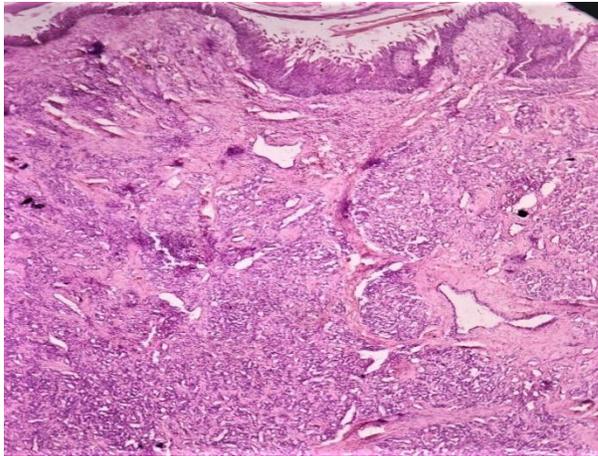
**Fig:2:(H&E ×400) showing pale ghost areas often occur due to foreign body reaction**



**Fig: 3: (H&E ×100) Nevous Sebaceous: showing large sebaceous glands with defective hairfollicles along with ectopic apocrine glands.**



**Fig:4:(H&E ×100) Nevous Sebaceous: showing verrucous epidermal hyperplasia together with immature sebaceous gland and basaloid hyperplasia.**

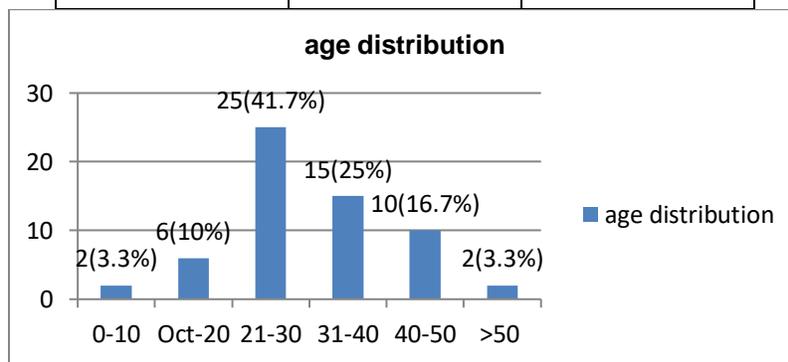


**Fig 5: (H&E ×100) Syringoma: showing tumor in the dermis arranged in tubules with infiltrative growth.**

**Fig 6: showing sex distribution (n=60)**

**Table 1: showing age distribution among cases**

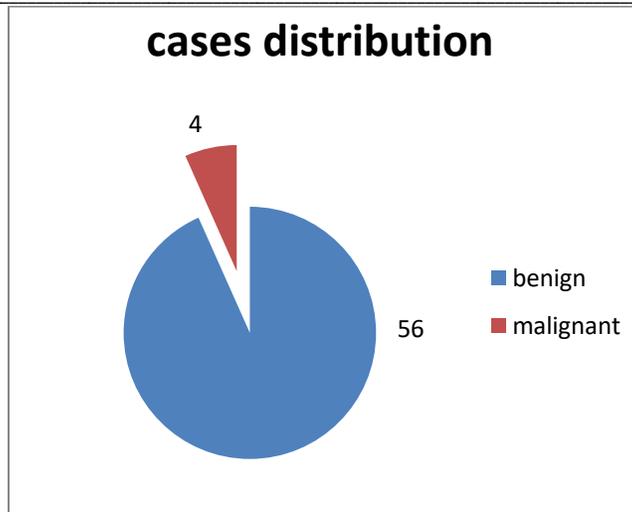
Age	Present study	percentage
0-10	2	3.3%
11-20	6	10%
21-30	25	41.7%
31-40	15	25%
41-50	10	16.75%
>50	2	3.3%



**Fig 8: Bar chart showing age distribution among the cases**

**Table 2: showing the various locations of the lesion in relation to sex distribution**

Sno	Site	Male	Female	Total(n=60)	percent
1	Head& neck				66.6%
	face	11	9	20	50%
	scalp	4	14	18	45%
	neck	1	1	02	5%
2	trunk	7	8	15	25%
3	extremities	2	3	5	8.3%



**Fig 9: Distribution of benign and malignant cases**

**Table 3: Adnexal tumors based on differentiation**

Sno	Differentiation	Ankitsharma et al(n=56)	Present study(n=60)
1	Sweat gland	62.86%	41.7%
2	Hair follicle	21.43%	33.3%
3	Sebaceous gland	35.71%	25%

**Table 4: Benign adnexal lesions**

Sweat gland lesions	n	%	Hair follicle	n=	%	Sebaceous gland	N=	%
Hidradenoma	12	48%	Pilomatricoma	12	60%	Neavus sebaceous	9	60%
Apocrine hidradenoma	1	4%	Proliferating tricholemmal tumor	6	30%	Sebaceous adenoma	3	20%
Cylindroma	2	8%	trichofolliculoma	1	5%			
Chondroid syringoma	2	8%						
Syringoma	3	12%						
Eccrine poroma	2	8%						

**Table 5: showing malignant adnexal tumours**

s.no	carcinoma	Lesion presentation	n	%
1	Sebaceous carcinoma	Nodulo ulcerative	3	20%
2	Tricholemmal carcinoma	non healing ulcer	1	1.5%

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