

Original Research Article

## A Clinicopathological Study of Adnexal Tumors of Skin in a Tertiary Care Research Hospital

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### ABSTRACT

**Aim:** To study the incidence, age and sex distribution of cutaneous appendageal tumors.

**Materials and Methods:** This is a part retrospective and part prospective study conducted at Department of Pathology, in a tertiary care hospital and research centre, Mumbai for a period of 5 years.

**Results:** Total 90 cases of appendageal tumors were studied. Incidence of benign tumors was much more than the malignant tumors with male to female ratio of 1.72:1. Hair follicle tumors comprised the maximum number of cases followed by sweat gland tumors and sebaceous gland tumors. The maximum numbers of cases were observed in 2<sup>nd</sup> to 4<sup>th</sup> decade. All malignant tumors were found in 5<sup>th</sup>-7<sup>th</sup> decade. Mean age of presentation of adnexal tumors was 35.8 years.

**Conclusions:** Skin adnexal tumors are a relatively rare group of tumors with considerable clinical and histological overlap. In our study, hair follicle tumors were the commonest group which is a different finding from the other studies where sweat gland tumors were common.

**Key words:** Adnexal tumors, trichoepithelioma, pilomatricoma, pathology.

### INTRODUCTION

Skin adnexal tumors are a large and diverse group of benign and malignant neoplasms, which exhibit morphological differentiation towards one of the different types of adnexal epithelium present in normal skin which include: sweat glands, sebaceous glands, hair follicle, erector pilorum and nails.

Clinically, most skin adnexal tumors have similar gross presentation hence histopathology plays an important role in reaching the correct diagnosis. Skin adnexal tumors may display more than one line of differentiation (hybrid/composite tumors), rendering precise classification of these neoplasms difficult. <sup>[1]</sup> The diagnosis of these mixed skin adnexal tumors relies on

histological evaluation, and they are usually classified according to the predominant morphological component.

Most adnexal tumors are benign and if completely excised, cause no further concern. However, sub classification of the adnexal tumors are done with regards to their clinical association with specific subtypes enabling the clinicians to undertake the right mode of treatment with accurate identification, identifying rare malignant adnexal tumors which having poor outcome, diagnosing some adnexal tumors which might be markers of syndromes associated with internal malignancies and academic satisfaction to be derived from accurately identifying lesions. <sup>[2-5]</sup>

## MATERIALS AND METHODS

The present study of the skin adnexal tumors was performed in the department of pathology, in a tertiary care hospital and research centre, Mumbai. The study was for the period of 5 years. It was a retrospective study of 2.5 years and a prospective study of 2 years and 6 months

The incidence of adnexal tumors out of all surgical specimens received in our institute was estimated. The clinical profile including age, sex, site of each case were recorded.

The material for this study comprised of punch biopsies and surgically excised specimens. The material was subjected to meticulous gross and microscopic examination. Apart from the regular Hematoxylin and Eosin stain, Special stains like PAS and Alcian blue were done wherever necessary.

The tumors were studied and labeled according to WHO classification.

## RESULTS

This study includes 90 cases of skin adnexal tumors, which were examined at our institute during the period of 5 years. There were 85 benign and 05 malignant tumors. There were 57 male patients and 33 female patients. There was a male predominance over the female with male to female ratio of 1.72:1.

**Table 1: Type of Skin Adnexal Tumors**

Type Of Tumour	No. of Cases	Percentage
Hair follicle tumors	43	47.78%
Sebaceous gland tumors	23	25.56%
Sweat gland tumors	24	26.66%

Hair follicle tumors comprised the maximum cases (n=43, 47.78%) followed by sweat gland tumors (n=24, 26.66%) and sebaceous gland tumors (n=23, 26.66%).

**Table 2 Comparative Incidence of Skin Adnexal Tumors In various studies**

Study Group	Year	Total Skin tumors	Skin Adnexal tumors	Percentage
Sirsat et al	1964 (24Yrs Study)	1117	49	4.4%
Vaishnav et al	1974 (12Yrs Study)	783	48	6.13%
Present Study	2013 (5 years Study)	579	90	15.54%

In our study, the incidence of skin adnexal tumour was 15.54%, which is significantly higher than other studies. This

The maximum numbers of cases were observed in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> decade. All malignant tumors were found in 5<sup>th</sup>-7<sup>th</sup> decade. Mean age of presentation of adnexal tumors was 35.8 years. In hair follicular and sebaceous gland tumour male outnumber female, whereas in sweat gland tumour female were in majority as compared to male. 82.22 % of cases were located in head, neck and face region i.e. 65.56 % over the face, 13.33 % over the scalp and 3.33 % over the neck. The next most common site was extremities (10%) with only a single case presenting in lower extremity followed by trunk (7.78%).

All the 43 cases of tumors of hair follicle origin were benign in this study. Trichoepithelioma (n=18, 20%) and pilomatricoma (n=18, 20%) accounted for the majority of the lesions in these group. Of the 23 cases of tumors of sebaceous gland origin, 18 cases were of benign nature and 5 cases of malignant tumor were found in this study. Nevus sebaceous was the most common benign tumor (11.11%) while all the malignant tumors were found to be sebaceous carcinoma (5.56%). All the 24 cases of tumors of sweat gland origin were benign in this study. Eccrine hidrocystoma accounted for the maximum number of cases (n=6, 6.67%).

## DISCUSSION

90 cases of skin adnexal tumors were studied from January 2009 to December 2013 in our institution. The present study was compared with studies carried out over different time periods and different durations. Our study has more number of cases (90) in 5 years duration as compared to other published studies.

is partly due to increased awareness and cosmetic inclination in this developed part of the country and partly that the patients

biopsied and then referred are not representative of the whole population.

Sirsat *et al*, [1] in 1964 in their published study showed male to female ratio of 1.3:1 among adnexal tumors in 49 cases. Yaqoob *et al* [4] showed similar result. In our study, the M: F ratio was 1.72:1 which is higher than the previous studies. Majority of other studies showed female preponderance. [2,5-8]

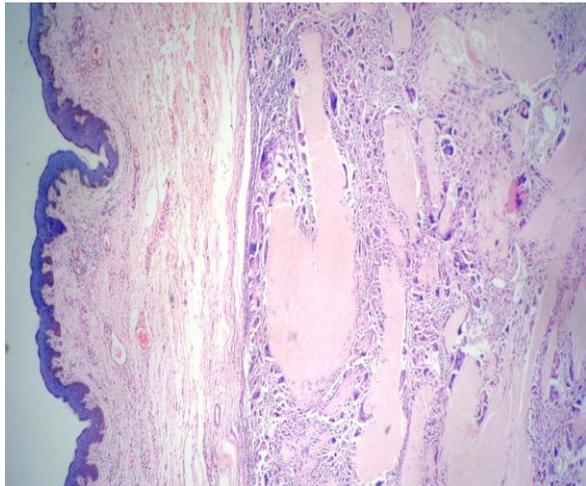


Fig 1 Pilomatricoma: Microphotograph showing well circumscribed tumour comprised of basophilic cells and ghost cells along with multinucleated giant cells

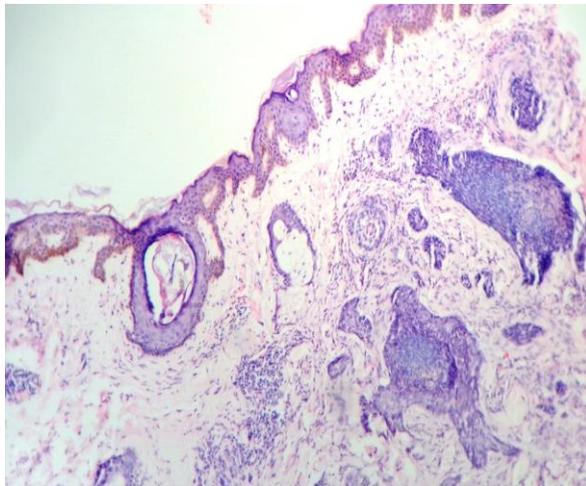


Fig 2 Trichoblastoma: Microphotograph showing a tumour arranged in nest and comprised of basaloid cells exhibiting peripheral palisading embedded in fibrous stroma.

Jayalakshmi and Looi [3] reported 29.8 years as the mean age of presentation in their study. Yaqoob *et al* [4] reported 41 years as the mean age of presentation in their study. Gayathri *et al* [7] reported 35.2 years as the mean age of presentation in their study. In the present study, the mean

age of presentation was 35.8 years which almost parallels with the above series.

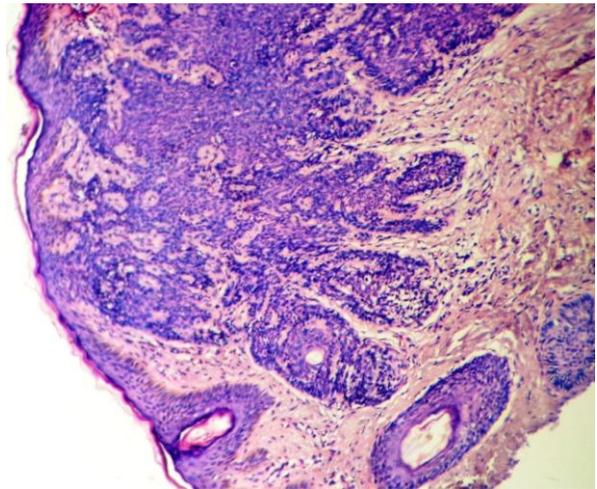


Fig 3 Eccrine spiradenoma. Microphotograph depicting tumour with two types of cells with dark staining nuclei at periphery and cells with pale staining nuclei at the centre.

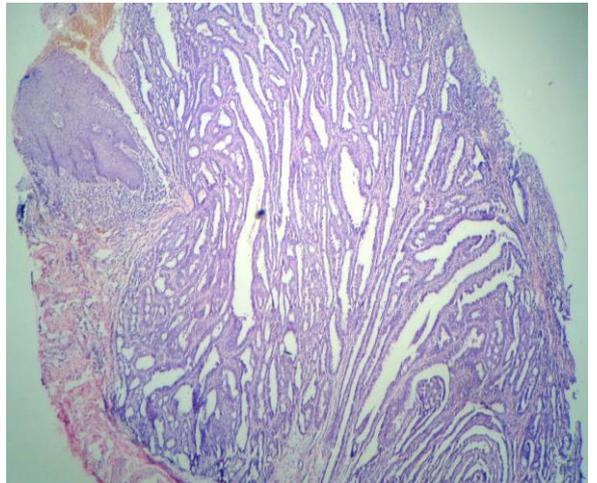


Fig 4 Nodular hidradenoma. Microphotograph depicting a well circumscribed tumour nodule with papillary folding projecting into cystic spaces

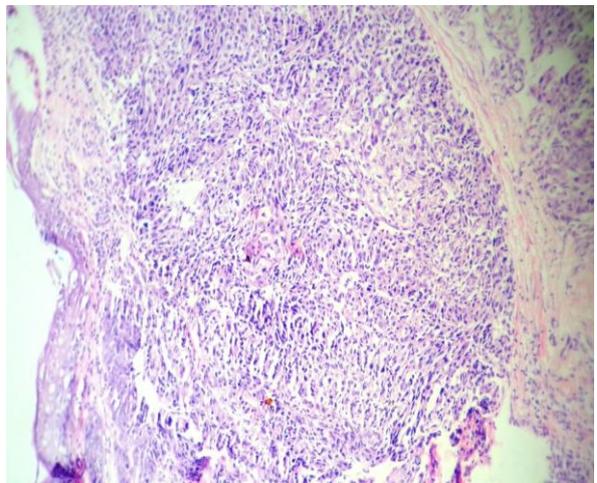


Fig 5 Sebaceoma. Microphotograph depicting a well circumscribed nodule comprising of undifferentiated basaloid cells in more than half of the tumour.

In the present study, skin adnexal tumors were found in the age group of 3-75 years, with peak in the 3<sup>rd</sup>-4<sup>th</sup> decade which almost parallels with other series. [1-8]

In our study, 82.22 % of cases were located in head, neck and face region i.e. 65.56 % over the face, 13.33 % over the scalp and 3.33 % over the neck. The rest included 7.78% on the trunk and 10% over the extremities. This is in concordance with most of the studies done earlier. [1-8]

Our study showed 43 (47.78%) hair follicle tumors, 18 (25.56%) sebaceous gland tumors and 24 (26.66%) sweat gland tumors out of 90 cases which are comparable with only Jayalakshmi and Looi. [3]

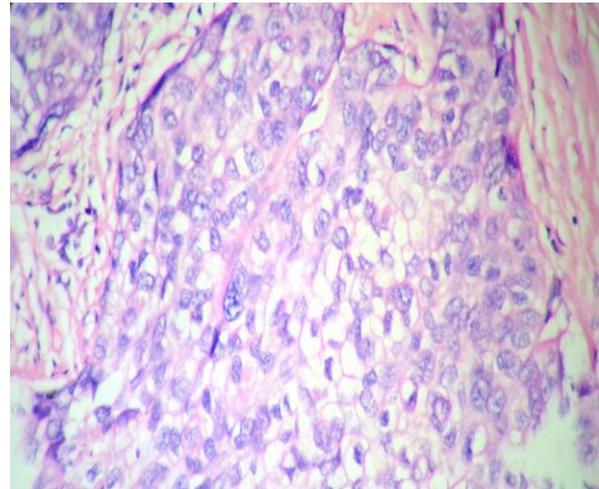


Fig 6 Sebaceous Carcinoma. Microphotograph showing Tumour Island with marked cytologic atypia, mitotic activity and focal sebaceous differentiation.

Table 3 Type of tumour: Comparative study of the various series vis a vis type of tumors

Type	Sirsat et al	Vaishnav et al	Radhika et al	Jindal et al	Nair et al	Present series
Hair follicle tumour	3	6	11	11	12	43
Sebaceous gland tumour	20	3	7	1	2	23
Sweat gland tumour	26	39	17	13	19	24
Total	49	48	35	25	33	90

Percentage of sweat gland tumors (Eccrine > Apocrine) was the highest in most of the above studies. [1,2,4-8]

Sirsat [1] study was carried out in cancer institute hence the incidence of malignant tumors was high. In the present study, 94.44% of skin adnexal tumors were benign and 5.56% were malignant which is same as Jindal and Patel [6] series and in comparison with the other studies mentioned above.

There was 1 case of trichoadenoma in a male with an incidence of 1.1 % among all the skin adnexal tumors. Age of presentation was 34 years. The tumour was situated on the face. Trichoadenoma may arise anytime throughout life and usually occurs on the face and buttocks. None of the above studies reported any case of trichoadenoma.

There was 1 case of trichoblastoma in a male with an incidence of 1.1 % among all the skin adnexal tumors. Age of presentation was 64 years. The tumour was situated on the face. None of the above studies reported a case of trichoblastoma.

There were 5 cases of trichofolliculoma in the present study. No

case was found in Sirsat et al [1] series, 1 case was reported each in Vaishnav et al [2] series and Radhika et al [8] series where it was present over the scalp.

There were 18 cases of trichoepithelioma making the incidence of 41.86% among the hair follicle tumors and an overall incidence of 20% among the skin adnexal tumors. This was high as compared to Vaishnav [2] series 4.6% of all adnexal tumors, however they constituted 29% of all the hair follicle tumors. The age varied from 12 to 75 years with peak incidence in 3<sup>rd</sup> - 4<sup>th</sup> decade, this is well compared to Gray series [9] in which they occurred in 3<sup>rd</sup> decade. The tumour is common in a male (12 out of 18 cases) which is similar to Gray series [9] showing male predominance.

There were 18 cases of pilomatricoma making overall incidence of 20 %, highest among the incidence of all the skin adnexal tumors found in this study. This is in parallel with Sirsat et al series [1] (9.1%) and Vaishnav et al series [2] (7%). Kartha et al [10] series (1980) reported pilomatricoma in 20 out of 82 cases (24.4%) of skin adnexal tumors studied and 57.14% of hair follicle tumors which is similar to

our findings of 20% of all skin adnexal neoplasms and 46.51% of the hair follicle tumors in our study.

There were 23 cases of sebaceous gland tumors, accounting for 25.56% of all the skin adnexal tumors. The most common skin adnexal tumour in our series was nevus sebaceous (10 cases) which constituted 43.47% of all the sebaceous gland tumors, which is high as compared to Sirsat et al [1] series (1964) but in concordance with most of the other studies. [2-8] Sirsat et al [1] had sebaceous gland carcinoma as the most common tumor (77.7%) which can be attributed to the study being conducted in a cancer institute.

There were 10 cases of Nevus sebaceous, making an overall incidence of 11.11% of all the skin adnexal tumors. Sirsat et al [1] and Vaishnav et al [2] had only 1 case in their series, Nair PS [5] and Gayathri et al [7] reported 2 and 4 cases of nevus sebaceous respectively. Higher incidence of nevus sebaceous within the sebaceous gland tumors as in our study is in concordance with most of the studies reported previously. The age varied from 12 to 40 years in this study. The age range was 17 days to 64 years in Mehregan and Pinkus series [12] (1965). The male to female ratio in the present study was 4:1, however in Mehregan and Pinkus (1965) series [12] where the ratio was 1:1.1.

In Sirsat et al [1] series, single case was associated with sebaceous carcinoma. However in our study, no such association was found in the 10 cases reported. 9 out of 10 cases (90%) were situated in head neck face region which correlated well with Mehregan and Pinkus et al [12] series in which 94.66% were situated in head and face region. One case in our study was present over hand.

There were 3 cases of sebaceous hyperplasia, making an overall incidence of 3.33 % of all the skin adnexal tumors, which is low as compared to Sirsat et al series [1] (1964, 14.3%). There in no case reported in Vaishnav et al (1974), Nair PS [5] (2007), Gayathri et al (2012) and Radhika et al [8]

(2013) series.

There were 4 cases of sebaceous adenoma making an overall incidence of 4.44 % of all the skin adnexal tumors which is comparable to Sirsat et al series1 (1964, 5%). In Sirsat et al series, [1] the tumor was associated with basal cell carcinoma. However in our study, no such association was found in the 4 cases reported. There in no case reported in Vaishnav et al, [2] Nair PS, [5] Gayathri et al [7] and Radhika et al. [8] There was a single case of sebaceoma making an overall incidence of 1.11 % of all the skin adnexal tumors. In present study, the tumor presented over the face as a fungating mass in a 44 year old female. There in no case reported in Vaishnav et al, [2] Nair PS, [5] Gayathri et al [7] and Radhika et al [8] series.

There were 5 cases of sebaceous carcinoma, making an overall incidence of 5.55% of all the skin adnexal tumors, which is low as compared to Sirsat et al series [1] (1964 ,22%). In Sirsat et al series, [1] single case of sebaceous carcinoma was associated with nevus sebaceous with the malignant tumor developing on it. However in our study, no such association was found in the 5 cases reported. There in no case reported in Vaishnav et al, [2] Nair PS, [5] Gayathri et al [7] and Radhika et al. [8]

There were 24 cases of sweat gland tumors in our study, constituting 26.66% of all the skin adnexal tumors. Most common in our series was eccrine hidrocystoma (6 cases, 6.66% of all adnexal tumors and 25% of sweat gland tumors).The most common benign sweat gland tumors in Sirsat et al, [1] Vaishnav et al, [2] Nair PS, [5] Gayathri et al [7] and Radhika et al [8] series was nodular hidradenoma. Commonest benign tumor in Nair PS, [5] was syringoma.

There were 3 cases of syringoma accounting for 3.33% of the sweat gland tumors, which is marginally higher as compared to Vaishnav et al [2] and Sirsat et al series, [1] which had only one case each in their series.

There were a single case of dermal cylindroma accounting for 1.11% of all the

skin adnexal tumors and 4.1% of sweat gland tumors which is comparable to Vaishnav et al [2] series- 2.6% and Radhika et al series. [8]

Eccrine spiradenoma accounted for 3 cases, making an overall incidence of 3.33% and 12.5% of sweat gland tumors, which is comparable to Sirsat et al series, [1] (11.11%), Nair [5] (10.5%) and Radhika et al [8] series (17.6%). Gayathri et al [7] reported eccrine spiradenoma with an incidence of 6.66% of sweat gland tumors.

Chondroid syringoma accounted for 3 cases, 3.33% of all the skin adnexal tumors and 12.5% of the sweat gland tumors which is slightly higher as compared to Vaishnav et al [2] series (1974, 7.69%). Most of the tumors showed tubular branching pattern and the stroma composed of predominantly chondroid matrix, pointing towards eccrine duct origin.

There were total of 2 cases of Nodular Hidradenoma comprising of 2.22% of all the skin adnexal tumors and 8.33% of sweat gland tumors which is lower to Sirsat et al series, [1] Vaishnav et al [2] (41.7%) and Yaqoob et al [4] series (32.55%).

There were 6 cases of Eccrine Hidrocystoma having incidence of 6.67% of all the adnexal tumors and 25% of sweat gland tumors. No cases were found in Sirsat et al [1] series (1964), Vaishnav et al, [2] Nair PS, [5] Gayathri et al [7] and Radhika et al. [8]

Kartha et al [10] reported 3 cases of hidrocystoma (eccrine or apocrine origin was not specified) making an incidence of 6.82% of sweat gland tumors which is lower than the findings of our study. A single case was reported by Gayathri et al [7] making an incidence of 6.67% of sweat gland tumors which is very low as compared to our study.

There were 2 cases of eccrine poroma making an overall incidence of 6.67% of all the skin adnexal tumors and 8.33% of sweat gland tumors. A single case was reported by Gayathri et al [7] making an incidence of 6.67% of sweat gland tumors which is similar to our study.

There was a single case of hidradenoma papilliferum making an overall

incidence of 1.11 % of all the skin adnexal tumors and 6.67% of sweat gland tumors. A single case was reported by Vaishnav et al [2] making an incidence of 4.54% of sweat gland tumors which is lower than the present study. Sirsat et al [1] reported a single case of hidradenoma papilliferum making an incidence of 2.5% of sweat gland tumors which is slightly lower than the present study. No cases were found in Nair PS, [5] Gayathri et al [7] and Radhika et al [8] series. [8] In our study, the age and sex of patient was 57 year old female which is similar to the age and sex of the patient in the Sirsat et al series [1] - 50 year old female. In our study, the tumor in our study presented over the genitalia (vulva). Sirsat et al [1] reported the tumor present over the muco-cutaneous junction of the anus.

There were 3 cases of syringocystadenoma papilliferum. The overall incidence of the tumor was 3.33% among all the skin adnexal tumors and 12.5% of sweat gland tumors. A single case was reported by Vaishnav et al [2] making an incidence of 4.54% of sweat gland tumors which is lower than the present study. Sirsat et al [1] reported 4 cases and Vaishnav et al [2] reported 8 cases of syringocystadenoma papilliferum making an incidence of 18.18% and 20.5% of sweat gland tumors respectively which is higher than the present study. Yaqoob et al [4] series reported 12 cases with an incidence of 13.95% of sweat gland tumors which is comparable with our study. Nair [5] reported a single case making an incidence of 5.26% of sweat gland tumors which is lower than the present study.

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