

Skin adnexal tumors - A histopathological study

Abhitha B C¹, Preeta Naik²

¹Department of Pathology, PES Institute of Medical Sciences and Research (PESIMSR), Kuppam, Andhra Pradesh, India

²Department of Pathology, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Abstract

Introduction: Skin adnexal tumors (SATs) are a rare type of neoplasm that can be classified into four categories based on their histological features, which resemble hair follicles, sebaceous glands, and eccrine glands. Benign tumors are more common than malignant tumors. This study aimed to analyse the morphological, clinical, and histological features of SATs and classify them according to the WHO Classification.

Objectives: 1) To analyse histopathological features of various skin adnexal tumors. 2) To categorize adnexal neoplasms based on their differentiation and classify according to WHO classification. 3) To correlate histopathological features with clinical data

Methodology: The present study was a retrospective study of cases from April 2023 to 2024. 35 cases were included in this study, which were received in histopathology section of Department of pathology at Hassan institute of Medical Sciences. Archived Hematoxylin and Eosin stained slides were retrieved and examined. Age, sex and site of the lesion were recorded from histopathology requisition forms.

Results: A total of 35 cases were studied. Of the 35 cases, the most common adnexal tumor was pilomatricoma followed by eccrine spiradenoma. The most common site of presentation was the head and neck, followed by upper limb and trunk. Highest incidence of presentation was in the age group between 60 to 69 years. Overall sex predilection was showing male preponderance.

Conclusion: Overall incidence of skin adnexal tumors was very less. Histopathological study remains the gold standard in differentiating the tumors of sweat gland, hair follicular and sebaceous glands. Accurate diagnosis of SATs is necessary as it plays a vital role in prognosis.

Key Words: Adnexal tumors, Benign, SATs.

Introduction:

Skin adnexal tumors (SATs) are a type of neoplasm that develop from the pilosebaceous unit, eccrine sweat glands or apocrine sweat glands. These tumors can be classified into four categories based on their histological features, which resemble those of hair follicles, sebaceous glands and eccrine glands^[1]. SATs originate from undifferentiated cells in the epidermis or its appendages, and their histological characteristics are influenced by the activation of molecular pathways involved in the formation of mature adnexal structures^[2]. While benign SATs often present as asymptomatic papules or nodules, making clinical diagnosis challenging, histopathology and immunohistochemistry are essential for confirming the diagnosis. Although skin adnexal tumors (SATs) are mostly benign, malignant cases have been reported^[3]. The presence of multiple SATs can be

a sign of an underlying genetic syndrome. Recent genetic studies have identified specific mutations responsible for these tumors, which are often found in patients with inherited genetic predispositions, leading to their frequent occurrence in these individuals^[4]. This study aimed to analyse the morphological, clinical, and histological features of SATs and classify them according to the WHO International Classifications^[5].

Aims and Objectives:

1) To analyze histopathological features of various skin adnexal tumors. 2) To categorize adnexal neoplasms based on their differentiation and classify according to WHO classification. 3) To correlate histopathological features with clinical data.

Materials And Methods:

The present study is a retrospective study of cases from April 2023 to April 2024. 35 cases were included

Address for Correspondence:

Dr. Preeta Naik

Associate Professor, Department of Pathology,
Hassan Institute of Medical Sciences, Hassan, Karnataka, India
Email: preetanaik@gmail.com

in this study, which were received in the histopathology section of the Department of Pathology at Hassan institute of Medical Sciences (HIMS). Archived haematoxylin and eosin-stained slides were retrieved and examined. Age, sex and site of the lesion were recorded from the histopathology requisition forms.

Statistical Analysis:

The collected data were entered and analysed using Microsoft excel. The data were expressed in percentages (%).

Results:

In the present study, SAT was observed in all age groups ranging from 12 to 85 years. However, the highest incidence of presentation was in the age group between 60 to 69 years (36.6%) followed by 50 to 59 years and 20 to 29 (20%). [Table.2] The overall sex distribution showed a male predilection with a male-to-female ratio of 1.5: 1. This male predilection was observed in both adults and children (60%). [Table.1] The head and neck region was the most common site affected (77.2%). Followed by upper limb and trunk (14.2%) & lower limb and abdomen (8.6 %). In the head and neck region, 27 cases were reported out of which 21 cases from face, 06 cases reported were from scalp. [Table.3] The present study identified various sweat gland tumors, including nodular hidradenoma, eccrine poroma, syringocystadenoma papilliferum, apocrine hidrocystoma, and eccrine spiradenoma. Hair follicle tumors comprised only benign lesions like pilomatricoma and trichoepithelioma. Notably, the rare tumours encountered were apocrine hidrocystoma, nodular hidradenoma, and syringocystadenoma

papilliferum. Pilomatricoma was the most common (46.6%), followed by eccrine spiradenoma (13.3%). [Table.4]

Table 1: Sex distribution of skin adnexal tumors in our study.

Sex	Number of cases	Percentage of cases
Male	21	60%
Female	14	40%
Total	35	100%

Table 2: Age distribution of skin adnexal tumors in our study.

Age	Number of cases	Percentage of cases
10 to 19 years	03	8.5 %
20 to 29 years	07	20 %
30 to 39 years	03	8.5 %
40 to 49 years	04	11.4%
50 to 59 years	07	20 %
60 to 69 years	11	36.6%
Total	35	100%

Table 3: Distribution of tumor according to the location.

Site of tumor	Number of cases	Percentage of cases
Head and neck	27	77.2%
Trunk and Upper limb	5	14.2%
Abdomen and lower limb	3	8.6%
Total	35	100%

Table 4: Classification of adnexal tumors in our study

Sweat gland tumors	No of cases	Percentage	Hair follicle tumors	No of cases	Percentage
Nodular hidradenoma	1	2.8%	Pilomatricoma	19	54.2%
Eccrine Poroma	2	5.8%	Trichoepithelioma	1	2.8%
Eccrine Spiradenoma	5	14.2%			
Syringocystadenoma papilliferum	1	2.8%			
Apocrine hidrocystoma	2	5.8%			
Papillary eccrine adenoma	2	5.8%			
Chondroid syringoma	2	5.8%			
Total	15	43%	Total	20	57%

Discussion:

Skin adnexal neoplasms comprise the wide spectrum of benign and malignant tumors that exhibit morphological differentiation towards one or more types of adnexal tumors in normal skin^[6,7]. Benign tumors of epidermal appendages can be categorised into four main groups based on their differentiation which include tumors of hair follicle differentiation, tumors with sebaceous gland differentiation, tumors of apocrine gland differentiation and tumors of eccrine gland differentiation^[8]. Most of the tumors in this study are only benign cases.

Most common tumors of this study were of tumors of follicular differentiation (57%) similar to Suri et al^[3] and Kaur k et al^[6] in which pilomatricoma (54.2%) was the commonest. Our findings showed a similar prevalence of sweat gland tumors (43.0%) to Sharma et al's study. Notably, eccrine spiradenoma (14.2%) was found to be less common in our study compared to other reported studies.

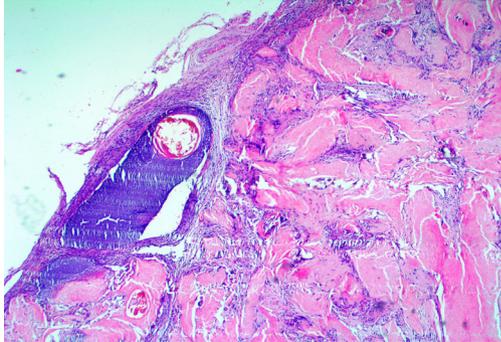


Figure 1: Low power(4x) shows island of epithelial cells comprising of ghost cells and basaloid cells.

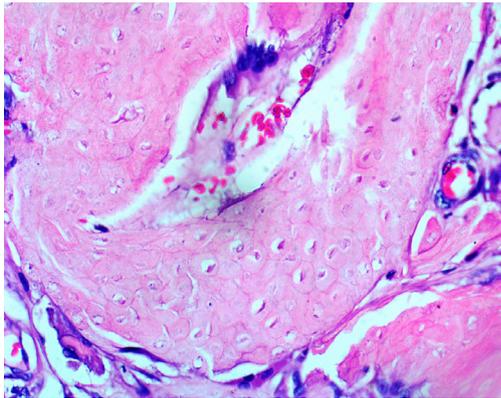


Figure 2: High power(40x) shows ghost cells distinct cell border & a central unstained shadow at the site of lost nucleus

Similar results were found in other studies but some also observed nodular hidradenoma and syringoma as the most common tumor^[9].

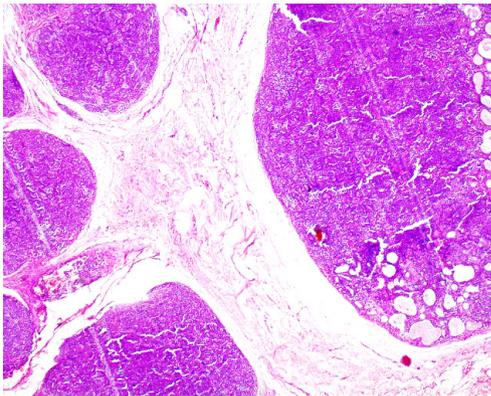


Figure 3: Low power(4x) shows multiple basophilic nodules of varying sizes with few dilated ducts in nodules - Eccrine spiradenoma.

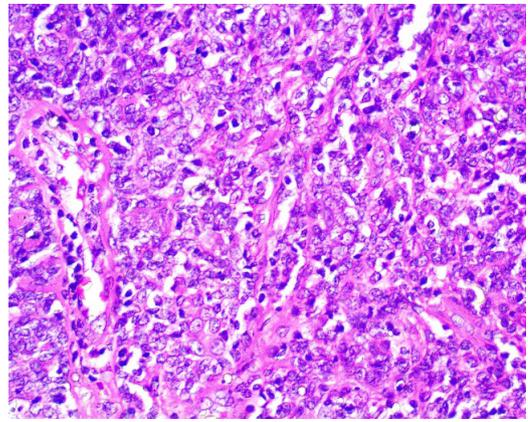


Figure 4: High power(40x) shows dual cell population composed of large pale cells and small basaloid cells, along with intermixed lymphocytes - Eccrine spiradenoma.

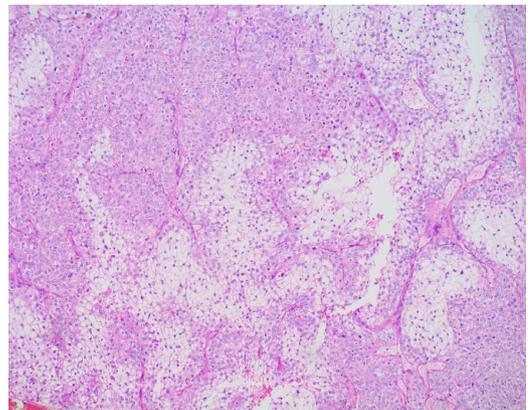


Figure 5: Low power(4x) shows biphasic population of cells having round polygonal cells and clear cells - Clear cell Hidradenoma.

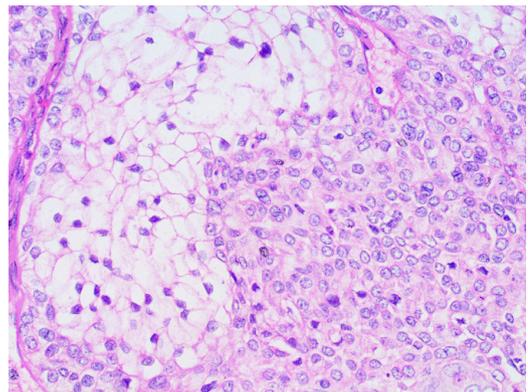


Figure 6: High power(40x) shows biphasic population of cells having round polygonal cells and clear cells - Clear cell Hidradenoma.

All the tumors in this study are of single lesions without any association with genetic syndrome which is in concordance with V. Rajalakshmi et al^[1].

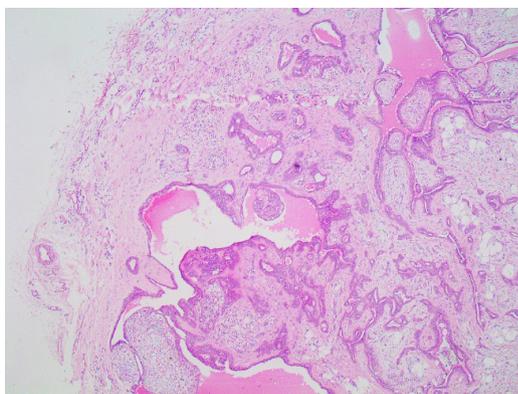


Figure 7: Low power(4x) of tumor shows large islands of benign appearing epithelial cells over chondromyxoid background - Chondroid syringoma

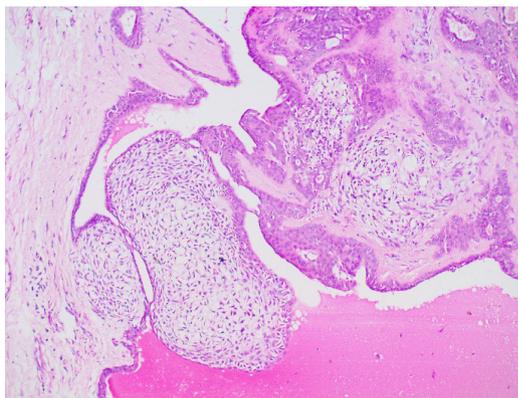


Figure 8: High power (40x) of tumor shows large islands of benign appearing epithelial cells over chondromyxoid background - Chondroid syringoma

Most common sites reported in our study is head and neck regions (77.2%) which is in concordance with Pujani et al^[5], Manjunath H K et al^[7], Suri et al^[3] and Sharma et al^[2]. Most of the tumors in our study were showing male preponderance with incidence of (60%) which has similar concordance with Sharma et al^[2]. No malignant lesions were observed in our study where as sebaceous carcinoma was the most common in the study conducted Sharma et al^[2], Suri et al^[3], Pujani et al^[5], kaur k et al^[8] and Manjunath H K et al^[7]. Of all we observed only the benign lesions in this study^[10,11].

Histopathological study remains the gold standard in differentiating the tumors of sweat gland, hair follicular and sebaceous regions, also in categorising benign and malignant tumors which plays a vital role in prognosis and the site of the lesions and clinical data being specific for each tumors^[12].

Conclusion:

Overall incidence of skin adnexal tumors were very less. Only benign lesions were observed in our study. These benign lesions were found in almost all age groups. In our study, pilomatricoma was the most common benign tumor which was a tumor of hair

follicular differentiation. Male preponderance was observed and Head and neck region was the most common site observed in our study of skin adnexal tumors though it can occur anywhere in the body.

References:

1. Rajalakshmi V, Selvakumar S, Rajeswari K, Meenakshisundaram K, Veena G, Ramachandran P. Case series of skin adnexal tumours. *J Clin Diagn Res* 2014;8(6):FC07-FC10.
2. Sharma A, Paricharak DG, Nigam JS, Rewri S, Soni PB, Omhare A, et al. Histopathological study of skin adnexal tumours: an institutional study in South India. *J Skin Cancer* 2014;2014:543756.
3. Suri J, Gupta D, Koul K, et al. A clinicopathological analysis of skin adnexal tumours: four-year retrospective study. *JK Sci.* 2016;18(4):248-251.
4. Valand AG, Ansari SAH, Sinha RK, et al. A clinicopathological study of adnexal tumors of skin in a tertiary care research hospital. *Int J Health Sci Res* 2016; 6(12):52-58
5. Pujani M, Madaan GB, Jairajpuri ZS, Jetley S, Hassan MJ, Khan S. Adnexal tumors of skin: an experience at a tertiary care center in Delhi. *Ann Med Health Sci Res* 2016;6:280-285.
6. Vani D, Ashwini N, Sandhya M, et al. A five-year histopathological study of skin adnexal tumours at a tertiary care hospital. *IOSR J Dent Med Sci* 2015;14(10):1-5.
7. Manjunath HK, Mohan B, Dharani VC, Thej MJ, Sushma TA, Hassan S R. Histomorphological pattern analysis of skin adnexal tumors. *Natl J Lab Med* 2020;9(4):29-40.
8. Kaur K, Gupta K, Hemrajani D, Yadav A, Mangal K. Histopathological analysis of skin adnexal tumors: a three-year study of 110 cases at a tertiary care center. *Indian J Dermatol* 2017;62:400-406.
9. Arakeri S, Karigoudar M, Patil S, Patil V. Histomorphological study of skin adnexal tumors and review. *Indian J Forensic Med Pathol.* 2019;12(3):217-221. doi:10.21088/ijfmp.0974.3383.12319.9.
10. Gopidesi DT, Sai PV, Vissa S, Bandla S, Charan BVH, Rao NM, et al. Skin adnexal tumors: a histopathological analysis of 30 cases at a tertiary care centre. *Saudi J Pathol Microbiol* 2020;5(2):67-71. doi:10.36348/sjpm.2020.v05i02.005.
11. Stewart C, Novoa R, Seykora J. Tumours of epidermal appendages. In: *Elder DE, editor. Lever's Histopathology of the Skin.* 11th ed. Philadelphia: Lippincott Williams & Wilkins 2015. p. 1040-1116.
12. Kamyab-Hesari K, Balighi K, Afshar N, Aghazadeh N, Rahbar Z, Seraj M, et al. Clinicopathological study of 1016 consecutive adnexal skin tumours. *Acta Med Iran* 2013;51:879-885.

Conflict of interest: Nil

Source of funding: Nil

Date received: Jul 01, 2025

Date accepted: Nov 12, 2025