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## RESEARCH ARTICLE

# HISTOMORPHOLOGICAL SPECTRUM OF SKIN ADENEXAL TUMORS IN A TERTIARY CARE CENTRE: A 3 YEAR RETROSPECTIVE STUDY

**[1]Shahida Riyaz, [2]Naresh N. Rai, *[3]Priyanka Patangia and [4]Sudha P. Meena**

[1]Assistant Professor, Government Medical College, Kota
[2]Senior Professor and Head, Government Medical College, Kota
[3]Tutor, AIIMS, Bhopal
[4]Associate Professor, Government Medical College, Kota

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**ABSTRACT**

**Introduction**: Skin Adnexal tumors are rare tumors. They are categorized into sweat gland tumors (eccrine and apocrine), hair follicle tumors and sebaceous gland tumors based on line of differentiation. Benign tumors are more prevalent than the malignant tumors.
**Aim**: To study the spectrum of skin adnexal tumors with respect to age, sex, site and histopathological pattern.
**Methodology:** Retrospective study of 60 histopathologically confirmed cases of skin adnexal tumors in a tertiary hospital over a period of three years (Jan 2014- Dec 2016). All the specimen of tumors received during this period were analysed and lesions were categorized according to WHO classification system for Skin Adnexal Tumors.
**Result:** In the present study 95% of the tumors were benign with majority of cases in 21-30 years age group. M:F ratio was 1.07:1. Head and neck was the commonly affected site and Follicular tumors comprised the majority of tumors (51.7%) and Pilomatrixoma was the commonest tumor encountered.
**Conclusion:** Histopathological examination proves to be the gold standard in the diagnosis of cutaneous adnexal tumors due to their wide spectrum and frequency of differentiation along two different lines within the same lesion.



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## INTRODUCTION

Skin adnexal tumors (SATs) are the neoplasms that differentiate toward or arise from pilosebaceous unit, eccrine sweat glands or apocrine sweat glands (Ahmed *et al*., 2005) They are classified according to their differentiation based on histological, ultrastructural and immunohistochemical features into eccrine, follicular, apocrine and sebaceous type. There is discordance in opinion regarding the origin of skin adnexal tumors. But the presence of pluripotent stem cells present in cutaneous appendages which are capable of differentiating along multiple cell lineages were considered as a reasonable hypothesis to explain these divergences. A malignant counter part of almost every of skin adnexal tumors has been described in the literature. Majority of The SAT's are benign which can be solitary or multiple. They are typically multiple when they are associated with an inherited syndrome (Lee DA *et al*., 2005). Local complete surgical excision is curative. Malignant counterpart of almost every skin adnexal tumors has been described which are rare, locally aggressive, and have the potential for nodal involvement and distant metastasis, with a poor clinical outcome. (Alsaad *et al*., 2007). The aim of present study was to study the clinicomorphological spectrum of adnexal tumors with respect to different histological patterns, anatomical location, site, age and gender incidence.

***Corresponding author: Priyanka Patangia***
Tutor, AIIMS, Bhopal. (Previously was Senior Resident at Government

## MATERIALS AND METHODS

It is a retrospective study done over a period of 3 years from January 2014 to December 2016 at our instituite. All the adnexal tumors received and reported in Department of Pathology of a tertiary care hospital were included. A total of 60 cases were included. Histopathology slides along with requisition form and final reports of all cases were retrived from records and studied. Hematoxylin and Eosin stained sides were used. Relevant clinical details comprising age, gender, site, size and appearance of tumor were noted and documented. Patients of all age groups were included. Distribution of tumor was classified as those arising from Head and Neck, Trunk and Upper limb, Abdomen and Lower limb and Genital areas.. The tumors were studied and confirmed by histopathological

examination which was followed by classification according to WHO classification system for Skin Adnexal Tumors into Eccrine, Follicular, Apocrine and Sebaceous tumors.

## RESULTS

In the present study 95% of the tumors were benign with only 5 % being malignant. Maximum number of cases were in 21-30 years followed by 31-40 and 11-20 years. M:F ratio was 1.07:1 with slight male predominance. Head and neck was the commonly affected site followed by trunk and upper limb, abdomen and lower limb, genitals. Follicular tumors formed the majority of cases (51.7%) which was followed by eccrine (30%), sebaceous (10%), and apocrine tumors (8.3%). Pilomatrixoma was seen in majority (38.33 %) of cases. Follicular tumors observed in present study were Pilomatrixoma, Trichoadenoma, Trichoepithelioma, Trichilemmoma, Sebaceous Trichofolliculoma, Proliferating trichilemmal tumor and malignant Proliferating trichilemmal tumor.

**Table 1. Distribution of tumors according to their behavior**

| Type | Number of cases | Percentage |
|---|---|---|
| Benign | 57 | 95 % |
| Malignant | 3 | 5 % |
| Total | 60 | 100 |

**Table 2. Distribution of tumors according to Gender**

| Age group | Number of cases | Percentage |
|---|---|---|
| 0-10 | 1 | 1.7% |
| 11-20 | 10 | 16.7% |
| 21-30 | 16 | 26.7% |
| 31-40 | 12 | 20.0% |
| 41-50 | 7 | 11.7% |
| 51-60 | 7 | 11.7% |
| 61-70 | 6 | 10.0% |
| 71-80 | 1 | 1.7% |
| TOTAL | 60 | 100 |

**Table 3. Distribution of tumors according to Gender**

| Gender | Number of cases | Percentage |
|---|---|---|
| Male | 31 | 51.7 % |
| Female | 29 | 48.3 % |
| Total | 60 | 100 % |

**Table 4 Distribution of Adnexal Tumors according to location**

| Site involved | Number of cases | Percentage |
|---|---|---|
| Head and neck | 31 | 51.7% |
| Trunk & upper limb | 19 | 36.7% |
| Abdomen & lower limb | 5 | 8.3% |
| Genitals | 5 | 8.3% |
| Total | 60 | 100 |

**Table 5. Distribution of tumors according to cell of origin**

| Category of tumor | Number of cases | Percentage |
|---|---|---|
| Follicular | 31 | 51.7 % |
| Eccrine | 18 | 30.0 % |
| Sebaceous | 6 | 10.0 % |
| Apocrine | 5 | 8.3 % |
| Total | 60 | 100 |

Eccrine tumors found were Chondroid syringoma, Syringoma, Eruptive Syringoma, Eccrine spiradenoma, Eccrine Hidrocystoma, Nodular Hidradenoma, Eccrine Poroma and Cylindroma. Sebaceous tumors included Sebaceoma, Sebaceous adenoma, sebaceous carcinoma and Mebomian gland carcinoma. Apocrine tumors were Apocrine Hidrocystoma, Hidradenoma Papilliferum, Papillary Hidradenoma, Syringocystadenoma Papilliferum.

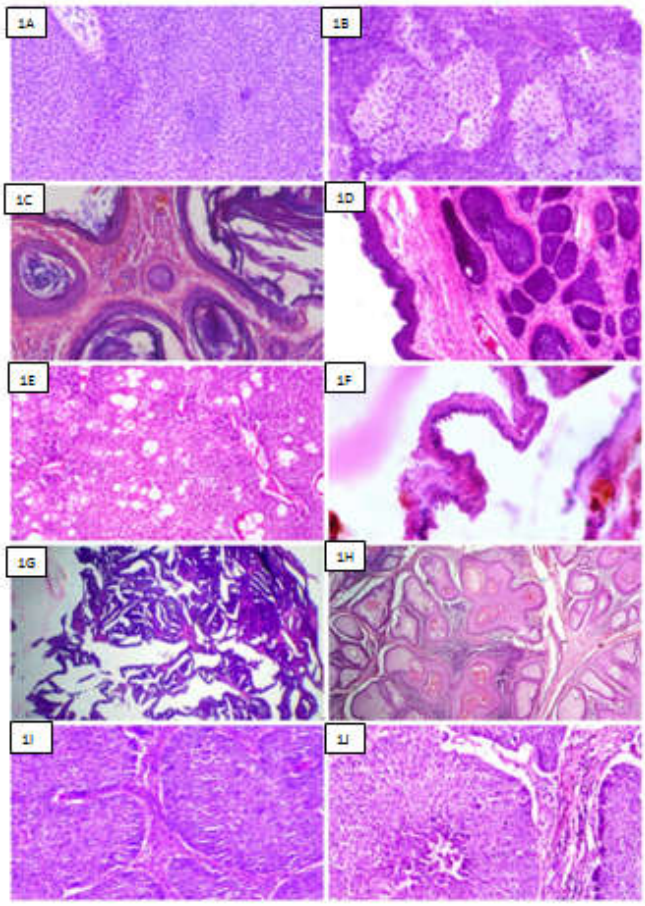


**Figure 1. Hematoxylin and eosin stain 1A. Eccrine Poroma (100x); 1B. Chondroid Syringoma (100x); 1C. Trichoadenoma; 1D. Cylindroma; 1E. Sebaceoma; 1F. Apocrine Hidrocystoma; 1G. Hidradenoma Papilliferum; 1H. Sebaceous Trichofolliculoma; 1I. Mebomian Gland carcinoma; 1J. Malignant Proliferating Trichilemmal tumor**

## DISCUSSION

Adnexal tumors of skin are rare but have been recognized from the later part of the 19th century. They include a wide spectrum of benign and malignant tumors exhibiting morphological differentiation towards one or more types of adnexal structures found in normal skin. Adnexal tumors (AT) arise from pleuripotent stem cells which may differentiate into eccrine, apocrine, sebaceous or hair follicle structures (Mackie *et al*., 2004). The use of special and/or immunohistochemical stains in the evaluation of SAT is variable. IHC and ultrastructural ancilliary studies may aid in establishing the tumor differentiation, but they have limited diagnostic value and yield (Alsaad, *et al*., 2007; Obaidat *et al*., 2007; Smith *et al*., 1992). However it may be helpful in cases of poorly differentiated carcinomas of adnexa mimicking Non-Hodgkin's lymphoma. The present study was done in Department of Pathology of our institute for a period of 3 years from January 2014 to December 2016. Skin appendageal tumors differentiate along one or more adnexal line and their overall incidence is low in our Indian population. Incidence of adenexal tumor was very low (<1%) when compared to total

surgical burden at our institute. Marla NJ *et al*., 2014 also encountered similar results for incidence of SAT's. There is no proper literature available regarding the racial and geographic incidence of these tumors and their etiopathogenesis is also not clear.(Nair PS *et al*., 2008). In the present study majority of the SAT's reported were benign (95%). This results were in concordance with studies performed by Alam S.*et al*. 2016; Jeyanthi *et al*. 2016; Vani *et al*., 2015; Sharma A *et al*., 2014; Radhika *et al*., 2013 and Samaila O *et al*., 2008 [14] In our study, benign adnexal tumors constituted 95% of cases and malignant adnexal tumors constituted 5% of cases, our results are supported by studies done by Sharma A *et al*.,2014; Marla NJ *et al*., 2014; Jindal *et al*., 2012 and Pantola *et al*.,2013 who reported 80.36%, 90%, 96% and 95.7% benign and 19.64%, 10%, 4% and 4.3% malignant tumors respectively. Malignant adnexal tumors are rare worldwide and especially in India (Samaila *et al*., 2008). Malignant appendageal tumors were the least common in one study conducted (Adeyi and Banjo A., 1998). Gandhi *et al*., 2016), encountered three malignant cases it represented 15% of the 20 tumors reviewed. In the present study only 5% i.e. 3 out of 60 cases were malignant. In our study M:F ratio was 1.07 : 1 which was similar to study done by Sharma A *et al*.,2014. M : F ratio observed by Reddy *et al*.,2016 and Alam *et al*.,2016 were 1.7:1 and 1.16:1 respectively with male predominance while in other studies like Vani *et al*.,2015; Nair PS *et al*., 2008; Radhika *et al*., 2013 and Saha *et al*., 2011 female patients outnumbered males. In the present study, third decade (21-30 years) was the commonly affected age group which is in par with Radhika *et al*., 2013. In contrast Nair PS *et al*.,2008 and Reddy *et al*., 2016 observed that the most common age group of presentation was 11–20 years, while according to Alam *et al*., 2016 and Sharma A *et al*.,2014 it was 40–49 years and 51–60 years respectively. In our study Head and neck (51.7%) was the most common site of occurrence of adnexal tumors followed by upper limb and trunk (36.7%). This results are in tandem with Bhat SP *et al*., 2016 (72.5%); Alam S. *et al*., 2016 (61.5%); Vani D *et al*.,2015 (64.7%) and Sharma A *et al*., 2014(64.2%). Similar findings were noted by Marla NJ *et al*., 2014; Pantola C *et al*., 2013 and Devanand B *et al*., 2011. The possible explanation for the predilection of the adnexal tumors for head and neck region can be abundance of cutaneous adnexal appendages at this site.

In the present study tumors with follicular differentiation constituted the largest group of tumors (51.7%) which is followed by eccrine (30%), sebaceous (10%) and apocrine (8.3%) tumors. In contrast, studies done by Jindal U *et al*., 2012 ; Vani *et al*., 2015; Jeyanthi *et al*.,2016 and Bhat *et al*., 2016 revealed predominance of eccrine tumors while Reddy *et al*., 2016 and Alam *et al*., 2016 showed that majority of tumors were with sebaceous differentiation. Pilomatricoma was the most common adnexal tumor encountered in our study. Similar results were reported by Bhat *et al*., 2016 (36.3% of benign tumors), Sharma *et al*., 2014 (21.43%) and Marla NJ *et al*., 2014 (67%). Nodular hidradenoma was reported as the commonest benign tumor by Vani *et al*., 2015 and Radhika K *et al*., 2013. With all the bewildering arrays regarding skin adnexal tumors, what matters most to the clinician is whether the tumor is benign or malignant. Cytologic/ nuclear atypia is the single most important feature in distinguishing benign and malignant tumors. Dr Bernard Ackerman challenged this concept and proposed that contrasting silhouettes/ architectural attributes accurately distinguish benign from malignant tumors. Features favoring benign tumors are Symmetry, V-shape, stroma-stroma clefting, absence of necrosis, well circumscription, smooth borders, vertical orientation to skin surface and shelling out completely on excision.

**Conclusion**

Skin adnexal tumors are a diagnostic problems to both surgeons and pathologists. Histopathological examination is the gold standard in the diagnosis of SAT's as it is the sole method for pattern recognition and due to their wide spectrum and frequency of differentiation along different lines within the same lesion.

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