

# A Prospective Study of Histomorphological Spectrum of Biopsy Confirmed Skin Adenexal Tumors in a Tertiary Care Centre at Bikaner Region

Garima<sup>1</sup>, Neelu Gupta<sup>2</sup>, Sunita Kulhari<sup>3</sup>

## ABSTRACT

**Introduction:** The adenexa are part of skin and comprised of sebaceous glands, sweat glands and hair follicles. Skin adenexal tumors are rare in occurrence and precise classification of these neoplasms is difficult. Benign tumors are more common than malignant tumors. Current study aimed to know the histopathology of skin adenexal neoplasm and to correlate with age, gender, location and type of differentiation.

**Material and methods:** A prospective study of 57 histopathologically confirmed cases of skin adenexal tumors was carried out in Department of Pathology. In this study biopsies were received in 10% formalin and stained by routine haematoxylin and eosin stain. Non neoplastic conditions were excluded from the study.

**Results:** Out of the 57 cases of skin adenexal tumors studied 55 (96.5%) were benign and 2 (3.5%) were malignant with a male: female ratio of 1:1.3. The most frequent group of tumors were of eccrine/apocrine origin 28/57 (49.1%) followed by follicular origin (38.6%) 22/57 and sebaceous origin 7/57 (12.9%). Pilomatrixoma was the most common benign tumor and sebaceous carcinoma was the only malignant tumor encountered in the study. Most common age group affected range from 41-60 years and mean age observed was 45 years. Head and neck (47.5%, 27/57) was the most common site involved in both males and females with a predominance in the facial region.

**Conclusion:** Skin adenexal tumors (SAT) are very rare and the classification of these tumours is complex. These tumors are usually missed clinically and histopathology proves to be the gold standard for diagnosis of these neoplasms.

**Keywords:** Haematoxylin and Eosin, Histopathology, Pilomatrixoma, Sebaceous carcinoma, Skin adenexal tumors

cells present within epidermis or its appendageal structures. Therefore, during neoplastic transformation, these tumors may aberrantly express one or more lines of appendageal differentiation to varying degree.<sup>2</sup> These tumors usually behave in a benign manner but malignant counterpart of almost every benign adenexal neoplasm exists. The malignant tumours are rare, locally aggressive, and have the potential for nodal involvement and distant metastasis, with a poor clinical outcome.

Adenexal skin tumors were termed as “troublesome tumors” by Cotton D<sup>3</sup> and are a major diagnostic challenge to both the surgeon and the pathologist because it includes a large spectrum of skin epithelial tumors including hamartoma, hyperplasia, benign, and malignant tumors that originate from or show differentiation toward adenexal epithelial structures. Majority of benign tumors are solitary or may be multiple but multiple tumors are typically associated with an inherited syndrome for example, multiple trichilemmomas in Cowden syndrome, sebaceous adenomas in Muir-Torre syndrome.<sup>4</sup>

Diagnosis mainly relies on the histopathology due to their non specific clinical presentation and are classified according to principal morphological component. Skin adenexal tumors carry a variable histomorphological pattern making it difficult to classify these tumors.<sup>5</sup> Exact categorization of benign tumors was believed to be purely academic and not affecting clinical management. Clinicopathological correlation is of great significance in their evaluation as anatomic location, number and pattern of distribution provides an important clue to the diagnosis but histopathology remains the gold standard for confirmation of the diagnosis.<sup>6</sup> Local complete surgical excision for benign tumors is generally curative but malignant counterparts can be locally aggressive and have

## INTRODUCTION

Skin appendages comprise of sweat gland, sebaceous gland and hair follicles. A wide variety of tumors originate from these structures with complex histological patterns. Skin adenexal tumors (SAT) are relatively uncommon and exact incidence is not known. Depending on their origin, these tumors have been traditionally divided into those with apocrine and eccrine, follicular and sebaceous differentiation. Although precise classification of these neoplasms is difficult because they may show differentiation towards more than one cell line.<sup>1</sup> These tumors arise from multipotent stem

<sup>1</sup>Resident, Department of Pathology, Sardar Patel Medical College, Bikaner, Rajasthan, <sup>2</sup>Professor and Head of Department, Department of Pathology, Sardar Patel Medical College, Bikaner, Rajasthan, <sup>3</sup>Assistant Professor, Department of Pathology, Sardar Patel Medical College, Bikaner, Rajasthan, India

**Corresponding author:** Dr. Garima, Room no. 21, Old PG Hostel, PBM Campus, Bikaner-334001, Rajasthan, India

**How to cite this article:** Garima, Neelu Gupta, Sunita Kulhari. A prospective study of histomorphological spectrum of biopsy confirmed skin adenexal tumors in a tertiary care centre at Bikaner region. International Journal of Contemporary Medical Research 2019;6(4):D4-D7.

**DOI:** <http://dx.doi.org/10.21276/ijcmr.2019.6.4.22>

a propensity for nodal involvement and distant metastases.<sup>7</sup> The aim of this study was to determine the histomorphological spectrum of SAT and to analyse the tumors according to their behaviour, location, age and gender of the patient.

**MATERIAL AND METHODS**

The present study was a prospective study of skin adenexal tumours diagnosed during period from July 2016 to October 2018 in the Department of Pathology in Sardar Patel Medical College, Bikaner. A total of 57 cases were included. All the biopsies received were fixed in 10% formalin, processed in paraffin wax and stained with haematoxylin and eosin stain. Necessary clinical details like age, gender, site, size were noted. Tumors were analysed considering their anatomic site, age, gender, behaviour, histologic type and line of differentiation. Only skin adenexal tumors were included in the study and other skin epidermal tumors and infective lesions of epidermis and skin adenexa were excluded.

**RESULTS**

Out of 57 cases, benign cases accounted for 96.5% (55/57) of the adenexal neoplasm while malignant accounted for 3.5% (2/57) of the total cases. On the basis of their line of differentiation, the most frequent group of tumors were of eccrine/apocrine origin 28/57 (49.1%) (Table 1). Most common age group affected range from 41-60 years (31.2%, 18/57) and the mean age observed was 45 years. In this study, M: F ratio was 1:1.3 with slight female predominance whereas benign tumors showed M:F ratio of 0.8:1 and malignant tumors were found to have M:F ratio of 1:2. Head and neck (47.5%, 27/57) was the most common site involved in both males and females with a predominance in the facial region 21.1% (12/57) followed by upper limb

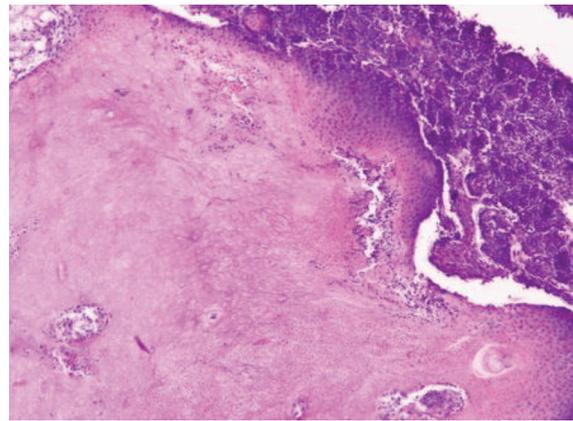


Image-1: Low power view of Pilomatricoma: H& E stain

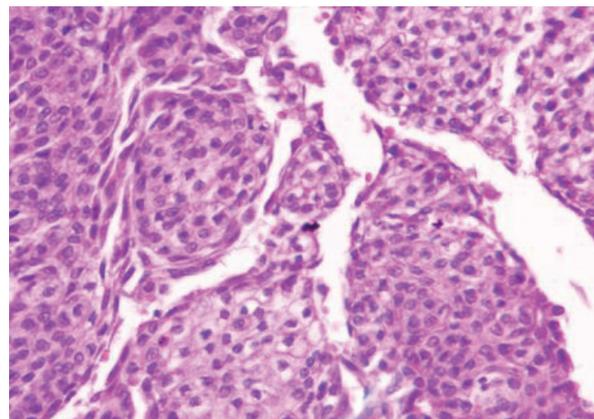


Image-2: High power view of Eccrine Acrospiroma: H&E stain

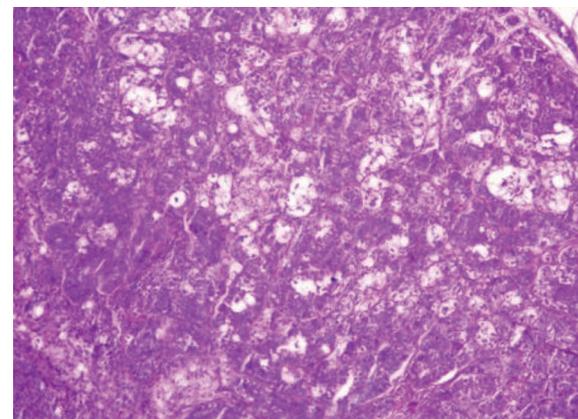


Image-3: Low power view of sebaceous carcinoma: H & E Stain.

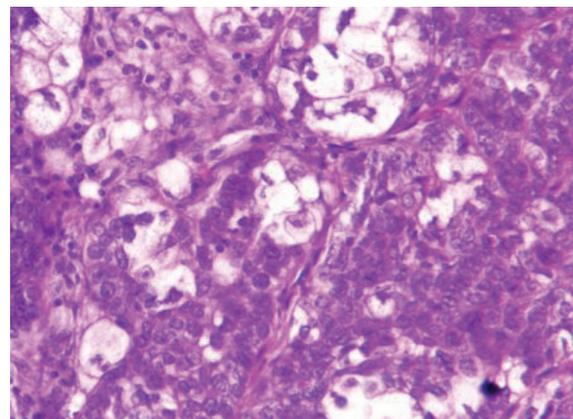
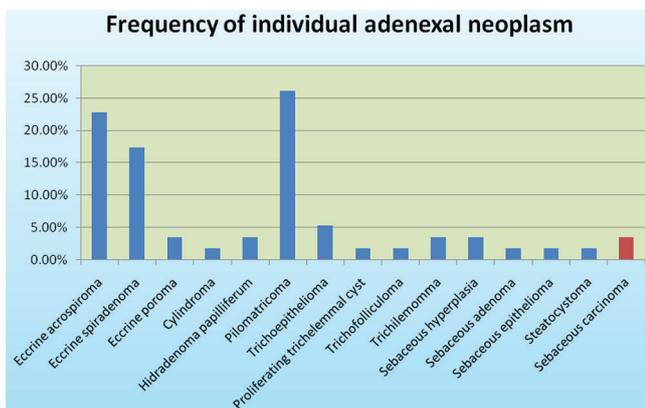


Image-4: High power view of sebaceous carcinoma: H&E stain

S. No.	Line of differentiation	No. of cases	Percentage incidence (%)
1.	Eccrine differentiaton	25	43.8%
2.	Apocrine differentiation	3	5.3%
3.	Follicular differentiaton	22	38.6%
4.	Sebaceous differentiation	7	12.3%
	Total	57	100%

Table-1: Adnexal tumors according to the line of differentiation



Graph-1: Frequency of individual adenexal neoplasm

(22.8%, 13/57) and lower limb (15.7%, 9/57).

During the study period, 57 cases of skin adenexal tumor were diagnosed on histopathological examination (image 1-4). There were 28 cases of sweat gland tumors, 22 cases of follicular tumors and 7 cases of sebaceous gland tumors. All the sweat gland tumor cases were benign and included 25 cases of eccrine differentiation and 3 cases of apocrine differentiation. Among eccrine tumors 13 cases of eccrine acrospiroma followed by 10 cases of eccrine spiradenoma and 2 cases of eccrine poroma were identified. Only 3 cases of apocrine differentiation which included 1 case of cylindroma and 2 cases of hidradenoma papilliferum were identified.

Pilomatrixoma was the most common tumor encountered in the study which belong to tumors with follicular differentiation. Other tumors with follicular differentiation were 3 cases of trichoepithelioma, 2 cases of trichilemmoma and 1 case each of proliferating trichilemmal cyst and trichofolliculoma identified.

Out of the 7 tumors showing sebaceous differentiation 5 were benign and 2 were malignant. Benign cases include 2 cases of sebaceous hyperplasia and 1 case each of sebaceous adenoma, sebaceous epithelioma and steatocystoma.

Amongst benign tumors the maximum frequency was of sweat gland tumors 49.1%, followed by follicular tumors 38.6% and sebaceous tumors 12.3%. Pilomatricoma was the most common benign tumor (26.2%) encountered in the present study which belong to follicular differentiation followed by eccrine acrospiroma (22.8%) which has eccrine origin. Only 3.5% cases of malignant tumors were identified and belong to sebaceous differentiation (Graph 1).

## DISCUSSION

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<sup>8</sup> 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).<sup>9</sup>

In the present study majority of the SAT's reported were benign. Benign adnexal tumors constituted 96.5% of cases and malignant adnexal tumors constituted 3.5% of cases, our results are supported by studies done by Neeraja et al., 2017<sup>10</sup>; Jindal et al., 2012;<sup>11</sup> Pantola et al., 2013<sup>12</sup>; Shahida et al., 2017<sup>13</sup>; Geeta et al., 2017<sup>14</sup>; Marla NJ et al., 2014<sup>7</sup> who reported 98%, 97.1%, 96%, 95.7%, 95%, 94%, 90% benign and 2%, 2.9% 4%, 4.3%, 5%, 6%, 10% malignant tumors respectively.

In our study M:F ratio was 1:1.3 which was in concordance with the study done by Vani et al., 2015<sup>15</sup>; Nair PS et al., 2008<sup>9</sup>; Poornima Vijayan et al., 2015<sup>16</sup>; Sridevi Sanapala et al., 2018<sup>17</sup>; Geeta Pachori et al., 2017.<sup>14</sup>

In the present study most common age group affected was 40-60 years which is in par with Alam et al., 2016<sup>18</sup>; Sharma A et al., 2014<sup>19</sup>; Sridevi Sanapala et al., 2018<sup>17</sup>; Geeta Pachori

et al., 2017<sup>14</sup>; Vani et al., 2015<sup>15</sup>; 40-49 years, 51-60 years, 41-50 years, 41-50 years, 40 to 49 years respectively.

In our study Head and neck (47.5%, 27/57) was the most common site of occurrence of adnexal tumors followed by upper limb (22.8%, 13/57). This results are in tandem with Sanpala et al., 2018 (68.62%)<sup>17</sup>; Pachori et al., 2015 (56%)<sup>14</sup>; Prasad B.V et al., 2018 (79.5%)<sup>20</sup>; Alam S. et al., 2016 (61.5%)<sup>18</sup>; Vani D et al., 2015 (64.7%)<sup>15</sup> and Sharma A et al., 2014 (64.2%).<sup>19</sup> 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 eccrine/apocrine differentiation constituted the largest group of tumors (49.1%) which is followed by follicular differentiation (38.6%) and sebaceous differentiation (12.3%). Similar results were encountered in studied done by Prasad B.V et al. 2018<sup>20</sup>; Alam et al. 2016<sup>18</sup>; Vijayan et al., 2015<sup>16</sup>; Vani et al. 2015<sup>15</sup>; Radhika et al. 2013<sup>5</sup>; Nair et al. 2008<sup>9</sup>

In contrast, studies done by Sahida et al. 2017<sup>13</sup>; Pachori et al. 2015<sup>14</sup>; Agrawal S et al. 2018<sup>21</sup>; Sanapala S et al. 2018<sup>17</sup> revealed predominance of eccrine tumors while Reddy et al., 2016<sup>22</sup> and Alam et al., 2016<sup>18</sup> showed that majority of tumors were with sebaceous differentiation. While most follicular and eccrine tumors were found to be benign, sebaceous group of tumors formed the only malignant tumors encountered in the study.

Pilomatricoma was the most common adnexal tumor encountered in our study. Similar results were observed by Sahida et al. 2017<sup>13</sup>; Prasad B.V et al. 2018<sup>20</sup>; Agrawal S et al. 2018.<sup>21</sup> Nodular hidradenoma was reported as the commonest benign tumor by Vani et al., 2015<sup>15</sup>; Radhika K et al., 2013<sup>5</sup> and Pachori et al., 2015.<sup>14</sup>

## CONCLUSION

Our study shows that SAT are uncommon tumors and the overall prevalence of SAT is very low among the overall skin lesions encountered. Most tumors were found to be benign with eccrine/apocrine tumors as the majority of cases in the study. The age presentation was in the older decades for malignant tumors while the benign tumors presented in 41-60 years age group, with a slightly female predominance in both groups.

Skin adenexal tumors are a diagnostic challenge to clinician due to similar clinical presentation of various tumors and to the pathologist due to their wide histomorphological spectrum and frequency of differentiation along different lines in the same lesion. Histopathology remains the gold standard for diagnosis of these tumors. Morphological evaluation is very important in evaluating SAT and special stains or IHC stains may occasionally serve as ancillary tools.

## REFERENCES

1. Le Boit PE, Burg G, Weedon D, Sarasin A. World Health Organization classification of Tumours. Pathology and Genetics of Skin Tumors. 3rd ed., Vol. 6. Lyon: IARC Press; 2005. p. 122-4.
2. Ahmed TS, Priore JD, Seykora JT. Tumours of epidermal appendages. In: Elder DE, editor. Lever's

- Histopathology of Skin. 11<sup>th</sup> ed. Philadelphia: Lippencott Williams and Wilkins; 2015. p. 851-909.
3. Cotton D. Troublesome tumors 1: Adnexal tumors of the skin. *Journal of Clinical Pathology*.1991;44:543–8.
  4. Lee DA, Grossman ME, Schneiderman P, Celebi JT. Genetics of skin appendage neoplasms and related syndromes. *J Med Genet* 2005;42;811-9.
  5. Radhika K, Phaneendra B V, Rukmangadha N, Reddy MK. Original Article. A study of biopsy confirmed skin adnexal tumours: experience at a tertiary care teaching hospital. *J Clin Sci Res*. 2013;2:132–8.
  6. Rodriguez-Diaz E, Armio M. Mixed tumors with follicular differentiation: complex neoplasms of the primary epithelial germ. *International Journal of Dermatology* 1995;34:782–5.
  7. Alsaad KO, Obaidat NA, Ghazarian D. Skin adnexal neoplasms – Part 1: An approach to tumors of the pilosebaceous unit. *J Clin Pathol*. 2007; 60: 129 - 44.
  8. Marla NJ, Pailoor K, Pai MR, Fernandes H, Jayaprakash CS, Pinto A. Clinicopathological study of adnexal tumors of skin. *Adv Lab Med Int*. 2014; 4: 122 - 127.
  9. Nair PS. A clinico-histopathological study of skin appendageal tumors. *Indian J Dermatol Venereol Leprol*. 2008;74:550.
  10. Neeraja Barve et al. Skin Adnexal Tumors - A Histopathological Spectrum at a Tertiary Care Hospital. *Journal of Medical Sciences*. January-June 2017;4:32-37.
  11. Jindal U, Patel R. Study of Adenxal Tumors of the skin: A three year study of 25 cases. *Internet J Pathol* 2012;13(3).
  12. Chayanika Pantola, Sanjay Kalra, Asha Agarwal et al. Cutaneous Adenexal Tumors: A Clinicopathological descriptive study of 70 cases. *World Journal of Pathology*.2013.
  13. Shahida Riyaz et al. Histomorphological spectrum of skin adenexal tumors in a tertiary care centre: a three year retrospective study. *International Journal of Current Research*. May, 2017; 9:51296-51299.
  14. Geeta Pachori, Manisha Jain et al. A Study of Spectrum of Skin Adnexal Tumors in Ajmer Region. *International journal of medical research professionals*.2017;3:84-87.
  15. Dr.Vani, Dr.Ashwini et al. A 5 Year Histopathological Study of Skin Adnexal Tumors at a Tertiary Care Hospital. *IOSR Journal of Dental and Medical Sciences*. 2015;14:1-4.
  16. Poornima Vijayan, Ramadas Nayak et al. Spectrum of malignant skin adnexal tumors – a single institution study of 17 cases with clinicopathological correlation. *International journal of research in medical sciences*. 2015;3:1889-1894.
  17. Sridevi Sanapala, Jagadeeswari Suvvari et al. Prospective study of skin adnexal tumours for a period of two years in a tertiary care hospital. *International Journal of Research in Medical Sciences*. 2018;6:225-231.
  18. Alam S, Lateefa M, Mohanty R. Histopathological study of 26 rare skin adnexal tumours over 5 years – a diagnostic dilemma!. *Int J Med Sci Public Health* 2016;5:1995-1998.
  19. Sharma A, Paricharak DG, Nigam JS, Rewri S, Soni PB, Omhare A, et al. Histopathological study of skin adnexal tumours-institutional study in South India. *Journal of Skin Cancer*.2014; 2014:543756.
  20. B.V.Sai Prasad et al. Histopathological Evaluation and Review of Cutaneous Adnexal Tumors (Cats) – A Research Study. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*. february 2018;7: 07-11.
  21. Sarjana Agrawal, Ravi Jain et al. Troublesome tumors” of the skin: Spectrum of skin adnexal tumors at a tertiary care center in Malwa region. *International Journal of Medical Science and Public Health*.2018;7:714-18.
  22. Reddy PKS et al., A clinico-histopathological study of appendageal skin tumours. *National Journal of Laboratory Medicine*. 2016;5:22-25.

**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 04-03-2019; **Accepted:** 04-04-2019; **Published:** 15-04-2019