



## Cyto-Histopathological Correlation of Skin Adnexal Tumors

<sup>1</sup>Dr.Saymah Rashid, <sup>2</sup>Dr.Huzaifa Tak, <sup>3</sup>Dr.Sana Mir, <sup>4</sup>Prof. Sheikh Bilal

<sup>1</sup>Senior Resident, <sup>2</sup>Consultant, <sup>3</sup>Senior Resident, <sup>4</sup>Head of the department

Department of Pathology Government Medical College Srinagar.

**\*Corresponding Author:**

**Dr.Saymah Rashid**

Senior Resident, Department of Pathology Government Medical College Srinagar.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

### Abstract

#### Introduction:

Skin adnexal tumors exhibit diverse morphological differentiation towards one or more types of adnexal structures found in normal skin. Fine needle aspiration cytology is of tremendous help in differentiating skin adnexal tumors from metastatic deposits of carcinomas and sarcomas.

#### Aim:

To recognize and classify skin adnexal tumors on fine needle aspiration cytology and to correlate and confirm the diagnosis on histopathological examination.

#### Material and Method:

A retrospective study was conducted in the department of Pathology, Government Medical College Srinagar for a period of one year starting from August 2020 to August 2021. A total of 23 cases were studied. FNAC was performed on discrete swellings to nodular lesions and the material obtained was smeared on glass slide and stained with giemsa stain. Relevant clinical details were noted. Following excision of the lesions, the tissue obtained was fixed in 10% formalin and stained with hematoxylin and eosin and subjected to histopathological examination.

#### Results:

A total of 23 cases were included in this study. Most of the skin adnexal lesions were benign (91.30% cases). Male to female ratio was 1.57:1. Head and neck was the commonest site involved. Pilomatricoma was the commonest skin adnexal tumor found in this study. Among the 23 cases of skin adnexal tumors, there was an exact correlation between cytological and histopathological diagnosis in 13 cases and partial correlation in 9 cases. There was no correlation between cytological and histopathological diagnosis in only 1 cases.

#### Conclusion:

Although FNAC is very useful in making diagnosis of skin adnexal tumors histopathological examination is essential for confirmation.

**Keywords:** NIL

### Introduction

Skin adnexal tumors are rare tumors which arise from various adnexal units of skin including sebaceous glands, eccrine and apocrine glands and hair follicles. Skin adnexal tumors are predominantly benign in nature and usually arise from head and neck, trunk and extremities. 1 They can be solitary or

multiple papulonodular or cystic lesions. Skin adnexal lesions should be kept in the differential diagnosis of cutaneous nodules. 2. Adnexal tumors can be an indication to internal malignancy such as trichilemmomas in Cowden's and sebaceous tumors in Muir-Torr syndrome, Brooke-Jones syndrome and Brooke-Spigler syndrome. 3

**Material and Method:**

A retrospective study was conducted in the department of Pathology, Government Medical College Srinagar for a period of one year starting from August 2020 to August 2021. A total of 23 cases were studied. FNAC was performed on discrete swellings to nodular lesions and the material obtained was smeared on glass slide and stained with giemsa stain. The clinical details of patients like age, sex and anatomical location were obtained from histopathological request forms. Following excision of the lesions, the tissue obtained was fixed in 10% formalin and stained with hematoxylin and eosin and subjected to histopathological examination.

**Results:**

A total of 23 cases were included in this study. Majority of cases were categorized as benign on cytological and histopathological examination. Cytological and histopathological correlation in various skin adnexal tumors is shown in table 1. Most adnexal tumors belonged to hair follicle differentiation 60.86%, followed by sweat gland differentiation (30.43%). Only two cases belonged to malignant category. One case reported as malignant epithelial tumor on cytology however after excision and histopathological examination turned out as metastatic carcinoma. In addition one more case reported as malignant adnexal lesion turned out as porocarcinoma on histopathological examination.

Pilomatricoma was the commonest benign adnexal tumor reported on cytology (10 cases) and all these cases were confirmed on histopathological examination. In addition, four cases reported as benign adnexal tumor on cytology were reported as pilomatricoma on histopathological examination. Most of the cases of pilomatricoma were seen in children and young adults. Head and neck

followed by upper extremity was the common site involved by pilomatricoma. Males comprised of majority of cases and presented with nodular swellings.

Chondroid syringioma was the next frequently diagnosed lesion on cytology comprising of 3 cases. All these were confirmed on histopathological examination. Chondroid syringioma mostly presented as swelling. Two of the swellings were located on face while as third one was located on scalp. One more case presented as swelling on tip of nose and was reported as benign adnexal lesion on cytology which turned out to be chondroid syringioma on histopathological examination.

The study included two cases of eccrine spiradenoma. One of the cases presented as nodular swelling on back in a 55 year old female & was reported eccrine spiradenoma on cytology. Histopathological examination confirmed the diagnosis. Another case presented as swelling on left shoulder in a 23 year old male & was reported benign adnexal lesion however it was later diagnosed as eccrine spiradenoma on histopathological examination.

One more case reported on cytology as benign adnexal tumor was diagnosed schwannoma later on histopathological examination.

On histopathological examination two malignant cases were noted. One was reported as malignant adnexal lesion on cytology however turned out as porocarcinoma on histopathological examination. This case presented with scalp swelling in a 55 year old female. Another case was reported as malignant epithelial tumor on cytology & had presented with a swelling scalp in a 58 year old female. On histopathological examination it turned out to be metastatic carcinoma.

**TABLE 1-Cyto-histological correlation in various skin adnexal tumors.**

No. of cases	Cytological diagnosis	Histopathological diagnosis
10	Pilomatricoma	Pilomatricoma
4	Benign adnexal lesion	Pilomatricoma
3	Chondroid syringioma	Chondroid syringioma
1	Benign adnexal lesion	Chondroid syringioma

2	Benign adnexal lesion	Eccrine spiradenoma
1	Malignant adnexal lesion	Porocarcinoma
1	Benign adnexal lesion	Schwannoma
1	Malignant adnexal lesion	Cutaneous metastasis.

**Discussion:**

Skin adnexal tumors are rare in routine pathological practice. Our study revealed that the incidence of benign adnexal tumors was more than that of malignant ones. The present study had 91.30% cases reported as benign in nature, in agreement with the other studies by Agrawal et al,<sup>4</sup> Vani et al.,<sup>5</sup> Sharma et al.,<sup>6</sup> and Alam et al,<sup>7</sup> who reported 89.36%, 74.5%, 80.36%, and 92.3% benign appendageal tumors in their study.

The incidence of malignant tumors was 8.69 % in our study. The incidence of benign tumors was 94.4% while that of malignant tumors was that of 5.6% in the study by Omar and Osman.<sup>8</sup> Predominance of benign adnexal tumors was also reported in a study by Adeyi O and Banjo A.<sup>9</sup>

Malignant tumours have to be differentiated from the cutaneous metastasis and epidermal malignancies. The malignant adnexal tumours are solitary and have lobular architecture on microscopy, the overlying epidermis may be ulcerated and infiltrated by tumour but it does not show pagetoid change as seen in metastasis or dysplasia as seen in epidermal malignancies.<sup>10</sup> They are commonly distributed in the head, neck and trunk .<sup>11-13</sup>

In this study tumors of hair follicle origin were more common (60.86%) followed by tumors of sweat gland origin(30.43%). This result is in concordance with other studies that found predominance of tumors with follicular differentiation to be 48.93%, 43.48%, 39.09%, and 64.29% respectively.<sup>4,14,15,16</sup> This may be due to ethnicity and racial differences. Only two malignant cases were reported on histopathological examination, one was diagnosed as porocarcinoma and other as deposits of cutaneous metastasis. Porocarcinoma belongs to sweat gland differentiation, hence was the only malignant adnexal tumor reported in this study.

Among the follicular adnexal tumors, the most common tumor was pilomatrixoma. FNAC showed

dual population of cells including a subset of basaloid cells. Ma et al, reported that pilomatrixoma can be falsely diagnosed on cytology if basaloid cells dominate the smears and the characteristic ghost cells are not present.<sup>17</sup> Eccrine spiradenoma was next in frequency after pilomatrixoma. Presence of small hyaline bodies reminiscent of stromal matrix and basement membrane material within cohesive clusters of basal, round to oval cells, including relatively darker myoepithelial cells and scattered lymphocytes constituted diagnostic clue for eccrine spiradenoma on cytology.<sup>18</sup>

All cases included in our study were found in head and neck region. This was attributed to abundant distribution of apocrine and eccrine sweat glands in the head and neck region.<sup>19</sup> Similar results were reported in a study by Omar and Osman in which head and neck was commonest site of skin adnexal tumors.

Skin adnexal tumors basically originate from undifferentiated pluripotent stem cells and finally differentiate to specific tumors influenced by genetics, local vascularity and the microenvironment of the epidermis and dermis.<sup>20</sup> The age group involved in our study was 20-30 year age group. This was in concordance with the study by Amrita Arora in which skin adnexal tumors were seen in the age group of 20-40 years. Similarly Omar and Osman in their study found age distribution of skin adnexal tumors as 31 to 40 years.<sup>8</sup>

Male gender was more frequently involved by skin adnexal tumors and our study revealed male to female ratio of 2.2:1. Male:female ratio obtained was 1.57:1 in the study by Omar and Osman.<sup>8</sup> Other studies reported similar results and found male:female ratio as 1.44:1, 1.07:1, & 1.8:1 respectively.<sup>21-23</sup>

**Conclusion:**

Although FNAC is safe, quick, cost effective and informative procedure in the management of skin adnexal tumors, histopathology provides an efficient diagnostic tool to classify the tumors on the basis of

their line of differentiation as well as a benign or malignant nature. Most skin adnexal tumors are benign in nature . Head and neck region is the

predominant site involved by adnexal tumors which may account for their early detection and management.

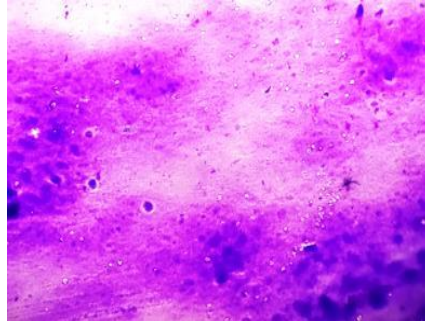


Fig 1 (a) Photomicrograph showing pilometriocoma on cytology

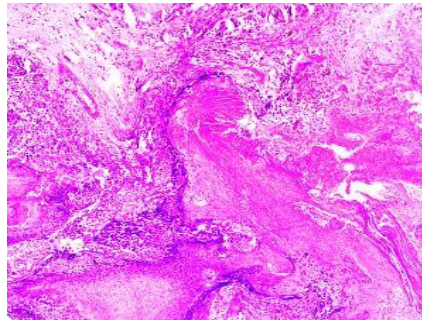


Fig 1 (b) Photomicrograph showing pilometriocoma on histopathology

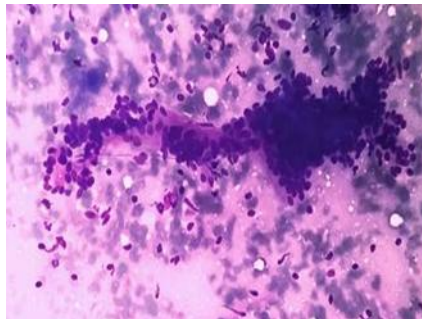


Fig 2 (a) Photomicrograph showing Spiradenoma on cytology.

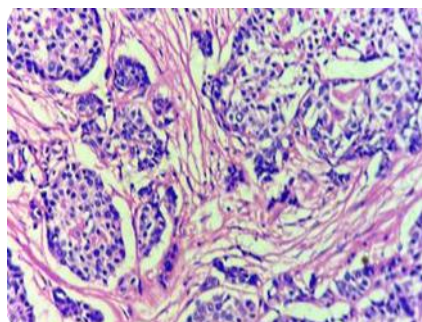




Fig 2 (b) Photomicrograph showing Spiradenoma on histopathology

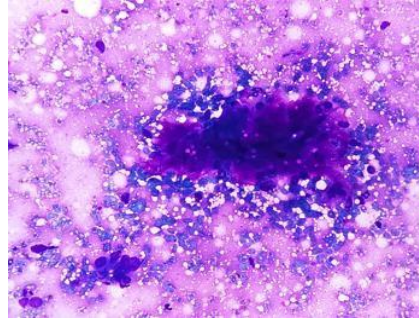


Fig 3 (a) Photomicrograph showing Chondroid syringioma on cytology.

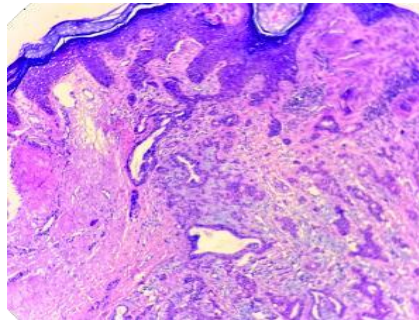


Fig 4 (a) Photomicrograph showing chondroid on histopathology.

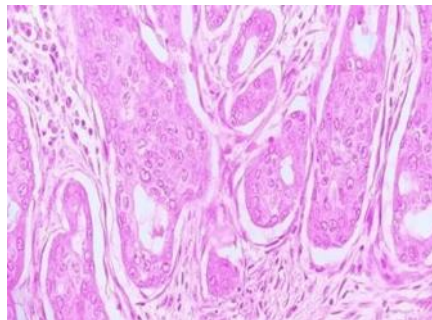


Fig 4 (a) Photomicrograph showing porocarcinoma on histopathology.

#### References:

1. Saha A, Das NK, Gharami RC, Chowdhury SN, Datta PK. A clinico-histopathological study of appendageal skin tumors, affecting head and neck region in patients attending the dermatology opd of a tertiary care centre in Eastern India. *Indian J Dermatol* 2011;56:33-6.
2. Gupta R, Singh S, Gupta K, Kudesia M. Clear-cell hidradenoma in a child: A diagnostic dilemma for the cytopathologist. *Diagn Cytopathol.* 2009;37:531-3. - [PubMed](#)
3. Lee DA, Grossman ME, Schneiderman P, Celebi JT. Genetics of skin appendage neoplasms and related syndromes. *J Med Genet.* 2005;42:811-9. - [PMC](#) - [PubMed](#)
4. Agrawal S, Jain R, Panchonia A, Kulkarni CV, Mehar R. “Troublesome tumors” of the skin: Spectrum of skin adnexal tumors at a tertiary care center in Malwa region. *Int J Med Sci Public Health* 2018;7(9):714-718.
5. Vani D, Ashwini N, Sandhya M, Dayananda TR, Bharthi M. A 5 year histopathological study of

- skin adnexal tumors at a tertiary care hospital. IOSR J Dent Med Sci (IOSR-JDMS) 2015;14:1-5.
6. 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. *J Skin Cancer* 2014;2014. Article ID: 543756.
  7. 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;5:1995-8.
  8. Omar AM, Osman NA. Four years retrospective study of skin adnexal tumors: Histomorphology and special stain study. *Int J Med Sci Public Health* 2020;9(4):273-279.
  9. Adeyi O, Banjo A. Malignant tumours of the skin: A 6-year review of histologically diagnosed cases . *Nigerian Journal of Hospital Medicine*. 1998;8:99-102.
  10. Ramya Gandhi, Sowmya Srinivasan. A morphologic study of cutaneous adnexal tumors.National journal of laboratory medicine.2016 Oct, Vol-5(4):PO 08-PO11.
  11. Doina Ivan. Cutaneous adnexal lesions. Dermatopathology companion meeting University of Texas MD Anderson medical centre, Houston,TX. USCAP Annual meeting. 2011,01-05.
  12. Jindal U, Patel R. Study of adnexal tumors of the skin: a three year study of 25 cases. *The Internet Journal of Pathology*. 2012;1(3).
  13. Tirumalae R, Roopa MO. Benign vs. malignant skin adnexal neoplasms: How useful are silhouettes? *Indian J Dermatol*. 2013;58:30-33.
  14. Dekal M, Bhattacharjee S. Histopathology of skin adnexal tumors a two year retrospective study at a tertiary care hospital. *Int J Sci Study* 2016;4:???
  15. 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;62:400-6.
  16. Kanth GK, Vijayasree V, Madhavi M, Rao TS, Narayana VS. A histopathological spectrum of skin adnexal tumors. *IOSR J Dent Med Sci* 2015;14:90-2.
  17. 17 Ma KF, Tsui MS, Chan SK. Fine needle aspiration diagnosis of pilomatrixoma. A monomorphic population of basaloid cells with squamous differentiation not to be mistaken for carcinoma. *Acta Cytol*. 1991;35:570–4. - [PubMed](#)
  18. Rekhi B, Agarwal A. Cytopathologic features of an unusual case of multiple eccrine spiradenomas misdiagnosed as a malignant round cell tumor. *J Cytol*. 2017;34:39–42. - [PMC](#) - [PubMed](#)
  19. Kamyab-Hesari K, Balighi K, Afshar N, Aghazadeh N, Rahbar Z, Seraj M, et al. Clinicopathological study of 1016 consecutive adnexal skin tumors. *Acta Med Iran* 2013;51:879-85.
  20. Mehregan AH. The origin of the adnexal tumors of the skin: A viewpoint. *J Cutan Pathol*. 1985;12:459–67. - [PubMed](#)
  21. Suri J, Mahajan D, Koul KK, Kumari R. A clinicopathological analysis of skin adnexal tumours: Four year retrospective study. *JK Sci* 2016;18:248-51.
  22. 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. *J Skin Cancer* 2014;2014:543756.
  23. Pantola C, Kala S, Agarwal A, Amit S, Pantola S. Cutaneous adnexal tumours: A clinicopathological descriptive study of 70 cases. *World J Pathol* 2013;2:77-82.