

A 5 Year Histopathological Study of Skin Adnexal Tumors at a Tertiary Care Hospital

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Abstract:

Introduction: Skin adnexal neoplasms are uncommon and are daunting diagnostic problems in view of the wide spectrum of lesions and their variants. Benign adnexal neoplasms are more common than malignant lesions.

Aim: To study histopathology of skin adnexal neoplasms and to correlate with the clinical profile.

Methodology: 51 cases with a diagnosis of skin adnexal neoplasm over a 5 year period reported in the Department of Pathology, Mysore Medical College & Research Institute were included in the study. Histopathological examination was done on Haematoxylin & Eosin stained slides and corroborated with special stains wherever required.

Results: Skin adnexal tumors were most common in the age group of 40 to 49 years (21.56%, 11/51). Male to female ratio was 1:1.68. The head and neck region was the most common site affected (64.70%, 33/51) with 39.21% (20/51) cases located on the face. 74.50% (38/51) cases were benign and 25.49% (13/51) cases were malignant. The sweat gland tumors formed the largest group involving 43.13% (22/51) cases followed by the hair follicle tumors 37.25% (19/51) followed by sebaceous gland tumors 19.60% (10/51). Nodular hidradenoma was the most common benign tumor. Trichoblastic carcinoma and sebaceous carcinoma were the most frequent malignant adnexal tumors in our study.

Conclusion: Histopathological examination is indispensable in the diagnosis of skin adnexal lesions owing to their wide spectrum and frequency of differentiation along two different lines in the same lesion.

Keywords: Adnexal neoplasm, Histopathology, Skin

I. Introduction

Skin adnexal tumours (SAT) 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: pilosebaceous unit, eccrine and apocrine [1]. SAT are uncommon and pose major diagnostic problems to both surgeons and pathologists [2]. SAT may display more than one line of differentiation (hybrid/composite tumours), rendering precise classification of these neoplasms difficult [1]. These tumours are derived from multipotential undifferentiated cells present within the epidermis or its appendageal structures and the histologic features of a tumour are related to the activation of molecular pathways responsible for forming the mature adnexal structures [3]. Most SAT are benign, but a malignant counterpart of every SAT has been described [1]. Malignant skin adnexal tumours are rare, locally aggressive and have the potential for nodal involvement and distant metastasis with a poor clinical outcome. Therefore establishing a diagnosis of malignancy in SAT is important for therapeutic and prognostic purposes [1].

II. Materials And Methods

A blinded retrospective review of all skin adnexal neoplasms reported in the Department of Pathology during the period 2010 to 2014 MMC&RI, Mysore, was done. 51 cases were there in total. The histopathological examination was done on formalin fixed tissues and paraffin embedded blocks were made. Haematoxylin & Eosin stained sections were examined and few special stains like PAS & reticulin were performed wherever required.

III. Results

In the present study, SAT were observed in all age groups ranging from 10 to 82 years. However, the highest incidence was observed in the age group of 40 to 49 years (21.56%, 11/51) followed by age groups 50-59 (17.64%, 9/51) and 70-79 years (17.64%, 9/51). The male:female ratio was 1:1.68. The head and neck region was the most common site affected (64.70%, 33/51) followed by lower limb (15.68%, 8/51) and upper limb (13.72%, 7/51). In head and neck region, 39.21% (20/51) were located on the face followed by 21.56% (11/51)

over the scalp. The neck region was least affected accounting to 3.92% (2/51). Benign adnexal tumors constituted 74.50% (38/51) cases and malignant adnexal tumors constituted 25.49% (13/51) cases. The sweat gland tumors formed the largest group involving 43.13% (22/51) cases followed by the hair follicle tumors 37.25% (19/51) followed by sebaceous gland tumors 19.60% (10/51). The sweat gland tumors are composed of nodular hidradenoma, eccrineporoma, syringocystadenomacystoma, apocrine hidrocystoma, eccrine spiradenoma and cylindroma. Pilomatrixoma, trichoepithelioma, trichofolliculoma, porocarcinoma and proliferating trichilemmal cyst with malignant transformation constituted the hair follicle tumors. Sebaceous gland tumors are composed of sebaceous hyperplasia, sebaceous epithelioma and sebaceous carcinoma. Syringocystadenomacystoma of eyelid, proliferating trichilemmal cyst with malignant transformation, apocrine hidrocystoma and eccrine spiradenoma (Fig 1) were some of the rare tumors encountered in our study. Amongst the benign tumors, nodular hidradenoma was the most common tumor representing 15.78%, 6/38 cases. Trichoblastic carcinoma (30.76%, 4/13) and sebaceous carcinoma (30.76%, 4/13) were the most frequent malignant adnexal tumors in our study. Benign tumors were observed in age ranging from 10-78 years and most of the malignant tumors were noted above 40 years of age.

IV. Discussion

Adnexal tumors of the skin, though rare have been recognised from the later part of 19th century [4]. Skin adnexal neoplasms are an assorted group of tumours that show differentiation towards pilosebaceous, eccrine or apocrine structures. Often they show evidence of more than one lineage within a single tumour. The histogenesis of SAT are from either primary epithelial germ cells or pluripotential cells or cells of pre-existing structure [5]. Skin adnexal tumors have a wide range of age distribution. Ankit et al observed that commonest age of presentation was 51-60 years whereas Radhika et al found third decade to be the most common age of occurrence [3, 5]. However, in the present study, commonest age group was 41-50 years (21.56%) followed closely by 51-60 years (17.64%).

Male: Female ratio was reported to be 1.07:1 by Ankit et al. In our study the male:female ratio was found to be 1:1.68 which was in concordance with Radhika et al, Nair et al and Saha et al. Ankit et al and Radhika et al observed that head and neck region was the most common site of occurrence, which was also noted in our study (62.24%) [3,5,6,7]

Incidence of benign tumours is more as compared to malignant cases [3]. Benign tumours showed smooth borders, absence of ulcers, presence of adnexae and absence of necrosis. Malignant tumours showed ulcers, clefts between tumour cells and stroma and necrosis [2]. The occurrence of benign tumors in our study was 74.50% and 25.49% were malignant which was in tandem with studies of Radhika et al, Ankit et al, and Samaila who reported 77.14%, 80.36%, and 88.5% benign and 29.63%, 19.64% and 11.5% malignant lesions respectively [5, 3, 8].

Ankit et al and Nair et al observed that tumors of sweat gland differentiation were most common followed by hair follicle tumors and then sebaceous glands tumors [3, 6]. The present study showed similar results with sweat gland tumors constituting the largest group (43.13%), followed by hair follicle tumors (37.25%) and sebaceous gland tumours (19.6%).

Nodular hidradenoma (Fig 2) was the most frequently encountered benign sweat gland tumor in the present study. Similar observations were reported by Radhika et al and Ankit et al [5, 3]. Histopathologically most of these tumors are circumscribed and solid with few showing cystic change. Tumor is composed of varying sizes of tubules and papillary projections lined by inner cuboidal and outer myoepithelial cell layer. Solid portions of the tumor showed nodules comprised of clear and polygonal cells [9].

Cylindroma was found to be the least common benign sweat gland tumor in our study. The tumor is composed of irregularly shaped islands that are surrounded by hyaline sheath. Islands consist of two types of epithelial cells: undifferentiated cells with small dark nuclei and cells with large pale nuclei representing certain degree of differentiation towards ductal cells.

In the present study we reported four cases each of trichoblastic carcinoma and sebaceous carcinoma. Histopathologically trichoblastic carcinoma (Fig 3) was comprised of islands of basaloid cells. These islands demonstrated peripheral palisading surrounded by fibrocellular stroma. Basaloid cells exhibited cytological atypia and brisk mitotic activity. Infiltration of underlying muscles was noted. Microscopically, sebaceous carcinoma (Fig 4) revealed irregular epithelial lobules with an infiltrative growth pattern in the dermis. Lesional cells demonstrated marked cytologic atypia, mitotic activity and focal sebaceous differentiation.

Syringocystadenomacystoma (Fig 5) is a rare adnexal neoplasm, with eyelid being an even more uncommon site. On microscopic examination, papillary projections with squamous epithelial lining and ductal invaginations were observed. These ductal structures were lined by inner columnar and outer cuboidal cells [9].

There are only few studies from India and abroad describing in detail about the appendageal tumors of the skin. We observed that adnexal tumors of skin appear to be relatively uncommon. Histopathological

examination is the cornerstone in establishing the diagnosis of adnexal neoplasms in spite of expanding arsenal of stem cell markers.

V. Conclusion

Histopathological examination is indispensable in the diagnosis of skin adnexal neoplasms owing to their wide spectrum and frequency of differentiation along two different lines in the same lesion. In spite of being armed with volumes of literature, it is an intimidating task for the surgical pathologist to categorise them correctly; especially so since they are uncommonly met with.

References

- [1]. K O Alsaad, N AObaiddat, D Ghazarain, Skin adnexal neoplasms-part 1: An approach to tumours of pilosebaceous unit, *J ClinPathol* 2007; 60: 129:44
- [2]. RTirumale, M O Roopa, Benign vs. Malignant Skin Adnexal Neoplasms: How Useful are Silhouettes? *Indian Journal of Dermatology*, 58 (1), 2013
- [3]. A Sharma, D G Paricharak, J S Nigam, S Rewri, P B Soni, A Omhare et al, Histopathological Study of Skin Adnexal Tumours- Institutional Study in South India, *Journal of Skin Cancer* 2014(2014)
- [4]. M K Reddy, A J Veliath, S Nagarajan, A L Aurora, A clinicopathological study of adnexal tumours of skin, *Indian J Med Res* 75, 1982, 882-9
- [5]. K Radhika, B V Phaneendra, N Rukmangadha, M K Reddy A biopsy confirmed skin adnexal tumours: experience at a tertiary care teaching hospital, *Journal of Scientific Research*, 2, 2013, 132-138
- [6]. P S Nair, A clinic-histopathological study of skin appendagealtumors, *Indian Journal of Dermatology, Venerology and Leprology*, 74 (550), 2008
- [7]. A Saha, N K Das, R C Gharami, S N Chowdhury, P K Datta, 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 Journal of Dermatology*, 56, 2011, 33-36
- [8]. M O A Samaila, Adnexal skin tumors in Zaria, Nigeria, *Annals of African Medicine*, 7(1), 2008, 6-10
- [9]. W Klein, E Chan, J T Seykora, Tumors of epidermal appendages, DE Elder (Ed) *Lever's Histopathology of the Skin* 9thedn. Philadelphia, PA: Lippincott Williams & Wilkins, 2005, 867-926.

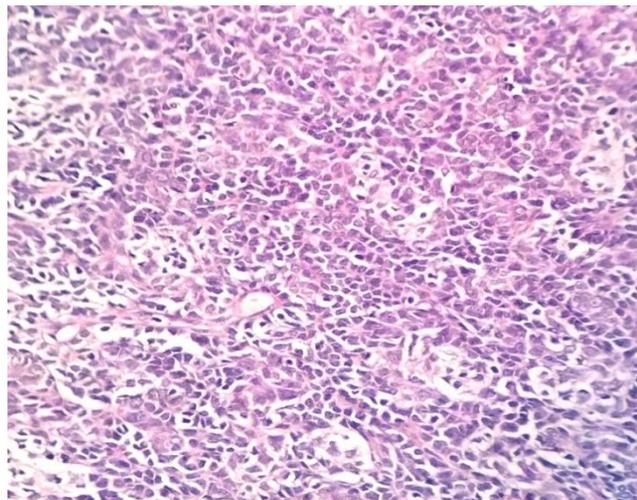


Figure 1: Eccrine spiradenoma showing epithelial cells with large pale nuclei around small lumina and another type of cells with small dark nuclei.

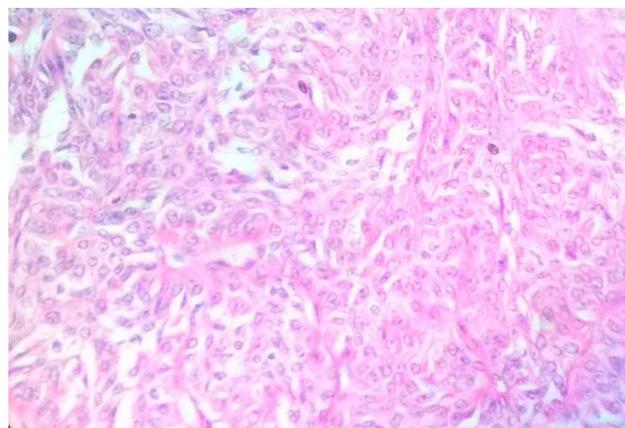


Figure 2 of Nodular hidradenoma showing basaloid tumor cells with clear cytoplasm arranged in nodules

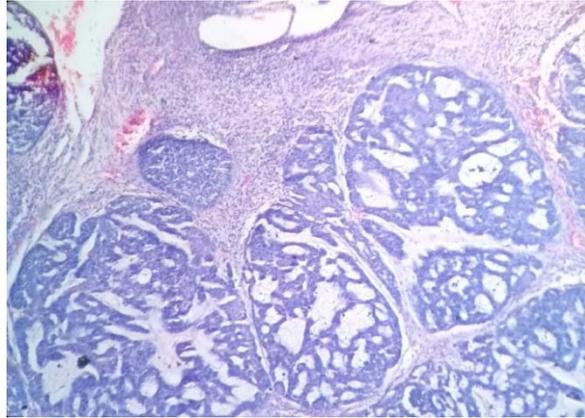


Figure 3:Trichoblastic carcinoma composed of islands of basaloid cells showing cytologic atypia.

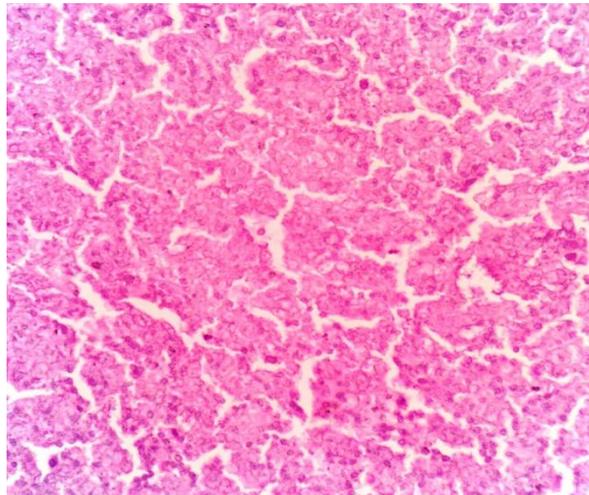


Figure 4: Sebaceous carcinoma showing small undifferentiated eosinophilic cells

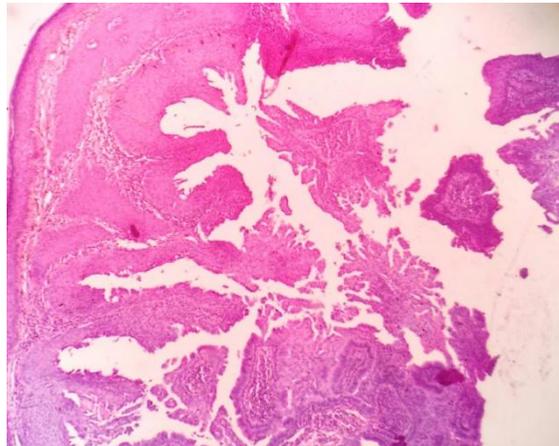


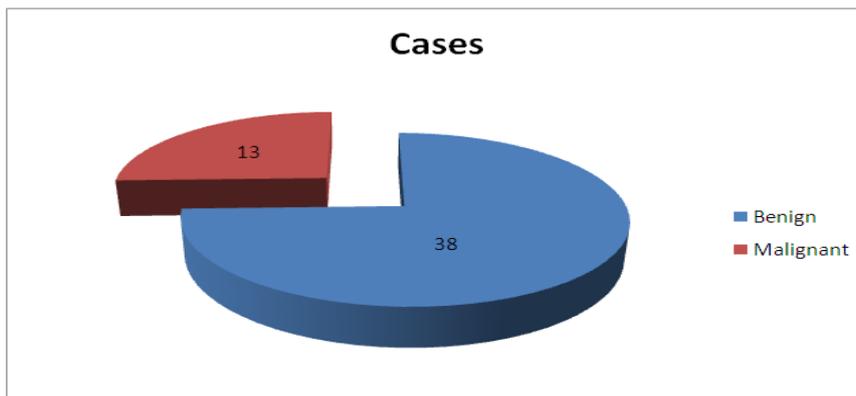
Figure 5:Syringocystadenomapatapilliferum showing epidermis with papillary projections and extending into lumina of the cystic invaginations.

Table 1: Adnexal Tumors According To The Line Of Differentiation.

Sl No	Line of differentiation	No. Of cases	Percentage incidence (%)
1	Sweat gland tumors	22	43.13
2	Hair follicle tumors	19	37.25
3	Sebaceous gland tumors	10	19.60
	Total	51	

Table 2: The Site And Sex Distribution Of Observed Adnexal Tumors

Sl No	Site of tumor	Male	Female	Total	Percentage incidence (%)
	Head & Neck				
1	Scalp	6	5	11	21.56
	Face	7	13	20	39.21
	Neck	1	1	2	3.92
2	Trunk	1	2	3	5.88
3	Upper limb	2	5	7	13.72
4	Lower limb	2	6	8	15.68
	Total	19	32	51	100.00



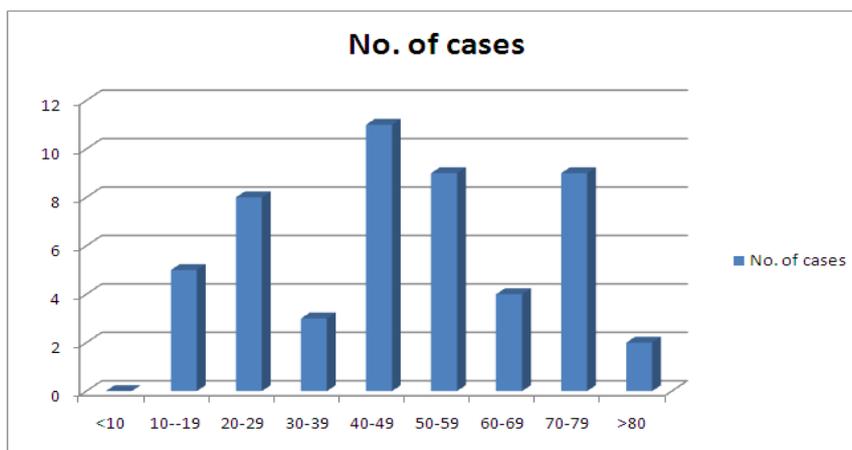
Pie chart showing proportion of benign and malignant cases.

Table 3: Benign Adnexal Lesions In The Present Study

Sweat gland tumors	No. of cases	Hair follicle tumors	No. of cases	Sebaceous gland tumors	No. of cases
Nodular hidradenoma	6	Pilomatrixoma	5	Sebaceous hyperplasia	3
Eccrineporoma	4	Trichoepithelioma	5	Sebaceous epithelioma	1
EccrineSpiradenoma	2	Trichoblastoma	1	Sebaceoma	1
Acrospiroma	2	Trichofolliculoma	1		
Cylindroma	1				
SyringocystadenomaPappilliferum	4				
Apocrine hidrocystoma	2				
Total	21		12		5

Table 4: Malignant Adnexal Tumors In The Present Study

Malignant adnexal tumors	No. Of cases
Trichoblastic carcinoma	4
Porocarcinoma	2
Proliferating trichilemmal cyst with malignant transformation	1
Sebaceous carcinoma	4
Nodular hidradenoma with atypia	1
Malignant adnexal neoplasm (eccrine/apocrine)	1



Bar diagram showing age distribution of cases of adnexal neoplasms.