Original Research Article

Prospective study of skin adnexal tumours for a period of two years in a tertiary care hospital

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ABSTRACT

Background: Skin adnexal tumours are rare tumours with complex histological patterns and variations and difficult to diagnose by histopathology only, so clinical history and presentation is necessary. The objective of the study was to correlate with age, sex, location, type of differentiation of adnexal tumours in our pathology department.
Methods: The present study was a prospective study done in the department of pathology in Andhra medical college, King George Hospital, Visakhapatnam. A total of 51 cases were included in this study from January 2015 to December 2016. Specimens were formalin fixed and after adequately processing the sections were stained routinely with hematoxylin and eosin stain and properly evaluated for histopathological examination.
Results: Out of these 51 cases, 88.24% (45 cases) were benign, and 11.76% (6 cases) were malignant tumours. Hair follicle differentiation were most common (35.3%) followed by sebaceous gland differentiation (31.37%) and sweat gland differentiation (29.41%).
Conclusions: Benign adnexal tumours were most common than malignant tumours. Skin adnexal tumours are clinically often misdiagnosed, so histopathological examination remains gold standard for their correct diagnosis.

Keywords: Hair follicle, sebaceous gland tumours, Skin adnexal tumours, Sweat gland

INTRODUCTION

The skin or integument is a complex organ with many functions. Skin lesions are very common, but some are complex. There are hundreds of neoplasms that arise from cutaneous appendages. They were classified into four groups: tumours with differentiation towards hair follicles, sebaceous glands, eccrine or apocrine glands.[1]

The aim of this study was to analyse adnexal tumours of the skin based on their morphological, clinical, and histopathological features. These tumours arise from multipotential undifferentiated cells which are present in epidermis and its appendages.[1] In this study adnexal tumours of the skin are grouped using the international classification of WHO (2006).[2] Cutaneous adnexae have same origin, so it was not surprising that these tumours arising from them may have many features in common.[3] Most of the benign skin adnexal tumours were very difficult to diagnose clinically. However anatomic location, incidence, age, sex distribution is helpful, histopathological examination was the corner stone for diagnosis of skin adnexal tumours.

METHODS

The present study was a prospective study done in the Department of Pathology in Andhra medical college, King George Hospital, Visakhapatnam. A total of 51

cases were included in this study from January 2015 to December 2016.

All the biopsies and resected specimens received in our department were immediately fixed in 10% formalin for 24hours. Multiple sections were studied after staining with Haematoxylin and Eosin. Final diagnosis was made by thorough light microscopic examination.

The details of clinical history and relevant investigation were obtained in every case and analyzed. All consecutively reported cases were reviewed and reclassified as skin adnexal tumours arising from sebaceous glands, hair follicles, apocrine or sweat glands and concordance of clinical and histopathological diagnosis was evaluated.

RESULTS

The present study was prospective study of skin adnexal tumours diagnosed during period of two years from January 2015 to December 2016 in the Department of Pathology in Andhra medical college, Visakhapatnam. Incidence of skin adnexal tumours as compared to total surgical pathological specimens we received was found to be less than 1%.

Out of 51 total cases, benign tumours were 45 cases - 88.24 % and malignant tumours were 6 cases -11.76%. (Table 1) Females (27 cases) were affected more than males (24 cases). Male: Female ratio was 1:1.125.

Table 1: Proportion of benign and malignant tumours (n=51).

Skin adnexal tumours	No of cases	Percentage
Benign	45	88.24%
Malignant	6	11.76%
Total	51	100

The most common age group affected was 41-50 years with 29.41% -15 cases. Age-wise distribution of skin adnexal tumours according to line of differentiation shown in Table 2.

Table 2: Age wise distribution of skin adnexal tumours (n=51).

Skin adnexal tumour	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Sweat gland tumours								
Eccrine spiradenoma					4	1	1	1
Chondroid syringoma		1			1			
Eccrine acrospiroma				3		1		
Eccrine poroma					1			
Adenoid cystic carcinoma								1
Hair follicle tumours								
Trichilemmoma			1	1				
Trichofolliculoma			1					
Trichilemmal cyst		2	2	1	1	1		
Pilomatricoma		2			1			
Malignant proliferating trichilemmal tumour						1	1	
Trichoepithelioma			1		2			
Sebaceous tumours								
Nevus sebaceous	1	4	2	1	2		1	
Sebaceous hyperplasia					1			
sebaceous adenoma				1				
Sebaceous carcinoma					2	1		
Apocrine tumours								
Syringocystadenoma papilliferum		1						
Hidradenoma papilliferum			1					
Total	1	10	8	7	15	5	3	2

Nevus sebaceous, Eccrine spiradenoma, Trichilemmal cysts were most common benign tumours and malignant proliferating trichilemmal tumour, sebaceous carcinoma were the common malignant tumours seen (Table 3, 4).

Site wise these tumours were mostly seen in Head and neck region 68.62% (35/51), out of which scalp 51.42% (18/35) was most common (Table 5).

Table 3: Benign adnexal lesions in the present study (n=45).

Skin adnexal tumour	No. of cases	Total
Sweat gland tumours		
Eccrine spiradenoma	7	
Chondroid syringoma	2	
Eccrine acrospiroma	4	14
Eccrine poroma	1	
Hair follicle tumours		
Trichilemmoma	2	
Trichofolliculoma	1	
Trichilemmal cyst	7	
Pilomatricoma	3	16
Trichoepithelioma	3	
Sebaceous tumours		
Nevus sebaceous	11	
Sebaceous hyperplasia	1	
Sebaceous adenom	1	13
Apocrine tumours		
Syringocystadenoma papilliferum	1	
Hidradenoma papilliferum	1	2

Table 4: Malignant adnexal tumours in the present study (N=6).

Adnexal tumour	No. of cases
Malignant proliferating trichilemmal tumour	2
Sebaceous carcinoma	3
Adenoid cystic carcinoma	1
Total	6

Table 5: The site and sex distribution of observed adnexal tumours (n=51).

Site of tumour	Male	Female	Total	%
Head and neck				
Scalp	6	12	18	
Face	1	4	5	
Ear lobule	2	1	3	68.62
Upper lid margin	3	2	5	
Nasoalveolar fold	3	1	4	
Trunk (back)	3	1	4	7.85
Lower limb	4	3	7	13.73
Others	2	3	5	9.8
Total	24	27	51	100

Hair follicle tumours (18 cases) were more common in this study constituting 35.3%, followed by 16 cases of sebaceous tumours (31.37%) and 15 cases of sweat gland tumours (29.41%) constitutively. Apocrine tumours constituted 2 cases with 3.92% (Table 6).

Benign tumours of the sweat gland comprised predominantly of 7 cases of Eccrine spiradenoma (Figure 1, 2) followed by 4 cases of Eccrine acrospiroma, 2 cases

of Chondroid syringoma (Figure 3, 4) and one case of Eccrine poroma. One case of malignant tumour seen was adenoid cystic carcinoma seen in right ear external auditory canal in a 74-year-old male patient.
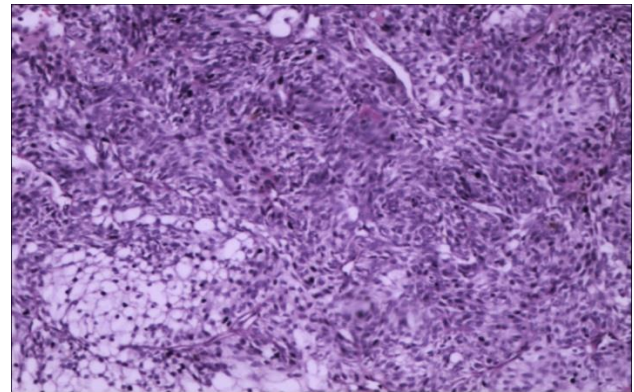

Figure 1: Photomicrograph of Eccrine spiradenoma showing two types of epithelial cells with large pale nuclei and peripheral small dark nuclei with in vascular stroma. (H and E, 100x).
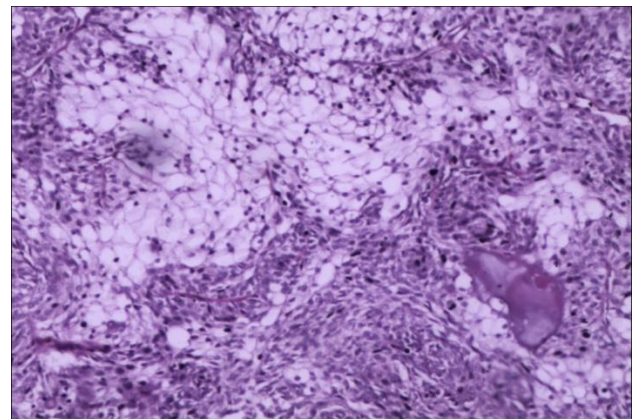

Figure 2: Photomicrograph of Eccrine spiradenoma showing epithelial cells with central large pale nuclei and vacuolated cytoplasm. (H and E, 100x)
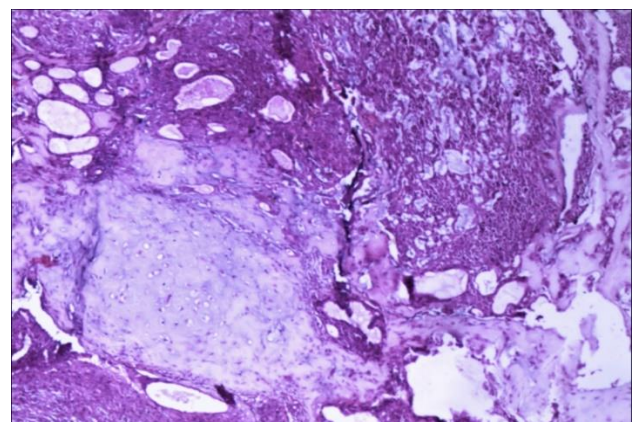

Figure 3: Photomicrograph of Chondroid syringoma showing epithelial and cystic component in chondromyxoid stroma. (H and E, 40x).
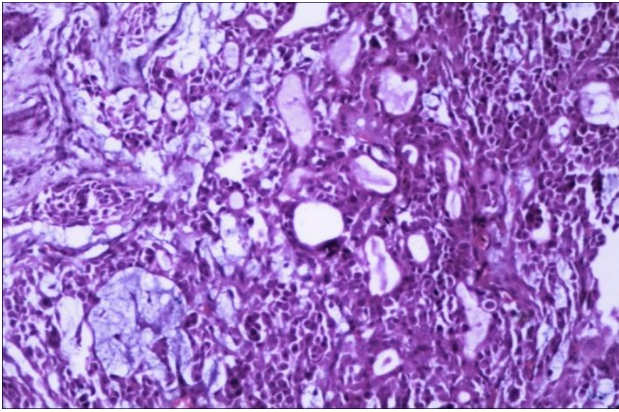
Figure 4: Photomicrograph of Chondroid syringoma showing nests, islands, ducts, and tubular structure in chondromyxoid stroma. (H and E, 100x).

Table 6: Adnexal tumours according to the type of differentiation (n=51).

Line of differentiation	Number of cases	(%)
Sweat gland	15	29.41
Hair follicle	18	35.3
Sebaceous gland	16	31.37
Apocrine gland	2	3.92
Total	51	

Benign Hair follicle tumours comprised predominantly 7 cases of Trichilemmal cyst, 3 cases of Pilomatricoma (Figure 5, 6), 3 cases of Trichoepithelioma, 2 cases of Trichilemmoma and 1 case of Trichofolliculoma. Malignant Hair follicle tumours were 2 cases of malignant proliferating trichilemmal tumour.

Figure 5: Photomicrograph of pilomatricoma showing two types of cells peripheral basophilic cells and central shadow cells (H and E, 100x).

Benign tumours with sebaceous differentiation comprised predominantly 11 cases of nevus sebaceous followed by one case each of sebaceous adenoma and sebaceous hyperplasia. Malignant sebaceous gland tumours were 3 cases of sebaceous carcinoma. (Figure 7, 8).
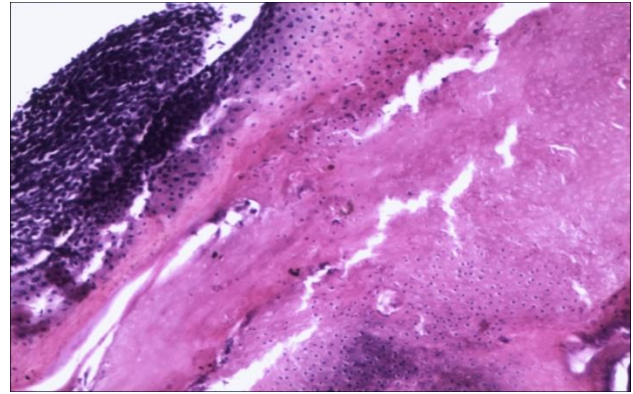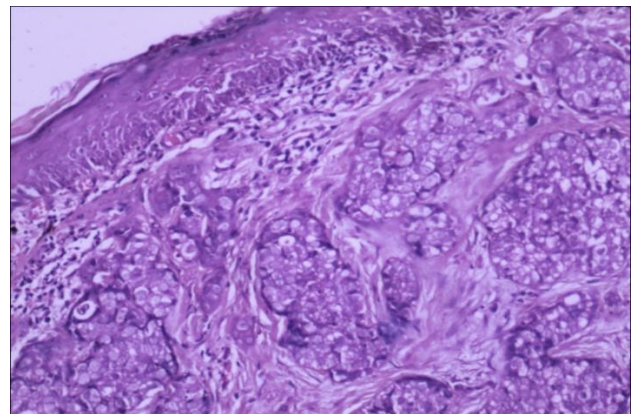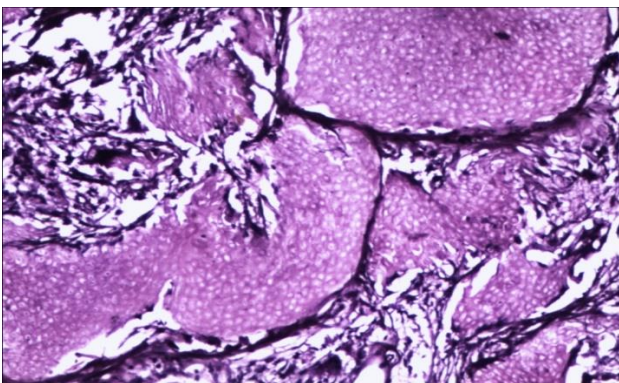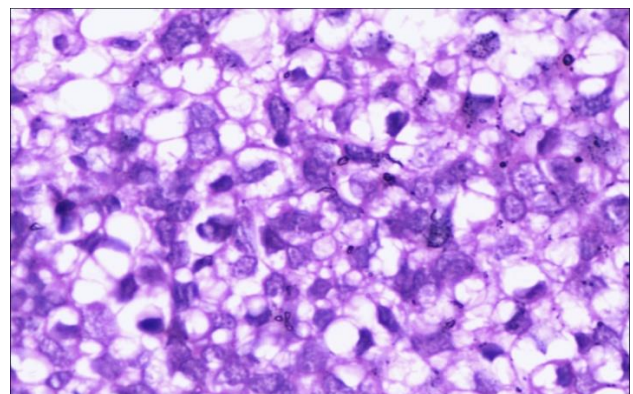

Figure 6: Photomicrograph of pilomatricoma showing two types of cells peripheral basophilic cells and central shadow cells and dystrophic calcification. (H and E, 100x).

Figure 7: Photomicrograph of sebaceous carcinoma showing nests of tumour cells with foamy vacuolated cytoplasm (H and E, 100X).

Figure 8: Photomicrograph of sebaceous carcinoma showing pleomorphic tumour cells with hyperchromatic nucleus (H and E, 400X).

DISCUSSION

Adnexal tumours of skin are rare and difficulties arise because of the variety and complexity of histologic, ultra-structural and histochemical study, complex

nomenclature, multiple classifications and conflict in opinion regarding histogenesis of some of the entities and relative rarity of these tumours. Incidence of benign tumours was more as compared to malignant tumours.[4-6]

Skin adnexal tumours have a wide range of age distribution. In the present study, most commonly affected age group was 41-50years which was correlated with Sadaf Alam et al, Vani et al.[7,8]

In the present study, females were more affected than males, Male:Female ratio was found to be 1:1.125, which was correlated with Nair et al (1:2.3), Vani et al (1:1.68), Saha et al (1:1.88).[8-10]

Head and Neck region (68.62%) was the most common site of occurrence, which was also found in Radhika et al, Vani et al (62.24%), Alam et al (61.53%) and samaila et al (46%).[4,6-8] Scalp was the most common site in Head and Neck region.

The pathological evaluation of skin specimens for skin adnexal tumours needs sufficient clinical data that is useful in achieving accurate diagnosis. The data includes patient's age and sex, location of the lesion, the rate of tumour growth, whether the lesion is solitary or multiple, and, if present, any associated inherited or systemic diseases.[11]

The specimen must be examined grossly and meticulously; the size, growth pattern (nodular or plaque), colour, presence of ulceration, and status of the surgical resected margins must be noted. The specimen should be thoroughly sampled after painting its resection margins; the lesion should be serially sectioned at 0.3-0.5cm intervals and submitted in its entirety for histological examination. Sections including tumoural and grossly uninvolved surrounding tissue are needed to evaluate the growth pattern of the tumour. The deep and peripheral surgical resected margins have to be submitted to assure complete excision.[11]

Skin adnexal tumours show differentiation towards sweat gland, hair follicle, sebaceous and apocrine gland. The presence of cells with coarsely vacuolated cytoplasm and starry nuclei (mulberry cells) within a tumour is indicative of sebaceous differentiation.[1]Apocrine cells have abundant eosinophilic cytoplasm and eccentric, basally located nuclei.[12] Although the presence of decapitation secretion is deemed evidence for apocrine differentiation, this finding is considered useful but not very specific.

Follicular differentiation in adnexal tumours is characterized by the presence of proliferation of basaloid bulbar follicular germinative cells, peripheral nuclear palisading and adjacent papillary mesenchymal cells.[11]

Follicular differentiation may also be suspected in the presence of matrical shadow (ghost) cells, and if tumour

is attached to normal follicular structures. Tumours of the hair follicle show differentiation towards many of the normal follicular elements and are generally named accordingly.[13]

Most of the skin adnexal tumours in our study 30 cases (58.82%) were <1.5 centimeters in maximum dimensions, which was also seen in Pujani M et al Rarely size may exceed 1.5cm, one case of Eccrine spiradenoma size was 4cm, and one case of Trichilemmal cyst was 6cm (Table 7).[14]

Most of skin adnexal tumours are benign and remain localized to site. However, diagnosing some of these tumours has important implications, as they might be markers for syndromes associated with internal malignancies, such as trichilemmomas in Cowden disease and sebaceous tumours in Muir-Torre syndrome.[15]

Table 7: Adnexal tumours according to the size of tumour.

Skin adnexal tumour	Size of the tumour (ranging from) (cm)
Sweat gland tumours	
Eccrine spiradenoma	0.5-4
Chondroid syringoma	1.5-2
Eccrine acrospiroma	0.5x2
Eccrine poroma	0.5x2
Adenoid cystic carcinoma	0.5x2
Hair follicle tumours	
Trichilemmoma	1x1
Trichofolliculoma	0.5x0.5
Trichilemmal cyst	0.5x2
Pilomatricoma	1x1
Malignant proliferating trichilemmal tumour	3x6
Trichoepithelioma	1x1
Sebaceous tumours	
Nevus sebaceous	0.5-2
Sebaceous hyperplasia	0.5x0.5
Sebaceous adenoma	0.5x2
Sebaceous carcinoma	1-2
Apocrine tumours	
Syringocystadenoma papilliferum	0.5x1
Hidradenoma papilliferum	0.5x1

Table 8: Benign and Malignant tumours in various studies.

Study	Benign (%)	Malignant (%)
Radhika et al	77.14	29.63
Reddy et al	69.41	30.59
Samaila et al	88.5	11.5
Alam et al	92.31	7.69
Vani et al	74.5	25.49
Ankith et al	80.36	19.64
Present study	88.24	11.76

In the present study benign tumours were 88.24% (45/51); malignant tumours were 11.76% (6/51) which was correlated with Ankith et al and Radhika et al (Table 8).[4,10]

In the present study, Hair follicle differentiation (18/51 cases) were more common constituting 35.3% which was similar to Nair et al and Vani et al.[8,9] (Table 9) Out of these 18 cases, 16 cases were benign and 2 were malignant. Benign tumours comprised predominantly 7 cases of Trichilemmal cyst followed by 3 cases of Pilomatricoma, 3 cases of Trichoepithelioma, 2 cases of Trichilemmoma and one case of Trichofolliculoma. Malignant Hair follicle tumours were 2 cases of malignant proliferating trichilemmal tumour. Out of 12 cases mostly seen in females, scalp was the common site, sizes ranging from 0.4 to 6cm.

In the present study, sebaceous differentiation constituted 16/51 cases (31.37%) which was similar to Alam et al, most commonly seen in face, mostly affecting females and in 4th decade age group.[7] Out of these 16 cases, 13 cases were benign and 3 were malignant. 11 cases of Nevus sebaceous was most common benign tumour. Malignant cases comprised of 3 cases of sebaceous carcinoma.

In the present study, skin adnexal tumours sweat gland differentiation was seen in 15 cases (29.41%) which was similar to Alam et al.[7] Seven cases of Eccrine spiradenoma most commonly seen in males and age group 41 to 50. Scalp was the common site, sizes ranging from 0.5 to 4cm. Two cases of Eccrine spiradenoma were clinically confused with vascular tumours. Histopathological examination ruled out its clinical diagnosis. Two cases of Chondroid syringoma cases were encountered in males in 43years and 18years age group in scalp and face, sizes ranging from 1.5 to 2cm. One case of malignant tumour seen was adenoid cystic carcinoma seen in right ear external auditory canal in a 74-year-old male patient.

Table 9: Line of differentiation in different studies.

Study	Sweat gland differentiation	Hair follicle differentiation	Sebaceous differentiation
Nair et al	51.5	36.36	6.06
Radhika et al	48.5	31.4	20
Vani et al	43.13	37.25	19.6
Alam et al	34.62	23.10	42.3
Pujani et al	56	28	16
Present study	29.41	35.3	31.37

Apocrine tumours constituted 2 cases with 3.92% out of which one case of Syringocystadenoma papilliferum was seen in 11years old girl in face and another case of Hidradenoma papilliferum was seen in 21year old female which was clinically misdiagnosed as lipoma.

In the present study, six cases clinically diagnosed as sebaceous cysts, turned out to be one case each of Eccrine spiradenoma, Pilomatricoma, trichilemmal cyst, Chondroid syringoma, Trichilemmal cyst and trichofolliculoma.

CONCLUSION

Incidence of skin adnexal tumours is low. The incidence of benign skin adnexal tumours is more as comparative to the malignant tumours. Most of the malignant tumours occur in older age group (41-50). Skin adnexal tumours can occur anywhere in the body however head and neck region are most common site.

Even though the incidence is low, skin adnexal tumours are clinically often misdiagnosed, so histopathological examination remains gold standard for their correct diagnosis and for their differentiation between benign and malignant tumours.

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