



Original Research Article

HISTOPATHOLOGICAL STUDY OF SKIN ADNEXAL TUMOURS

T. Hannah Jerlin¹, K.G. Padmanaban², P. Gayathri³

¹Assistant Professor, Department of Pathology, Government Thanjavur Medical College and Hospital, Thanjavur, Tamil Nadu, India.

²Associate Professor, Department of Pathology, Government Thanjavur Medical College and Hospital, Thanjavur, Tamil Nadu, India.

³Assistant Professor, Department of Pathology, Government Thanjavur Medical College and Hospital, Thanjavur, Tamil Nadu, India.

Received : 05/12/2025
Received in revised form : 20/01/2026
Accepted : 09/02/2026

Corresponding Author:

Dr. T.Hannah Jerlin,
Assistant Professor, Department of Pathology, Government Thanjavur Medical College and Hospital, Thanjavur, Tamil Nadu, India.
Email: drjerlin06@gmail.com

DOI: 10.70034/ijmedph.2026.1.289

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 1657-1666

ABSTRACT

Background: Skin adnexal tumours have been recognized from the later part of the 19th century. Tumours of cutaneous appendages are not so common. The classification of these tumour is also more complex. Adnexal tumours (ATs) includes a large spectrum of skin epithelial tumours including hamartoma, hyperplasia, benign, and malignant tumours that originate from or show differentiation toward adnexal epithelial structures, namely, pilosebaceous unit, eccrine, and apocrine. To study the incidence of skin adnexal tumors and describe its variants, thus thereby helping us to ease the diagnosis of skin adnexal tumours as they serve a marker for some internal malignancies.

Methods and Materials: This study design was a prospective study, which included all excision biopsy specimens which were diagnosed as tumours arising from skin adnexa as outlined in the WORLD HEALTH ORGANISATION classification of skin tumours were studied. The specimens were received in the Department of Pathology, Thanjavur Medical College over a period of 2020 to 2021. Data were entered in the excel sheet and analyses were done using Graph pad Prism version 5 software. $p < 0.05$ were measured as statistically significant

Results: The mean age was 47.1 years with SD of 16.7. The age range of 3-80 years. Majority of the study participants were in age group of 41-50 years 15(24.2%). The second common age group among the study participants were 51-60 years 12(19.4%). Females were predominant in our study 35(56.5%). Benign lesions (95.20%) are commoner than malignant lesions (4.8%). Eccrine differentiation was most common 27 (44%) followed by Pilar differentiation 20(32%).

Conclusion: Our study concluded that Morphological assessment is very important in evaluating skin adnexal tumours, and histochemical and/or immunohistochemical stains may occasionally serve as ancillary tools. Eccrine differentiation is characterised by the presence of uniform small basaloid cells which are smaller than keratinocytes arising from eccrine duct. Follicular differentiation is characterised by the presence of proliferation of basaloid bulbar germinative cells, peripheral nuclear palisading and adjacent papillary mesenchymal cells and shadow cells.

Keywords: Adnexal, hyperplasia, eccrine, pilosebaceous.

INTRODUCTION

SKIN is the largest and more complex organ in the body. The tumours arising from skin adnexal epithelial structures namely pilosebaceous unit, eccrine and apocrine remains a challenging

diagnosis even for the expert pathologists, In spite of significant low incidence of skin adnexal tumours, diagnosis of these skin adnexal lesions principally relies on histopathological study as their clinical presentation are non-specific.

Skin adnexal tumours have been recognized from the later part of the 19th century. Tumours of

cutaneous appendages are not so common. The classification of these tumour is also more complex. Adnexal tumours (ATs) includes a large spectrum of skin epithelial tumours including hamartoma, hyperplasia, benign, and malignant tumours that originate from or show differentiation toward adnexal epithelial structures, namely, pilosebaceous unit, eccrine, and apocrine. These tumours arise from multipotent stem cells present within epidermis or its appendageal structures. Therefore, during neoplastic transformation, these tumours may aberrantly express one or more lines of appendageal differentiation to varying degree.

Diagnosis of skin adnexal lesions is difficult due to the large variety of tumour and tumour like lesions and their variant forms, the uncommon occurrence of some of the lesions, the frequency of differentiation along two or more adnexal lines in the same tumour and the complicated nomenclature. Most adnexal lesions are benign and if completely excised, cause no further concern. However the need for analysing these lesions arises due to the following considerations.

Skin adnexal lesions can occur anywhere in the body and can mimic tumours of that particular organ. For example, skin adnexal lesions occurring on the breast can be mistaken for carcinoma breast or lesions like erosive adenomatosis of nipple can mimic Paget's disease of breast and other malignant conditions that need radical surgery and has grave implications for the patient.

Some of the Adnexal tumours can be markers of internal malignancy, for example, Multiple Trichilemmomas in Cowden syndrome, multiple Sebaceous Adenomas in Muir-Torre syndrome. Malignant tumours are rare compared to benign counterparts. However, they follow more aggressive clinical course and have potential of nodal and distant metastasis. Their diagnosis has important therapeutic implications.

Awareness of the morphology of skin adnexal lesions will contribute to a right diagnosis and can help to avoid potential pitfalls. Clinical associations with specific subtypes will not become apparent if the lesions are not subtyped. Accurate SUBCLASSIFICATION is therefore an aid to future epidemiological and histological studies.

A review of English literature highlights the complexity in the understanding of skin adnexal lesions. Further this literature pertains chiefly to the Western population; with a few Indian studies in between. In view of this it is essential to study lesions to define their incidence, morphology especially with regard to the Indian population.

Skin Adnexal tumours arising from the skin are usually missed clinically and often confirmed by histopathology. These tumours may be confused with certain types of cutaneous cancer like squamous cell carcinoma, basal cell carcinoma. Diagnosis of skin adnexal tumours is possible by performing an elliptical skin biopsy, submitting for

haematoxylin and eosin (H&E) staining and if needed immunocytochemistry.

In this study, we have reviewed the histological features of some common adnexal tumours, which we commonly encounter in day to day practice, that show apparent differentiation rather than derivation may conceptually be more plausible approach to classifying these tumours. Most of them present as papules and nodules, which are easily misdiagnosed. I studied extensively the histomorphology, age and sex distribution of various common adnexal neoplasms presented to our Department of pathology at Thanjavur medical college hospital.

Aims of the study

1. To study the incidence of skin adnexal tumors.
2. To study the Age and Sex wise distribution of cutaneous adnexal tumors.
3. To classify and analyse the Histopathological feature of various skin adnexal tumors.

MATERIALS AND METHODS

This study design was a prospective study, which included all excision biopsy specimens which were diagnosed as tumours arising from skin adnexa as outlined in the WORLD HEALTH ORGANISATION classification of skin tumours were studied. The specimens were received in the Department of Pathology, Thanjavur Medical College over a period of 2020 to 2021.

Inclusion Criteria

All age group patients who were diagnosed to have skin adnexal tumours.

Exclusion Criteria

Inadequate specimens, cases which does not satisfy the standard histologic criteria and skin tumours(eg) basal cell carcinoma. other than skin adnexal lesions.

Methods

Clinical examination

The following details were noted and recorded: Patient age, sex, site of the lesion/tumour.

Microscopy

All excised specimen received in our department, were processed by routine tissue processor and slides were stained by Haematoxylin and Eosin (H &E) were studied. The skin adnexal lesions were re categorised and subtyped as per current standard criteria. The immunocytochemical studies, such as Periodic acid Schiff (PAS) stain was done to demonstrate basement membrane material where ever necessary.

RESULTS

Spectrum of Skin Adnexal Lesions

In this present study, we have analysed 62 (no=62) excised specimens of skin adnexal neoplasms of which lesions with eccrine differentiation were the commonest accounting for 27 cases (44%) while pilar differentiation accounting for 20 cases (32%).

Similar proportion of cases had sebaceous differentiation (7cases), apocrine differentiation (8

cases) accounting for 11% and 13% respectively. (table 1.0).

Table 1: Demographic details

Variables	n	%
Age Category		
<20 years	2	3.2
21-30 years	10	16.1
31-40 years	10	16.1
41 – 50 years	15	24.2
51 – 60 years	12	19.4
61 – 70 years	10	16.1
>70 years	3	4.8
Gender		
Female	35	56.5
Male	27	43.5

The mean age was 47.1years with SD of 16.7. The age range of 3-80years. Majority of the study participants were in age group of 41-50 years 15(24.2%). The second common age group among the study participants were 51-60 years 12(19.4%). Females were predominant in our study 35(56.5%).

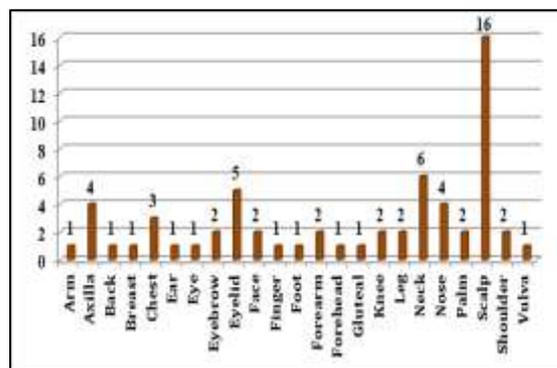


Figure 1: Site of involvement

Scalp is the most common site to involve 16 (25.8%) followed by Neck 6(9%)

Table 2: Histopathological types of Adnexal tumors

S.NO	HISTOPATHOLOGICAL DIAGNOSIS	NUMBER OF CASES	%
1	ECCRINE DIFFERENTIATION	27	44
	a. Nodular hidradenoma	14	51.8
	b. Eccrine poroma	5	18.5
	c.chondroid syringoma	2	7.4
	d.eccrine spiradenoma	2	7.4
	e.eccrine hidrocystoma	2	7.4
	f.malignant nodular hidradenoma	1	3.7
	g.eccrine ductal carcinoma	1	3.7
2	PILAR DIFFERENTIATION	20	32
	a.trichoepitheiloma	8	40
	b.pilomatricoma	7	35
	c.proliferating trichelemmal tumour	3	15
	d.trichoblastoma	1	5
	e.hair follicle nevus	1	5
3	APOCRINE DIFFERENTIATION	8	13
	a.syringocystadenoma papilliferum	3	37.5
	b.cylindroma	2	25
	c.apocrine hidrocystoma	2	25
	d.hidradenoma papilliferum	1	12.5
4	SEBACEOUS DIFFERENTIATION	7	11
	a.nevus sebaceous of jadasohn	3	42.8
	b.sebaceous adenoma	2	28.6
	c.sebaceous hyperplasia	1	14.3
	d.sebaceous gland carcinoma	1	14.3

The most common Histopathological diagnosis observed in our study was Eccrine differentiation 27(44%).Pilar differentiation was observed in 20(32%)

Table 3: Eccrine differentiation lesions(n=27)

Type of lesions of eccrine differentiation	n	%
Eccrine hidrocystoma	2	7.4
Chondroid syringoma	2	7.4
Eccrine spiroadenoma	2	7.4
Eccrine poroma	5	18.5
Nodular hidradenoma	14	51.8
Malignant nodular hidradenoma	1	3.7
Eccrine ductal carcinoma	1	3.7

Nodular Hidradenoma was present in 14(51.8%) of the study participants followed by eccrine poroma 5(18.5%).

Table 4: Nodular Hidradenoma

Variables	n	%
Age category		
21-30	4	28.6
31-40	2	14.3
41-50	1	7.1
51-60	3	21.4
61-70	2	14.3
>70	2	14.3
Sex		
Male	8	57.1
Female	6	42.9
Site		
Scalp	3	21.4
Knee	2	14.3
Neck	1	7.1
Gluteal	1	7.1
Breast	1	7.1
Leg	1	7.1
Finger	1	7.1
Chest	1	7.1
Arm	1	7.1
Axilla	1	7.1
Forearm	1	7.1

Among these 14 patients,8 were males and 6 were females occurring mostly in the second to seventh decade of life. These lesions were solitary in all the cases with wide anatomical distribution, with scalp being the most common site followed by axilla.

Table 5: Eccrine Poroma (N=5)

Variables	n	%
Age category		
41-50	2	40
51-60	2	40
61-70	1	20
Sex		
Male	1	20
Female	4	80
Site		
Palm	2	40
Leg	1	20
Foot	1	20
Chest	1	20

Eccrine poroma stands second most common tumour showing eccrine differentiation. Accounting for about 6.5% of total skin adnexal neoplasms. Of which 19% among eccrine tumours. Most common site being palms and soles. Age distribution occurs with a peak during 4th to 6th decade, female preponderance.

MALIGNANT SKIN ADNEXAL NEOPLASM:

In tumours showing differentiation towards eccrine, we encountered 2 cases of malignant neoplasm,

MALIGNANT NODULAR HIDRADENOMA (hidradenocarcinoma) and **ECCRINE DUCTAL CARCINOMA**.

SKIN ADNEXAL LESIONS WITH PILAR DIFFERENTIATION

Skin adnexal lesions with pilar differentiation were the second most common neoplasms that we encountered in our study. The below table shows the distribution of different adnexal tumours with pilar differentiation.

Table 6: Distribution of tumours with pilar differentiation

Type of pilar differentiation lesions	n	%
Pilomatricoma	7	35
Tricho-epithelioma	8	40
Proliferating trichelemmal cyst	3	15
Hair follicle nevus	1	5
Trichoblastoma	1	5

Tricho-epithelioma was found to more in our study 8 (40%).

Table 7: Tricho epithelioma

Variables	Trichoepithelioma	Pilomatricoma	PTC	Trichoblastoma
Age category				
<20	0(0%)	1(14.3%)	0(0%)	0(0%)
21-30	2(25%)	3(42.9%)	0(0%)	0(0%)
31-40	1(12.5%)	1(14.3%)	0(0%)	0(0%)
41-50	0(0%)	2(28.5%)	3(100%)	1(100%)
51-60	4(50%)	0(0%)	0(0%)	0(0%)
>70	1(12.5%)	0(0%)	0(0%)	0(0%)
Sex				
Male	6(75%)	3(42.9%)	1(33%)	0(0%)
Female	2(25%)	4(57.1%)	2(67%)	1(100%)
Site				
Scalp	4(50%)	1(14.3%)	3(100%)	1(100%)
Nose	3(37.5%)	1(14.3%)	0(0%)	0(100%)
Neck	1(12.5%)	5(71.4%)	0(0%)	0(100%)

In our study, Trichoepithelioma is found to have a peak incidence during fifth decade when compared to other age groups. More common in male gender when compared to females (Figure 4.0). Scalp is the most common site followed by nose. we had one lesion occurring at multiple sites namely nose and

outer canthus. In this study, pilomatricoma accounts for 35% of tumours (7 cases)of which 3 of them occurred in males and 4 in females ,with neck being the commonest site followed by scalp with the age group between 2nd to 5th decade .

Table 8: Sebaceous Differentiation lesions

Type of lesions of sebaceous differentiation	n	%
Nevus sebaceous of Jadassohn(Benign)	3	42.8
Sebaceous hyperplasia(Benign)	1	14.3
Sebaceous adenoma(Benign)	2	28.6
Sebaceous carcinoma(Malignant)	1	14.3

SKIN ADNEXAL TUMOURS WITH APOCRINE DIFFERENTIATION

In our study, we had 8 cases (13%) among 62 skin adnexal tumours showed Apocrine differentiation. Of which Syringocystadenoma papilliferum accounts for 37.5 % (3 cases) followed by 2 cases

(25%) of Apocrine hidrocystoma and cylindroma with female preponderance occurring in age group between fourth to fifth decade. An interesting case of tubular apocrine adenoma occurring in the vulval site in a 50 years old female.

Table 9: Apocrine differentiation lesions

S.No	Type of lesions of apocrine differentiation	n	%
1	Apocrine hidrocystoma	2	25
2	cylindroma	2	25
3	Syringocystadenoma papilliferum	3	37.5
4	Hidradenoma papilliferum	1	12.5

DISCUSSION

Sweat gland tumours were the predominant subcategory of SAT in some Indian studies which

correlates with our present study which also shows tumours with the eccrine differentiation (43.50%) to be the commonest finding.

Table 10: Comparison of Current Study with Other Indian Studies

TUMOUR	Present study	Reddy.et.al	Vaishnav and Dharkar etal	Kartha et.al	Simi et.al
HAIR FOLLICLE					
Hair follicle nevus	1(1.6)	0	0	0	0
Trichoepithelioma	8(12)	4(4.7)	2(4.16)	2(2.4)	6(5)
Trichoblastoma	1(1.6)	0	0	0	0
Pilomatricoma	7(11.2)	9(10.6)	3(6.15)	20(24.4)	20(16.7)

Proliferating Trichelelmal cyst	3(4.8)	0	0	0	23(19.2)
Trichofolliculoma	0	0	0	2(2.4)	1(0.8)
Trichodiscoma	0	0	0	13(19.9)	1(0.8)
Trichoadenoma	0	0	0	0	1(0.8)
SEBACEOUS DIFFERENTIATION					
Nevus sebaceous of Jadassohn	3(4.8)	0	1(2.08)	Not studied	21(17.5)
Sebaceous hyperplasia	1(1.6)	0			2(1.7)
Sebaceous adenoma	2(3.2)	3(3.5)	2(4.16)	3(3.7)	1(0.8)
APOCRINE DIFFERENTIATION					
Apocrine hidrocystoma	2(3.2)	0	0	0	3(2.5)
Cylindroma	2(3.2)	1(1.2)	1(2.08)	0	2(1.7)
Syringocystadenoma papilliferum	3(4.8)	3(3.5)	8(16.7)	8(8.5)	3(2.5)
Tubular apocrine adenoma	0	0	0	0	0
Hidradenoma papilliferum	1(1.6)	0	1(2.08)	0	1(0.8)
ECCRINE DIFFERENTIATION					
Eccrine hidrocystoma	2(3.2)	0			
Chonroid syringoma	2(3.2)	5(5.9)	3(6.15)	7(8.5)	4(3.3)
Nodular Hidradenoma	14(22.5)	29(34.1)	20(41.7)	14(17.1)	1(0.8)
Malignant nodular hidradenoma	1(1.6)				0
Eccrine duct carcinoma	1(1.6)	11(12.9)			0
Eccrine poroma	5(8.0)	0	0	0	4(3.3)
Eccrine spiradenoma	2(3.2)	2(3.5)	0	1(1.2)	2(1.7)
Eccrine nevus	0	0	0	0	1(0.8)
syringoma	0	3(3.5)	1(2.08)	7(8.5)	18(15)
Digital papillary adenoma	0	3(3.5)	0	5(6.1)	1(0.8)
Extra mammary paget disease	0	0	0	0	1(0.8)
TOTAL	62	85	48	82	120

SKIN ADNEXAL LESIONS WITH ECCRINE DIFFERENTIATION

In a study of 24 patients with SAT (excluding pilosebaceous tumours) by Harsh Mohan et al, eccrine tumours constituted 16 cases (66.7%). There were 27 cases of skin adnexal lesions with eccrine differentiation in the current series, which accounted for 44% of the total cases. Nodular hidradenoma was the commonest lesion showing eccrine differentiation in our current study (52%). Similar findings noted in Harsh Mohan et al study, were eccrine acrospiroma (nodular hidradenoma) found to be commoner than syringoma.

NODULAR HIDRADENOMA

Nodular hidradenoma is a benign tumour, which usually presents as a solitary, skin-coloured lesion and occurs more commonly in females. 14 cases of Nodular hidradenoma seen in the current study. Females were found to have more incidence when compared to males, which correlates with literature. The clinical features also were in concurrence with published literature.

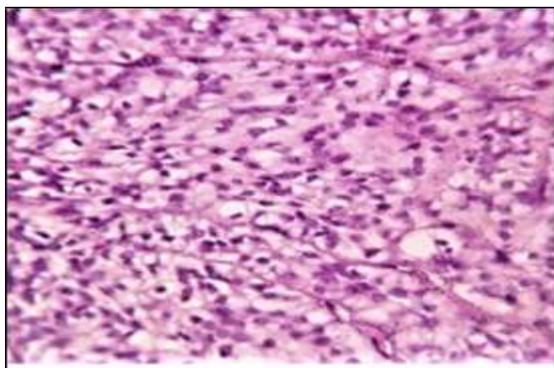


Figure 2: Showing clear vacuolated cells of Nodular hidradenoma H&E.

Additionally, we encountered a case of a solitary nodular swelling in the inframammary region of the right breast in a 35-year-old female, measuring 4x4cm, aspiration yielded 10 mL of straw-colored fluid which is shown in Fig. 3(a). Fig. 6(b) shows cytological analysis revealing cohesive clusters of epithelial cells arranged in small clusters, papillae, and glandular patterns, along with cystic macrophages in a proteinaceous background, mimicking breast lesions clinically and cytologically. Upon excision, histopathological examination revealed features consistent with clear cell hidradenoma are displayed in Fig. 3(c) and (d).

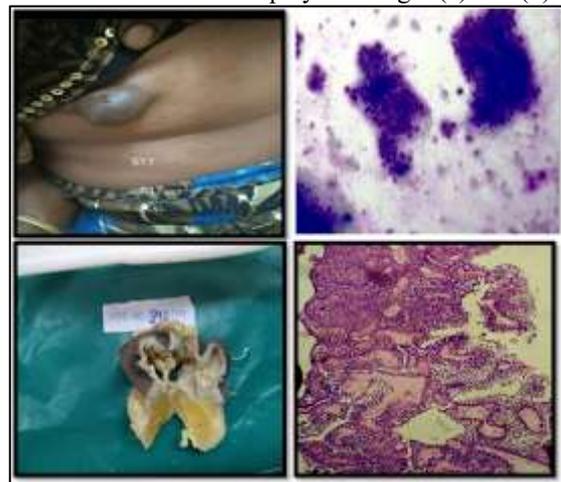


Figure 3: (a). Patient with left inframammary nodular swelling (first row, right), (b) smear showed cohesive clusters of epithelial cells arranged in small clusters, papillae and glandular pattern, along with cystic macrophages in a proteinous background (first row, left), (c) Gross image of the excised pedunculated mass (second row, right), (d) Histopathological image with dual population of cells having clear and eosinophilic cytoplasm, cystic changes, eosinophilic secretions and focal area of calcification (second row, left).

Other Tumours

In the current study, we encountered a pigmented variant of eccrine poroma which correlates with simi et al. which showed classical histological features as described in literature. There were 2 cases of eccrine spiradenoma in this study. None of the cases showed association with cylindromas. The histological features were in concurrence with published literature.

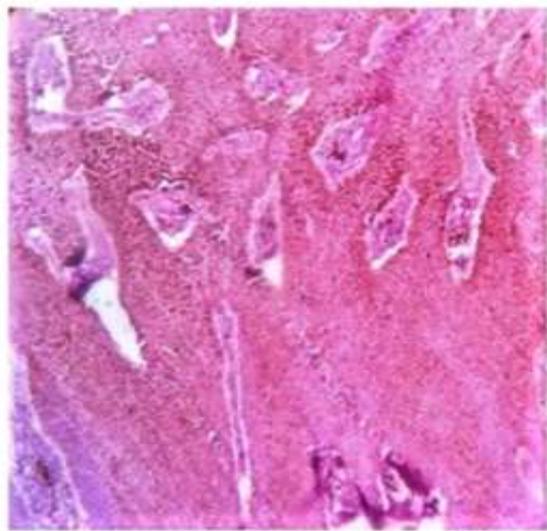


Figure 4: Pigmented eccrine poroma (H&E)

Incidence of malignancy in skin adnexal lesions:

The incidence of malignancy in skin adnexal lesions is rare, representing only 0.005% of all skin tumors. There are two types of adnexal carcinoma: those with affinities with, and potentially deriving from, benign adnexal tumors, and those that appear malignant from the outset. Generally, the risk of malignancy in a benign tumor seems to be correlated with the size and duration of the preexisting benign lesion. In our current study, we identified 3 cases of skin adnexal neoplasms demonstrating malignant transformation. These cases included 1 case (1.6%) of Malignant Nodular Hidradenoma, 1 case (1.6%) of Eccrine Ductal Carcinoma, and 1 case (1.6%) of Sebaceous Carcinoma.

Among tumors showing differentiation towards eccrine glands, we encountered 2 cases of malignant neoplasms: Malignant Nodular Hidradenoma (hidradenocarcinoma) and Eccrine Ductal Carcinoma. Malignant Nodular Hidradenoma presented as a 4x2x2cm right axillary swelling in a 47-year-old woman with a duration of 2 years. Microscopically, the lesion exhibited sheets of cells with two populations, some with clear cytoplasm and others with eosinophilic cytoplasm, along with areas of active mitosis and mild to moderate pleomorphism.

Eccrine Ductal Carcinoma, representing 4% (1 case) of eccrine differentiation neoplasms, occurred in the lower back of a 55-year-old female. Microscopic examination revealed a neoplasm composed of

anaplastic cells arranged in sheets, with central comedonecrosis. Individual cells exhibited nuclear atypia and active mitosis.

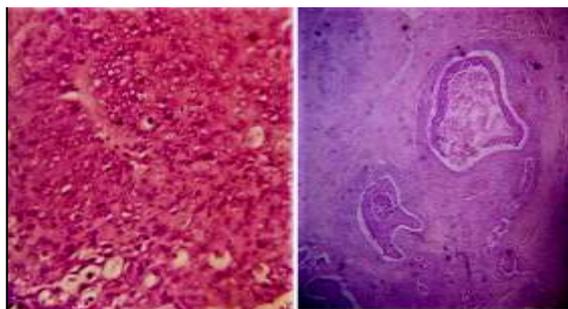


Figure 5: Eccrine duct carcinoma with comedonecrosis (H&E)

SKIN ADNEXAL LESIONS WITH PILAR DIFFERENTIATION

TRICHOEPITHELIOMA

In this study Trichoepithelioma accounts for 40%(8 cases) of the pilar lesions. Lesions more commonly in head and neck region as seen in previous literature. we came across a single case which occurred as multiple lesion(nose and outer canthus) in a 52 yrs old female. All the 8 cases showed the characteristic histological features as described in the literature. Also seen in one case was calcification and abortive hair follicles not commonly described in literature.

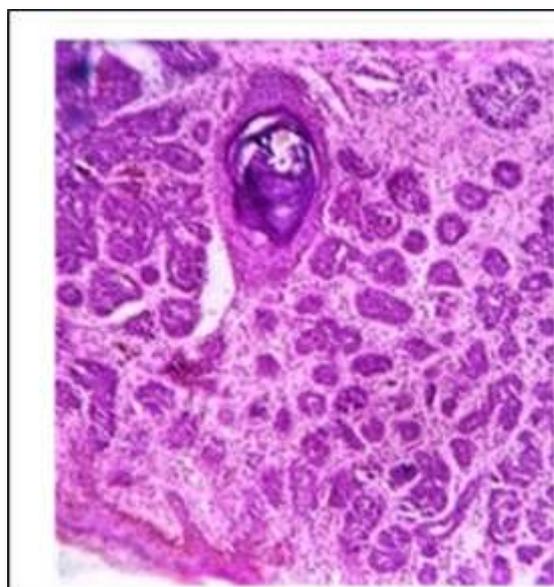


Figure 6 Trichoepithelioma exhibiting nests of basaloid cells without artifactual clefts(H&E).

PILOMATRICOMA

Pilomatricoma a benign neoplasm with differentiation towards the matrix of the hair follicle. The age range of occurrence of pilomatricomas in our study was in the 2nd to 4th decade. As pilomatricomas in general have a slight female predominance, in this study also female preponderance was noted with a male to female

ratio of 1:2. In an Indian study by Solanki et al the arm was the commonest site involved but in our present study, we had neck as the most common site of occurrence followed by upper extremity. Friedrich et al, Geiser et al and Haus's et al found multiple lesions in upto 3.5% cases. we didn't encounter any multiple lesions.

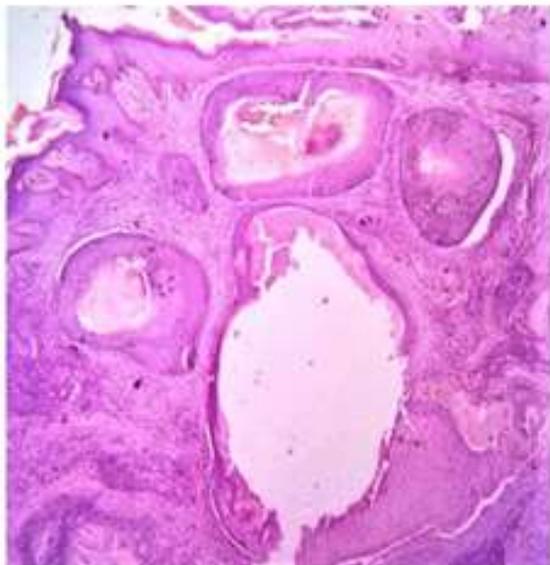


Figure 7: Pilomatricoma showing ghost cells surrounded by peripheral basaloid cells H&E

PROLIFERATING TRICHOLEMMA CYST

Tricholemmal cysts are derived from the outer root sheath (tricholemma) of the hair follicle, and hence arise preferentially in areas of dense hair follicle concentrations such as the scalp, as seen in this study, where all 3 cases (100%) were scalp lesions. Simi.et.al found 22% of the cases showed multiple lesions. No multiple lesions noted in our study. The abrupt keratinisation (tricholemmal) without the formation of keratohyaline granules which is the defining characteristic of these lesions, is a feature of the external root sheath in the isthmus region, and differs from that of the follicular infundibulum which shows epidermal keratinisation. Under polarised microscopy perpendicularly oriented bundle of tonofibrils were seen: another characteristic of this type of keratinisation. Although cholesterol clefts are believed to be quite common, they were observed in Simi et.al study in 13% of cases and calcification which occurs in upto a quarter of the lesion was seen 65% of cases.

OTHER TUMOURS WITH PILAR DIFFERENTIATION

In study conducted by simi et al, shows no case of trichoblastoma. We had one case of trichoblastoma occurring in the scalp, which is the most common site in a 45 years female. In our study, we encountered a single case of hair follicle nevus in a 3 years old boy at scalp.

SKIN ADNEXAL LESIONS WITH SEBACEOUS DIFFERENTIATION

The incidence of skin adnexal tumours showing sebaceous differentiation differs in various studies. Vaishanv and Dhakar reported 3 in a study of 48 cases while these accounted for 17% of 120 cases in the study by Parate et al. Twenty-one percent of all skin adnexal lesions in simi et. Al. study showed a sebaceous differentiation. In our study, we encountered 11% of total 62 cases among which nevus sebaceous of Jadasohn tops the list.

NEVUS SEBACEOUS OF JADASOHN

Here sebaceous glands are numerous and are hyperplastic. These lesions occurs as three forms, infantile, adolescent and adult forms. The hair follicle remains primordial. One of the characteristic findings observed in the simi et.al series was the absence of normal hair follicles in the lesion although the same may be seen in rest of the epidermis, a feature of diagnostic importance not usually highlighted in literature.

OTHER NON MALIGNANT SEBACEOUS LESIONS

There was two case of Sebaceous adenoma in this study which showed similar clinical and histologic findings as described in literature. Histologically an occasional lobule showed keratinisation and marked inflammation in the stroma. One case of Sebaceous hyperplasia were encountered in this study and the clinical findings in this study were in concordance with the available literature. An additional histological finding observed was the presence foci of calcification in one of the lesion.

SEBACEOUS CARCINOMA

In simi et al study, there was one case of extraocular sebaceous carcinoma occurring in the face in a 80 years old male. The current study included one case of an ocular sebaceous carcinoma, which occurred on the right upper eyelid of an 69-year-old male. Histologically, the lesion showed an infiltrative growth of pattern. The tumour was characterized by a preponderance of pleomorphic, basaloid cells that are arranged in solid sheets and irregular lobules, and showed marked cytonuclear atypia and high mitotic activity as described in literature. Areas of tumour necrosis was noted in this case, the presence of which denotes bad prognosis. The exact incidence of metastasis of extraocular Sebaceous carcinomas is still unknown due to relatively small number of cases that have been reported.

SKIN ADNEXAL LESIONS WITH APOCRINE DIFFERENTIATION

In our study, we encountered 8 cases (13%) of tumours showing apocrine differentiation as compared to 6 cases showed apocrine differentiation which accounted for 5% of skin adnexal lesions in simi et.al study. In our study Syringocystadenoma Papilliferum was the most common.

SYRINGOCYSTADENOMA PAPPILLIFERUM

In this study, we had 3 cases (37.5%) occurred at scalp commonly followed by axilla in one case. all 3 cases showed female preponderance with the age

group 40 years. A dense plasma cell infiltrate as described in literature, was noticed in all the cases which occupied the fibrous connective tissue of the papillary stalks and dermis beneath the tumour. The plasma cell infiltrate was most intense near the epithelium. Surface ulceration was present in one of the lesion. None of these lesions showed association with nevus sebaceous or basal cell carcinoma.

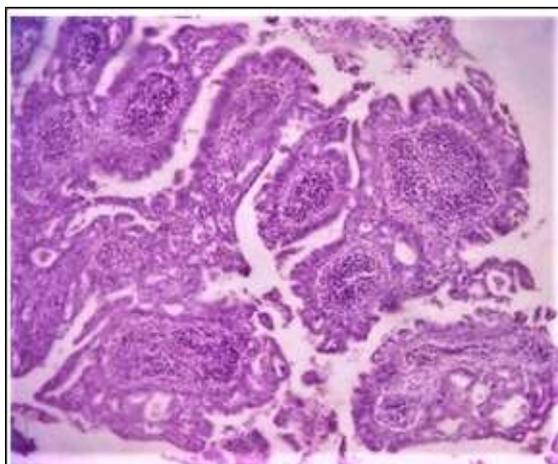
OTHER TUMOURS WITH APOCRINE DIFFERENTIATION

We came across 2 cases of apocrine hidrocystomas in a 45 year and 50 years old female occurring in the axillae and eyelid respectively. The histological findings observed in our study was similar to those described in the literature. This case in addition showed an inflammatory cell infiltrate of foamy macrophages, multinucleated giant cells, plasma cells and atrophic hair shafts. The stroma also showed proliferating blood vessels.

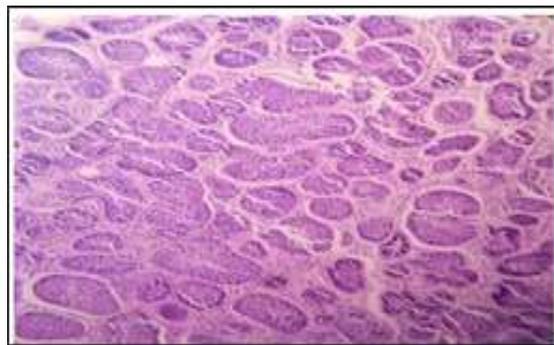
In our present study, we had 2 cases of apocrine cylindromas presented as solitary lesions in 60 years and 70 years of female occurred at scalp and left side forehead respectively which correlates with 2 cases of cylindroma in simi et.al . study. In our present study, tumours showed similar clinical and histological features as described in literature.

Hidradenoma papilliferum

We received one case of hidradenoma papilliferum occurring in the left side of vulva in a 50 years female which accounted for 1.6%. In other studies (simi et.al, reddy et.al) were not encountered. As per described in literature, we encountered in vulval site.



a)



b)

Figure 8: a) Syringocystadenoma papilliferum showing bilayered papillary structures b) Cylindroma showing zigzag arrangement of neoplastic cells H&E

INCIDENCE OF MULTIPLE LESIONS IN SKIN ADNEXAL LESIONS

Ninety four percent of Syringomas presented as multiple skincoloured papules and only 1 case showed a solitary lesion in simi et.al study. Two of the 19 cases of Pilomatricoma and 5 cases (22%) of trichilemmal cyst and all cases of trichoepithelioma had multiple lesions in simi et al study. In our present study, we had one case(12.4%) out of 8 cases of trichoepithelioma presented in nose and outer canthus.

INCIDENCE OF MALIGNANCY IN SKIN ADNEXAL LESIONS

In simi et .al study 3 cases(2.5%) showed malignant change. Two of these were among lesions of sebaceous differentiation. In our current study, we had 3 cases of skin adnexal neoplasms, showing malignant change. They are as follows, 1 case(1.6%) of Malignant nodular hidradenoma, 1 case(1.6%) of Eccrine ductal carcinoma and 1 case(1.6%) of Sebaceous carcinoma.

CONCLUSION

Skin adnexal tumours are usually classified according to the predominant morphological component. Our study concluded that Morphological assessment is very important in evaluating skin adnexal tumours and histochemical and/or immunohistochemical stains may occasionally serve as ancillary tools.Eccrine differentiation is characterised by the presence of uniform small basaloid cells which are smaller than keratinocytes arising from eccrine duct.Follicular differentiation is characterised by the presence of proliferation of basaloid bulbar germinative cells, peripheral nuclear palisading and adjacent papillary mesenchymal cells and shadow cells.

Sebaceous differentiation is indicated by the presence of cells with coarsely vacuolated cytoplasm and starry nuclei (mulberry cells). This should be differentiated from clear cell change seen in outer root sheath differentiation. Apocrine differentiation is characterized by cells with abundant eosinophilic cytoplasm and eccentric,

basally located nuclei. In addition, there is usually evidence of decapitation secretion in the luminal cells.

Benign lesions (95.20%) are commoner than malignant lesions (4.8%). However careful evaluation of benign lesions is necessary to avoid missing out an associated microscopic focus of malignancy (as seen in a case of malignant nodular hidradenoma in this study), Nevus Sebaceous of jadasohn and proliferating trichilemmal cysts were the commonest non-neoplastic lesions and Nodular hidradenoma was the commonest neoplastic lesion. Nevus sebaceous of jadasohn, a hamartoma of pilosebaceous structures, can show changes involving eccrine and apocrine glands. Normal terminal hair follicles are characteristically absent in the lesion although the same may be seen in rest of the epidermis, a feature of diagnostic importance not usually highlighted in literature.

Limitations: The sample size was small and the study was done in a single center, so the results cannot be generalized.

Contributions:

All authors contributed to this journal

Funding: Nil

Conflict of Interest: Nil

Acknowledgement: The authors would like to thank the Dean and Head of the Department of Pathology, Government Thanjavur Medical College and Hospital, for helping and guiding in completing this research.

REFERENCES

1. David Elder, Rosalie Elenitsas, Bruce D.Ragsdale. In: Levers Histopathology of skin; 8th Edition, Lippincottwilliams and wilkins, London. 1997; 747-804
2. Sternberg 's diagnostic surgical pathology,6th edition, vol 1,editor Stacey.E.Mills, 47-48.
3. Simi et.al : Histopathological study of skin adnexal lesions with clinical correlation : March 2008
4. M. Kumaraswamy, Reddy et.al. A clinicopathological study of adnexal tumours of skin. Indian journal of medical research. 1982;75; 882-889.
5. Harsh Mohan et.al.Clinicopathologic profile of sweat gland tumours. Indian journal of Dermatology.2002;47;210-213.
6. V.P. Vaishnav and Dharkar .Adnexal tumours of skin. Indian journal of Pathology and bacteriology.1974;17;882-889.
7. KenHashimotoetal. Clearcell Hidradenoma. Archives of dermatology. 1967;96;18-39.
8. G.H. Ano-Edward ,I.O.Amole et.al .Nodular hidradenoma of the breast: a case report. Alexandria journal of med 54(2018):367-368
9. Robert G.Freemanetal.Eccrine poroma. The American Journal of clinicalpathology.1961;63:444-450.
10. Paulhirschetal.ChondroidSyringoma.Archivesofdermatology. 1961;84;177-189
11. friedrich W.Moehlenbeck.Pilomatricoma. Archeives of Dermatology,1973;108:532-534.
12. Kumar P and ChaturaKR.Proliferating trichilemmal cyst mimicking squamous cell carcinoma.Indian J Dermatol Leprology.2000;66:149-150.
13. H. Mehregan. Sebaceous tumors of the skin. Journal of Cutaneous Pathology Journal of Cutaneous Pathology 1985; 12: 196-199
14. B Liegletal,Malignant transformation in benign adnexal skintumours.Histopathology.2004;45:162-170.
15. Paul R. Vanatta. Syringocystadenomapapilliferum. The American Journal of surgical pathology.1985;9:678-683.
16. John H.Meekeretal. Hidradenoma papilliferum.The American Journal of clinical pathology.1962;37:182-195.
17. Ken Hashimoto etal.Histogenesis of skin appendage tumours.Archeives of dermatology.1969;100:356 - 369.