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SPECTRUM OF SKIN ADNEXAL TUMOURS RECEIVED AT A TERTIARY CARE CENTRE

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ABSTRACT

Aims: To study the spectrum of skin adnexal tumours received at a tertiary care center and to determine the most common histopathological subtype, age, gender and anatomical distribution of these tumours. **Study Design:** Retrospective, descriptive, observational study. **Place and duration of study:** Department of Pathology, Saveetha Medical College, Chennai between May2015 – May2021. **Methodology:** All the cases diagnosed as skin adnexal tumours during the study period were included in the study and all other cases were excluded. The demographic and histopathological details were obtained from the histopathological records from the Department of Pathology of Saveetha Medical College and Hospital, Chennai. **Results:** Of the total 44,954 specimens received over a six-year period, 0.116% (52) were skin adnexal tumours out of which 90.39%(47) were benign and 9.61%(5) were malignant tumours. Majority of the cases, 69.22% (36) were found to occur in the age group of 21-60yrs. A slight female preponderance with a male:female ratio of 1:1.48 was observed. Among the benign tumours 40.39%(21) cases were of follicular differentiation and the most common benign lesion reported in our study, was nodular hidradenoma. Majority of the malignant tumours were of eccrine differentiation with one case each of malignant nodular hidradenoma, malignant chondroid syringoma and porocarcinoma being reported during the study period. Most of these cutaneous adnexal neoplasms were found to arise in the face followed by the scalp. **Conclusion:** Skin adnexal tumours are rare entities (incidence-0.2%) exhibiting a diverse spectrum of histomorphological features depending on their tissue of origin. They can be of follicular, sebaceous, apocrine or eccrine differentiation, originating from the multipotent stem cells present within the epidermis or its appendages. They pose a diagnostic challenge due to their low incidence rate and varied histopathological presentation. Hence, a detailed histopathological examination is imperative for their accurate diagnosis.

Keywords: *Skin adnexal tumours, Eccrine, Apocrine, Sebaceous, Follicular*

1. INTRODUCTION

Skin adnexal tumours are rare entities with an overall incidence <0.2%. [(1)] They consist of a diverse spectrum of neoplasms originating from the multi-potent stem cells present in the epidermis and its appendages.[(1,6)] These tumours can be of follicular, sebaceous, apocrine or eccrine differentiation.[(5)] Although, these neoplasms are known to exhibit wide variations in their histopathological

appearances, they also show considerable overlap in between lesions of similar differentiation.[6] Most of these tumours have a non-specific clinical presentation, making histopathological examination the mainstay of diagnosis.[5]

2. MATERIAL AND METHODS

This study was conducted at Saveetha Medical College, Chennai, India. The Institutional Review Board approval was obtained. It was a retrospective descriptive study wherein hematoxylin and eosin-stained slides of sections of formalin fixed paraffin embedded tissue blocks of all cases of skin adnexal tumours received at our tertiary care centre over a period of six years (May2015- May2021) were perused. All cases of skin adnexal tumours inclusive of both resection and biopsy specimens received during the study period were included in the study whereas, all other cases of skin tumours which were not arising from skin adnexal structures were excluded. The demographic details and histomorphological findings were obtained from the case records at the Medical Records Department and the Histopathology registers in the Department of Pathology respectively. The tumours were classified according to the WHO classification of Skin tumours, 4th edition, Volume 11, 2018. Statistical analysis was done using descriptive statistics.

3. RESULTS

tumours out of which 90.39%(47) were benign and 9.61%(5) were malignant tumours. Among the benign tumours the majority of cases were of follicular differentiation 40.38% (21) followed by eccrine tumours, 34.61% (18). However, most of the malignant tumours were of eccrine differentiation accounting for 5.77% (3) cases in this study.

Fig./Table 1: Distribution of skin adnexal tumours

	Follicular	Sebaceous	Apocrine	Eccrine	Total
Benign	40.39% (21)	7.69% (4)	7.70% (4)	34.61% (18)	90.39% (47)
Malignant	1.92% (1)	1.92% (1)	-	5.77% (3)	9.61% (5)
Total	42.31% (22)	9.61% (5)	7.70% (4)	40.38% (21)	100% (52)

69.22% (36) cases of skin adnexal tumours reported during the course of this study were found to occur in the age group of 21-60yrs**.** While follicular and eccrine tumours were most commonly diagnosed in the 21-40yrs age group, sebaceous tumours were more often seen in the younger age group of 0-20yrs. Apocrine tumours, on the other hand, were encountered mostly in the older age group of 61-80yrs.

Fig./Table 2: Age distribution of skin adnexal tumours

Age Group	Differentiation				Total
	Follicular	Sebaceous	Apocrine	Eccrine	
0-20 yrs	3.85% (2)	3.85% (2)	-	-	7.70% (4)
21-40yrs	21.15% (11)	-	1.92% (1)	21.15% (11)	44.22% (23)
41-60yrs	5.77% (3)	1.92% (1)	1.92% (1)	15.39% (8)	25% (13)
61-80yrs	11.54% (6)	1.92% (1)	3.85% (2)	1.92% (1)	19.23% (10)
81-100yrs	-	1.92% (1)	-	1.92% (1)	3.84% (2)

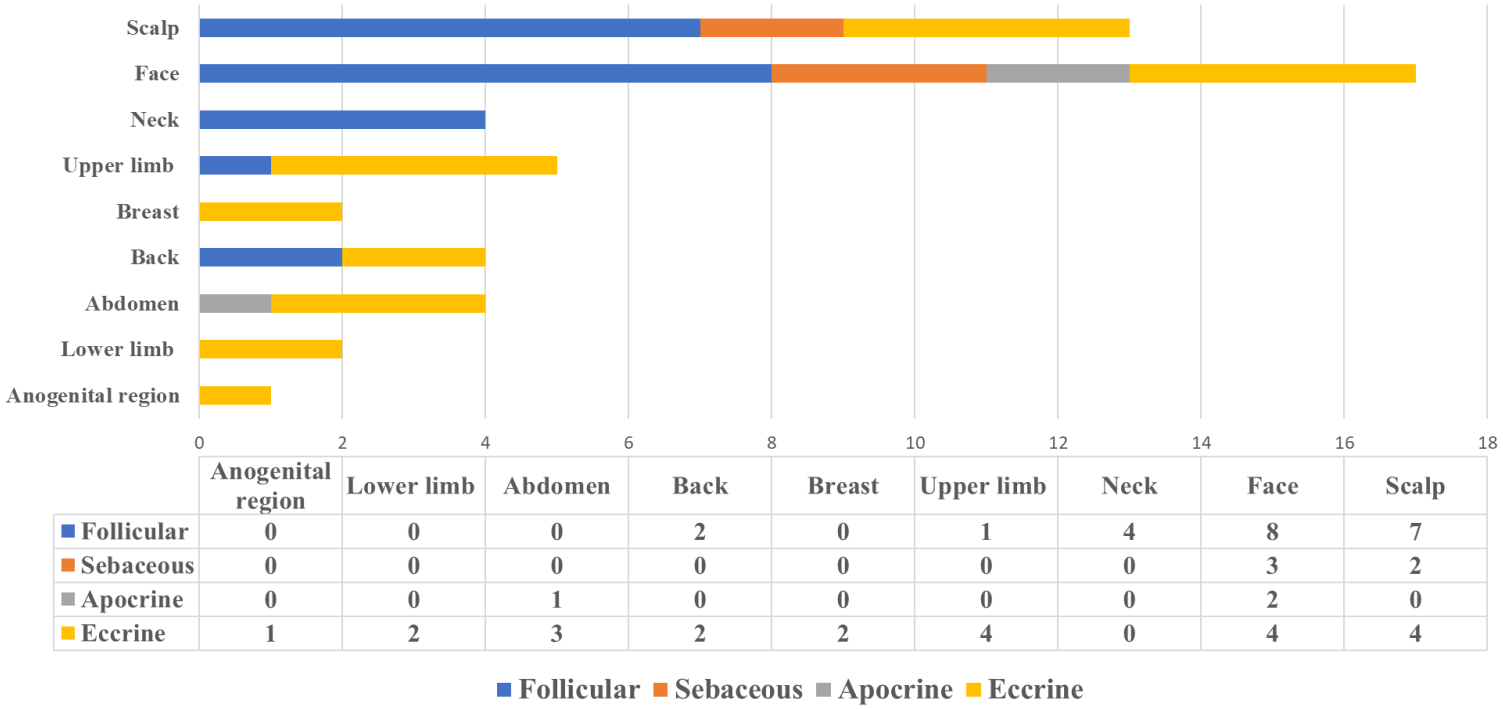
Most of the skin adnexal neoplasms in this study were diagnosed in female patients as indicated by the male: female ratio of 1:1.48 for the cases included in this study. Both benign and malignant tumours showed a preponderance of female

patients. While follicular, apocrine and eccrine tumours exhibited female predominance, tumours of sebaceous differentiation were more common in males.

Fig./Table 3: Gender distribution of skin adnexal tumours

Gender Distribution	Benign		Malignant		Total
Male	38.46% (20)		1.92% (1)		40.38% (21)
Female	51.92% (27)		7.70% (4)		59.62% (31)
	Differentiation				
	Follicular	**Sebaceous**	**Apocrine**	**Eccrine**	
Male	19.23% (10)	5.76% (3)	-	(8)	40.38% (21)
Female	23.08% (12)	3.85% (2)	7.70% (4)	25% (13)	59.62% (31)

Skin adnexal tumours were most commonly found to occur on the face, 32.7% (17), followed by the scalp 25% (13).



	Anogenital region	Lower limb	Abdomen	Back	Breast	Upper limb	Neck	Face	Scalp
Follicular	0	0	0	2	0	1	4	8	7
Sebaceous	0	0	0	0	0	0	0	3	2
Apocrine	0	0	1	0	0	0	0	2	0
Eccrine	1	2	3	2	2	4	0	4	4

Fig./Table 4: Anatomical distribution of skin adnexal tumours

Among the follicular tumours, pilomatricoma, 17.31% (9) was the most common histological variant reported in this study followed by trichoepithelioma 13.46% (7).

Fig./Table 5: Distribution of histological variants of follicular tumours

Follicular Tumours	Distribution
Pilomatricoma	17.31% (9)
Trichoepithelioma	13.46% (7)
Proliferating trichilemmal tumour	7.69% (4)
Trichoblastoma	1.92% (1)
Malignant proliferating trichilemmal tumour	1.92% (1)

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Majority of the sebaceous cutaneous adnexal neoplasms in this study were of benign nature with just 1 case of sebceous carcinoma being reported during the study period.

Fig./Table 6: Distribution of histological variants of sebaceous tumours

Sebaceous Tumours	Distribution
Nevus sebaceous	3.84% (2)
Sebaceous Hyperplasia	3.84% (2)
Sebaceous carcinoma	1.92% (1)

Only benign apocrine tumours comprising of 1 case each of cylindroma, syringocystadenoma papilliferum, tubular apocrine adenoma and hidradenoma papilliferum were encountered during the course of this study.
Nodular hidradenoma accounted for 25% (13) cases of eccrine tumours reported in this study. It was also the most common histological variant of skin adnexal tumour in this study.

Fig./Table 7: Distribution of histological variants of eccrine tumours

Eccrine Tumours	Distribution
Nodular Hidradenoma	25% (13)
Eccrine Poroma	5.77% (3)
Eccrine Hidrocystoma	1.92% (1)
Chondroid syringoma	1.92% (1)
Eccrine Porocarcinoma	1.92% (1)
Malignant nodular hidradenoma	1.92% (1)
Malignant chondroid syringoma	1.92% (1)

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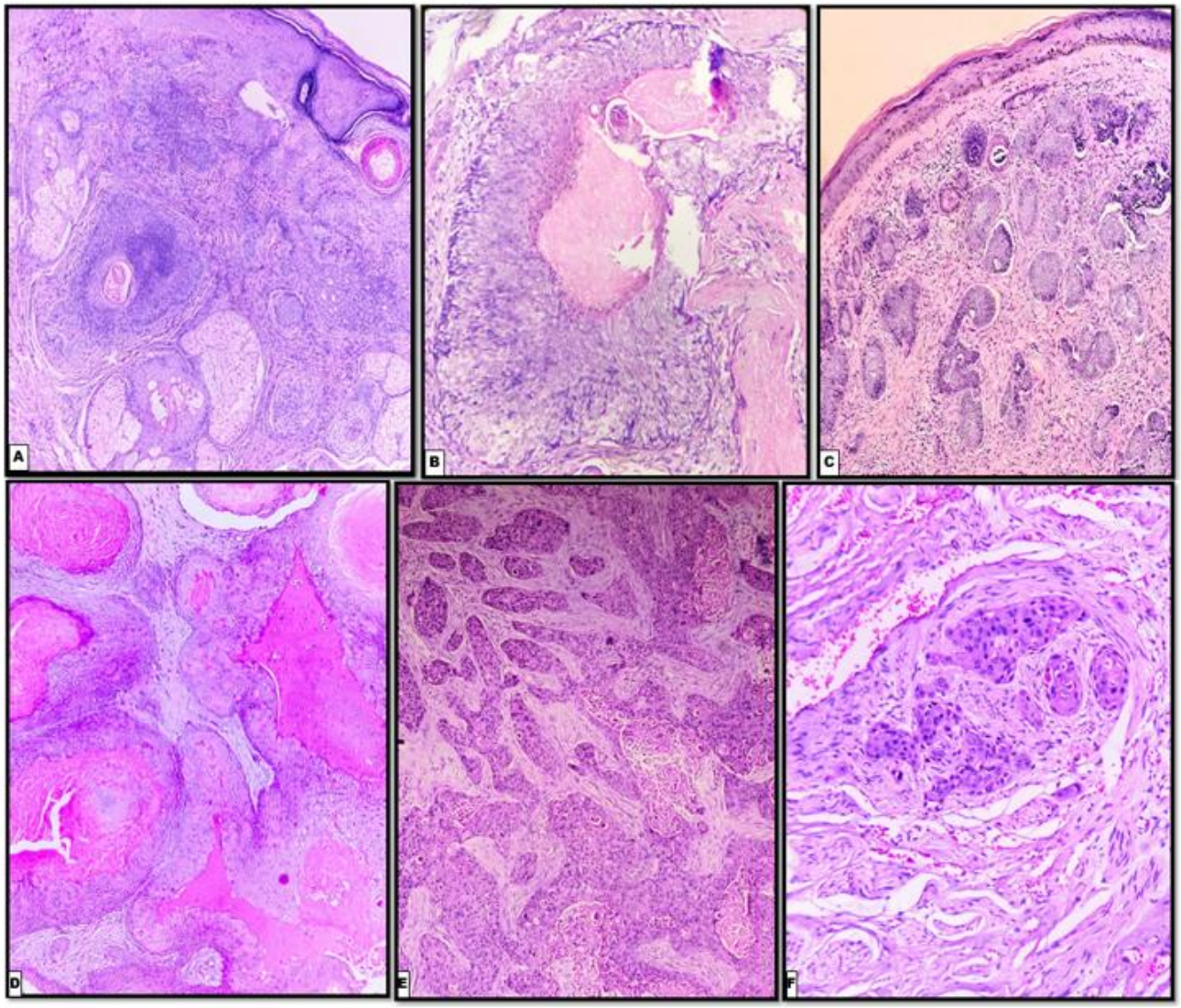
Fig./Table 8: Haematoxylin and Eosin (H&E) stained sections of skin adnexal tumours of follicular diferentiation.

Fig.Table 8: **A) Trichoepithelioma** – Lobules of uniform basaloid cells with peripheral palisading and focal papillary



mesenchymal bodies **B) Pilomatricoma** - Circumscribed benign neoplasm composed of basaloid cells with abrupt keratinisation and ghost cells **C) Trichoblastoma** - Nests of basaloid cells showing follicular differentiation amidst a fibrous stroma **D) Proliferating Trichilemmal tumour** - Lobules of squamous epithelium with abundant thickened keratin material and abrupt keratinization surrounded by hyalinised stroma with focal calcification and foreign body giant cell reaction. **E),F) Malignant Proliferating Trichilemmal tumour** - Nests, cords, trabeculae and sheets of highly pleomorphic cells having hyperchromatic nuclei with prominent nucleoli and moderate eosinophilic cytoplasm. Few nests exhibit pilar type of keratinisation and perineural invasion.

Fig./Table 9: Haematoxylin and Eosin (H&E) stained sections of skin adnexal tumours of Sebaceous diferentiation.

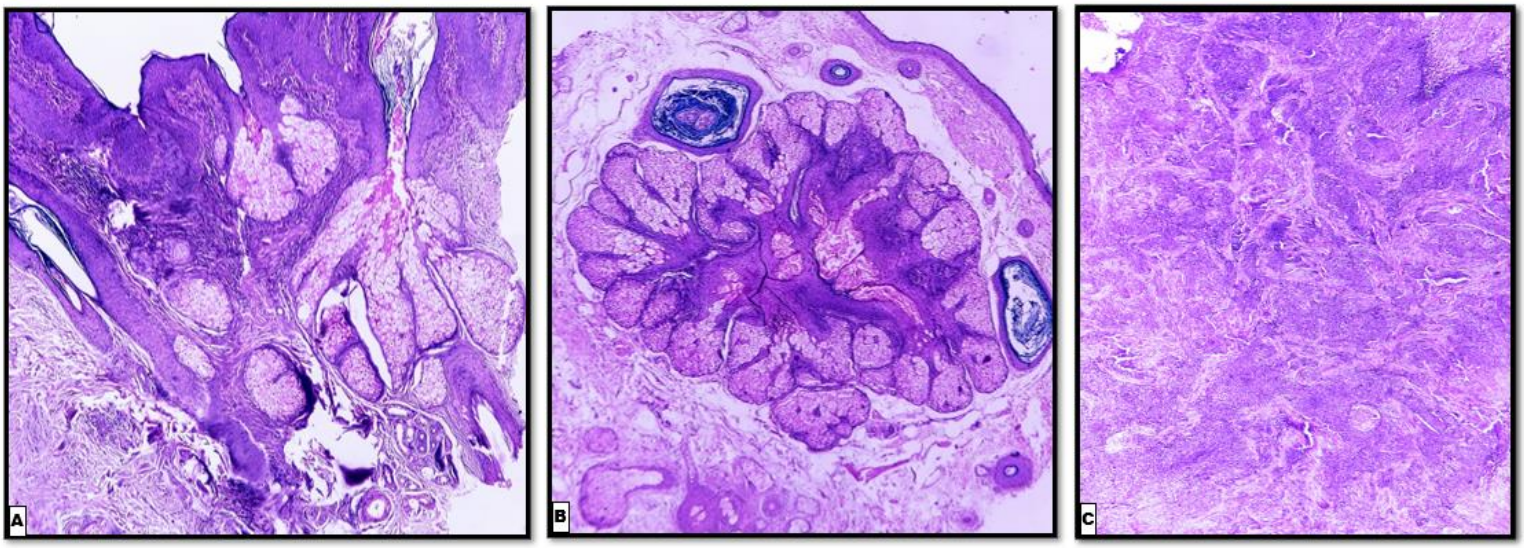


Fig.Table 9: **A) Nevus Sebaceous** - Lobules of sebaceous glands with subepidermal region showing few nests of melanocytes. **B) Sebaceous Hyperplasia** - Thinned out epidermis with a lesion composed of numerous lobules of of mature sebaceous glands grouped around a central duct. **C) Sebaceous carcinoma** – Infiltrating malignant neoplasm composed of lobules of cells with moderate eosinophilic to multivacuolated cytoplasm and hyperchromatic pleomorphic nuclei with indentation. Some of the lobules show differentiation into mature sebaceous cells.

Fig./Table 10: Haematoxylin and Eosin (H&E) stained sections of skin adnexal tumours of Apocrine diferentiation.

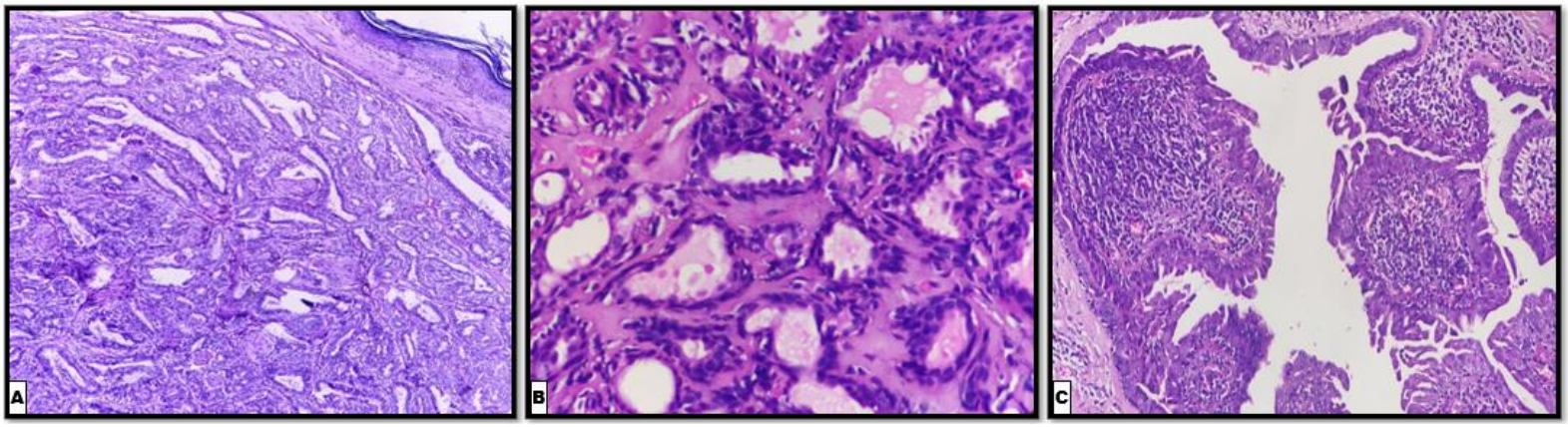


Fig.Table 10: **A) Hidradenoma Pailliferum** - Neoplasm composed of many closely packed glands lined by apocrine cells separated by slender fibrous septae along with squamous morules. **B) Tubular Adenoma** - Neoplasm composed of irregularly shaped tubules lined by two layers of cells, peripheral cuboidal cells and luminal columnar cells with apocrine snouting. Some of the tubules are cystically dilated with papillary projections into the lumen. **C) Syringocystadenoma Papilliferum** – Cysts extending from the epidermis showing numerous papillary projections into the lumen lined by apocrine cells and the core composed of dense plasmacytic infiltrates.

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Fig./Table 11: Haematoxylin and Eosin (H&E) stained sections of benign skin adnexal tumours of Eccrine diferentiation.

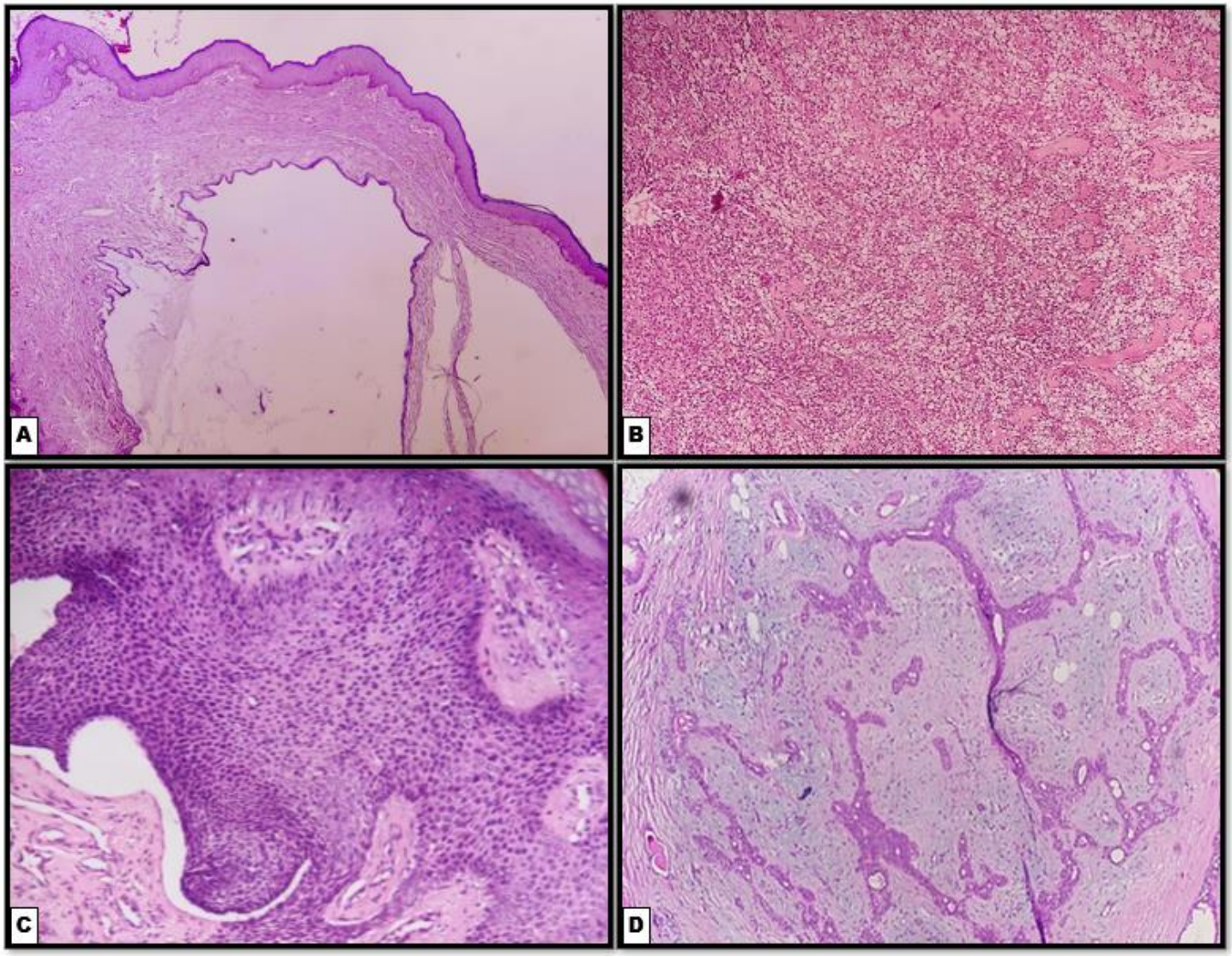

Fig.Table 11: **A) Eccrine Hidrocystoma** – Thin walled cyst lined by a single layer of cuboidal to flattened epithelium. **B) Nodular Hidradenoma** – Cysic lesion composed of lobules of clear cells and cells with eosinopillic cytopasm surrounding lumina lined by cuboidal epithelium containing eosinophilic secretion. **C) Eccrine Poroma** - Hyperkeratotic epidermis with broad anastamosing bands of cuboidal to basaloid cells extending into the dermis, devoid of peripheral pallisading. **D) Chondroid Syringoma** – Epithelial component composed of sheets, ducts and cords of cells with scant eosinophilic cytoplasm and regular round vesicular nuclei surrounded by a myxoid stroma with focal chondroid and fibrocollagenous areas.

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Fig./Table 12: Haematoxylin and Eosin (H&E) stained sections of malignant skin adnexal tumours of Eccrine diferentiation.

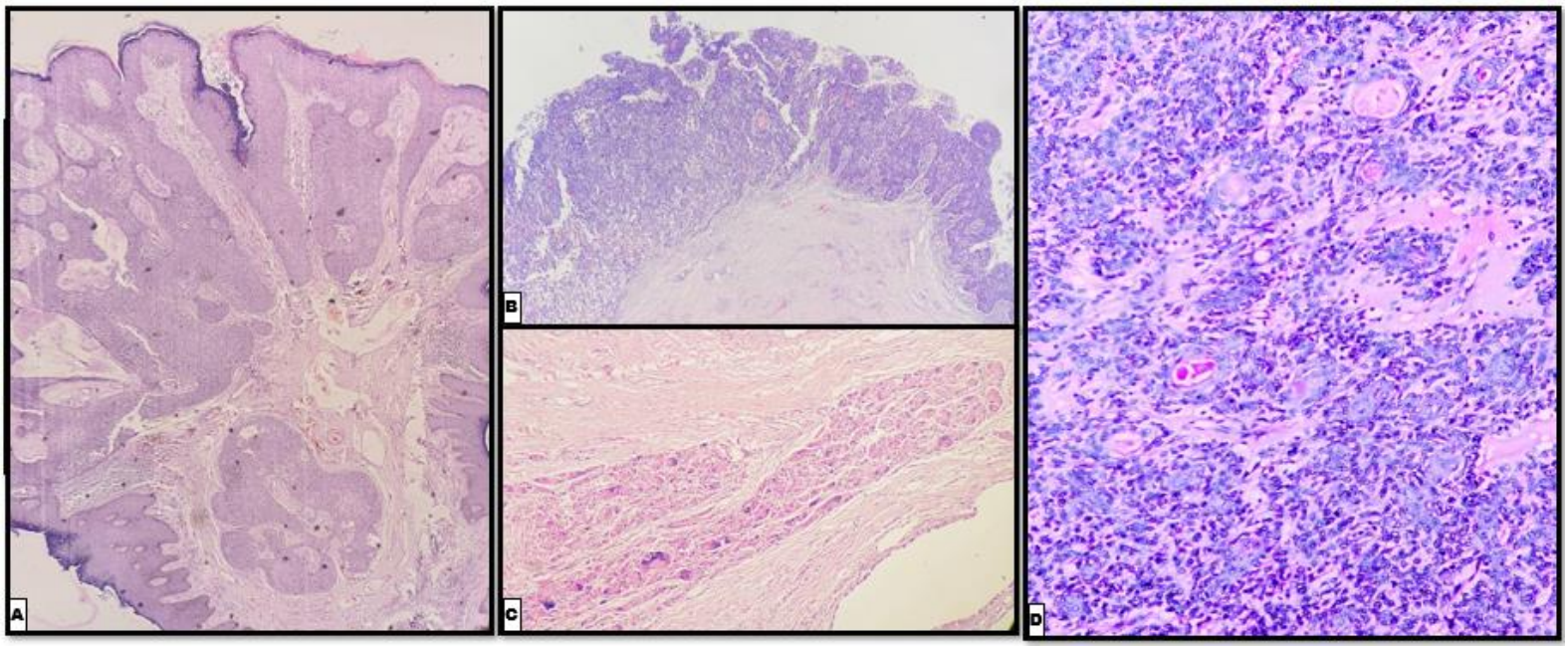

Fig.Table 12: **A) Porocarcinoma** – Infiltrating tumour seen extending into the dermis composed of small non-pigmented keratinocytes arranged in cords, nests,ducts admixed with few areas of squamous differentiation along with scattered lymphocytes, neutrophils, fibrinoid material and congested blood vessels and occasional mitoses(1-2/HPF). **B), C) Malignant Nodular Hidradenoma** – Infiltrating malignant neoplasm composed of nests and sheets of cells with scant to moderate eosinophilic to vacuolated cytoplasm and moderately pleomorphic vesicular nuclei, some with prominent nucleoli along with increased mitotic figures, few of thme atypical (2 to 4 per high power fields). **D) Malignant Chondroid Syringoma** – Tumour composed of cells with mildly pleomorphic nuclei arranged in sheets and cords; and ducts lined by two layers of cells enclosing lumen filled with eosinophillic material surrounded by a loose myxoid stroma withchondromyxoid elements and focal areas of hyalanisation.

4. DISCUSSION

In our study, the incidence of skin adnexal tumours was 0.116%. This was in concordance with the study conducted by Jayanthi et al. [(1)] As reported in other studies, benign neoplasms were more to be more common than their malignant counterparts. [(1-8)] The highest number of cases were reported in the age group of 21-40yrs, as seen in studies conducted by Kaur et al, Nayak et al and Vishwanathan et al. A slight female preponderance with a male: female ratio of 1:1.48 was observed. [(1,6)] Majority of the cases in our study were of follicular differentiation followed by eccrine differentiation as reported by Nayak et al. [(2)] Among the benign tumours 44.68%(21) cases were of follicular differentiation and the most common benign lesion reported in our study was nodular hidradenoma. [(2,6)] Most of these cutaneous adnexal neoplasms were found to arise in the face followed by the scalp. [(7,8)]

	THIS STUDY	Jayanthi et al.	Nayak et al.	Kaur et al.	Suri et al.	Jeyanthi et al.	Sharma et al
INCIDENCE	0.116%	0.22%	-	0.3%	66/10,000	0.27%	-
BENIGN (%)	90%	86.95%	97.7%	82.73%	93.94%	78.6%	80.36%
MALIGNANT (%)	10%	13.05%	2.3%	17.27%	6.06%	21.4%	19.64%
M/c DIFFERENTI - ATION	Follicular	Eccrine	Follicular	Follicular	Follicular	Sweat gland tumours	Sweat gland tumours
M/c AGE GROUP	21-40yrs	51-60yrs	31-40yrs	20-39yrs	31-40yrs	51-60yrs	51-60yrs
M:F ratio	1:1.48	1:2.06	1.38:1	1.03:1	1.44:1	1:1.33	1.07:1
M/c Site	Face	-	Scalp	Face	Face	Scalp	Face
M/c BENIGN TUMOUR	Nodular Hidradenoma	Eccrine poroma, Nevus Sebaceous	Nodular Hidradenoma	Pilomatricoma	Pilomatricoma	Nodular hidradenoma	Clear cell Hidradenoma, Pilomatricoma
M/c MALIGNANT TUMOUR	-	Porocarcinoma	Sebaceous carcinoma	Sebaceous carcinoma	Sebaceous carcinoma	Sebaceous carcinoma	Sebaceous carcinoma

Fig./Table 13: Literature review

5. CONCLUSION

Skin adnexal tumours are rare entities, exhibiting a diverse spectrum of histomorphological features depending on their tissue of origin. Most of these tumours are benign with a very low incidence of malignant tumours. They are most commonly found to occur in the head and neck region with face and scalp being most commonly involved. Clinical diagnosis of these tumours is difficult because of their non-specific clinical presentation. These tumours pose a diagnostic challenge due to their low incidence rate and varied histopathological presentation. Since histopathology is the gold standard for diagnosing these neoplasms, familiarity with the various presentations of these lesions is essential for their prompt and accurate diagnosis.

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COMPETING INTERESTS – Nil

AUTHORS' CONTRIBUTIONS

[4]Dr.Ganthimathy Sekhar designed the study. [1*]Dr.Neha Agarwal wrote the protocol, the first draft of the manuscript and managed the analyses of the study. All authors read and approved the final manuscript. [2]Dr. Danita G.S Edwin and [3]Dr. Niveditha E.N. performed the statistical analysis managed the literature searches.

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