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A Morphologic Study of Cutaneous Adnexal Tumours

Pathology Section

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ABSTRACT

Introduction: Cutaneous adnexal tumour is a collective term for tumours arising from various adnexal units of the skin. These tumours share many common features even though they differentiate along one line. They can only be categorized on microscopic examination and not by clinical manifestations. Their microscopic classification also is difficult owing to the variety of tissue elements, patterns and metaplastic transformations in these tumours.

Aim: To review and classify all dermal adnexal tumours diagnosed in the Pathology Department of SMVMCH over the period of six years spanning from January 2007 to December 2012, and also to differentiate dermal adnexal tumours from other cutaneous tumours by pattern recognition (morphological identification of varied histopathological features).

Materials and Methods: All adnexal tumours diagnosed in the Pathology Department of Sri Manakula Vinayagar Medical College and Hospital (SMVMCH) over the period of six years was studied. The Haematoxylin and Eosin stained slides were analysed for patterns to differentiate each entity from other cutaneous tumours.

Results: Twenty adnexal tumours were diagnosed over a period of six years. Clinical presentations varied from discrete swellings and nodules to ulcerated masses. Most of the lesions were distributed in the head, neck and extremities. Histologically 17 cases were benign and three tumours were malignant. Commonest tumour encountered was eccrine acrospiroma followed by pilomatricoma and syringoma. Malignant tumours encountered were eccrine porocarcinoma, malignant eccrine spiradenoma and malignant adnexal tumour.

Conclusion: Cutaneous adnexal tumours are complex due to their diverse origin and varied histological appearance. Many of these entities have morphological overlap. Although majorities of adnexal tumours are benign, malignant counterparts are also rarely encountered, causing further diagnostic difficulties. By far the commonest variant in the present study was of eccrine sweat gland origin.

Keywords: Apocrine, Eccrine, Haematoxylin & Eosin, Hair follicles

INTRODUCTION

The adnexa are part of the skin and are composed of different kinds of cells that can give rise to a wide variety of tumours. It is comprised of sweat glands, sebaceous glands and hair follicles, all of which share the same origin. Their detailed morphological classification is difficult because of the variety of tissue elements and patterns seen [1-3].

Adnexal tumours have to be differentiated from other primary cutaneous neoplasm and cutaneous metastasis. Primary cutaneous neoplasm are histopathologically diverse varying from hamartomas, cysts and benign to malignant tumours. Cutaneous metastasis occurs in 10% of patients with internal carcinomas [4,5].

Adnexal tumours are significant because some can give a clue to the association of internal visceral malignancy like multiple trichilemmoma and breast carcinoma which is termed as Cowden's disease [5,6]

Dermal adnexal tumours pose diagnostic difficulty due to morphological overlap. They are relatively uncommon and exact prevalence is unknown. Common sites are head and neck, trunk, and extremities. They are classified according to appendageal differentiation [4,5].

MATERIALS AND METHODS

This retrospective study was conducted over a period of six years from January 2007 to December 2012, in the Department of Pathology at Sri Manakula Vinayagar Medical College and Hospital, Puducherry. The clinicopathological details like age, gender, site of involvement and clinical diagnosis were collected from the histopathology requisition forms for the given period. Histopathologically diagnosed adnexal tumours only were included in this study and the other epidermal tumours of skin were excluded. The formalin fixed paraffin embedded tissue sections stained with Haematoxylin and eosin were retrieved and subjected to histopathological examination and analysed. Totally 20 cases of adnexal tumours were included in this study. The tumours were

categorised on the basis of adnexal origin. This study was approved by the institutional ethical committee. Since, this study was retrospective and descriptive study and the values were expressed in percentage, the individual parameters were not comparable to obtain a statistical significance. Hence, the data were analysed by using software Statistical Package for Social Science (SPSS), version 16.0 and results were expressed in percentage.

RESULTS

There were 20 adnexal tumours encountered during the six year period. Clinical presentations varied from discrete swellings, nodules, and ulcerations. Most of the lesions were distributed in the head, neck, and extremities. Histopathologically 17 cases were benign and only three tumours were malignant.

Most common tumours in the present study belonged to sweat gland differentiation (60%), followed by hair follicle (30%). Only two cases were of sebaceous gland differentiation (10%).

Eccrine acrospiroma (25%) was the most common benign neoplasm in tumours with eccrine differentiation, followed by syringoma (10%). Out of the three malignant tumours, two lesions showed eccrine differentiation and the third was undifferentiated.

Pilomatricoma was the commonest tumour with hair follicle or pilar differentiation with three cases (15%) followed by one case each of trichoepithelioma, trichoadenoma and proliferating trichilemmal tumour. No malignant tumour with pilar differentiation was observed in this study. Only two benign lesions were encountered with sebaceous differentiation [Table/Fig-1].

Diagnostic Patterns of Individual Lesions

Poroma typically forms a psoriasis-like epidermal extension into the papillary dermis as anastomosing bands of uniform tumour cells that are smaller and more glycogenated than adjacent keratinocytes [Table/Fig -2].

Eccrine porocarcinoma [Table/Fig-3] is based on the presence of an asymmetrical, invasive architectural pattern and/or significant cytologic atypia in a tumour showing eccrine differentiation.

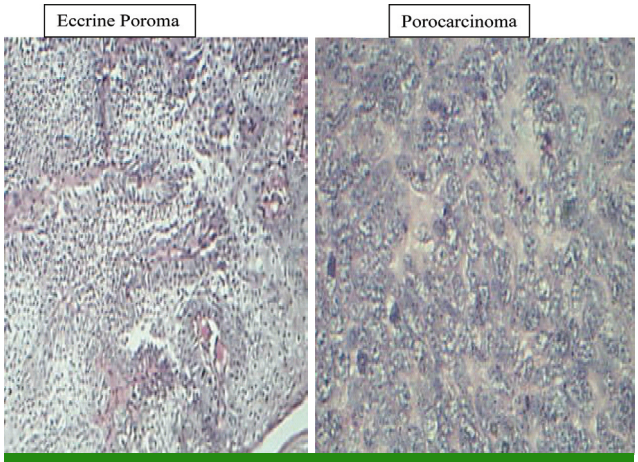
Nodular hidradenoma [Table/Fig-4] also termed as eccrine acrospiroma is formed by closely aggregated tumour cells displaying a round, fusiform, or polygonal biphasic cell population. The eosinophilic cell type is a large cell with abundant, eosinophilic, finely granular cytoplasm. The clear cell type has clear cytoplasm, probably owing to glycogen content, and a smaller, more eccentrically placed nucleus.

Syringoma [Table/Fig-5] is characterised by comma shaped ducts distributed in the papillary dermis.

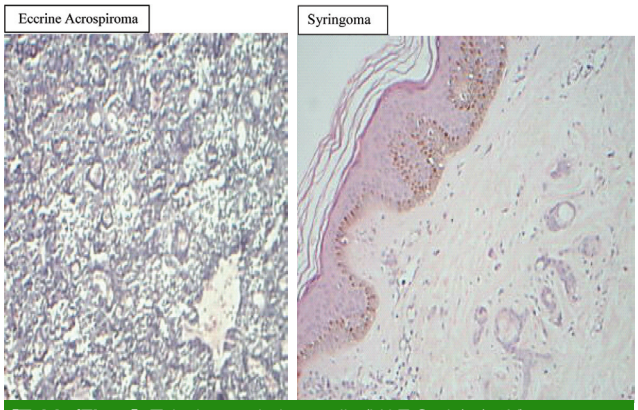
Papillary syringoadenoma [Table/Fig-6] has a characteristic appearance of papillae lined by two layers of cells with the central core infiltrated by lymphocytes and plasma cells.

	Eccrine Sweat Gland	Hair Follicle	Sebaceous Gland
Benign	Eccrine acrospiroma (25%)*	Pilomatricoma (15%)	Nevus sebaceus of Jadassohn (5%)
	Eccrine poroma (5%)	Trichoepithelioma (5%)	Apocrine hidrocystoma (5%)
	Syringoma (10%)	Trichoadenoma (5%)	
	Papillary syringoadenoma (5%)	Proliferating trichilemmal tumour (5%)	
Malignant	Sweat Gland Carcinoma (15%)	—	—
Total (%)	12(60%)	6(30%)	2(10%)

[Table/Fig-1]: Distribution by origin of dermal adnexal tumours.

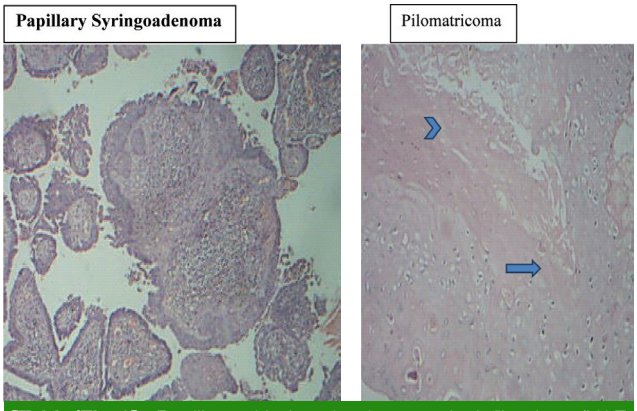


[Table/Fig-2]: Streaming of benign keratinocytes with cytoplasmic vacuolation ,(H&E Stain),(40X).
[Table/Fig-3]: High Mitotic Activity & Nuclear Atypia, (H&E Stain), (40X).



[Table/Fig-4]: Tubules and clear cells (H&E Stain), (40X).
[Table/Fig-5]: Coma shaped duct (H&E Stain), (10X).

Pilomatricoma [Table/Fig-7] is a sub-epidermal entity displaying a biphasic pattern of keratinized ghost cells surrounded by variable numbers of basaloid cells.



[Table/Fig-6]: Papillae with lymphoplasmacytic infiltration, (H&E Stain), (20X).
[Table/Fig-7]: Ghost cells and abrupt keratinization, (H&E Stain), Arrow-Ghost cells; arrow head—Abrupt keratinization.

DISCUSSION

Skin appendageal tumours differentiate along one adnexal line and their overall incidence is low in our Indian population. There is no proper literature available regarding the racial and geographic incidence of these tumours and their etiopathogenesis is also not clear [5]. In a study by Samaila et al., [6] over a 16 year period a total of 5642 cases of cutaneous tumours were studied, of which only 52 cases were of cutaneous adnexal tumours [Table /Fig- 8].

S. No	Types of Tumours	Our Study (6 Year Period)	Samaila et al., (16 Year Period) [6]	Saha et al., (1 Year Period) [4]	Krishnakanth et al., (3 Year Period) [9]
1.	Eccrine Tumours	45%	67.2%	56.52%	28.57%
2.	Hair Follicle Tumours	30%	7.8%	26.08%	57.14%
3.	Sebaceous tumours	10%	13.5%	17.39%	-----
4.	Malignant tumours	15%	11.5%	-----	14.29%

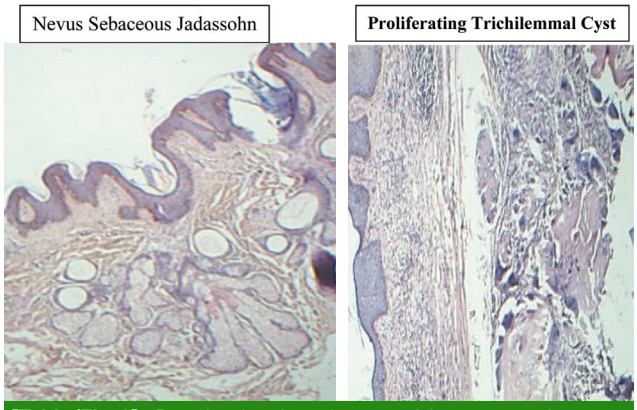
[Table/Fig-8]: Comparison of present study with previous results.

The sweat gland tumours were the largest group encountered in this study. The complex nature of the sweat gland may be responsible for this wide distribution of tumours [3]. Eccrine acrospiroma was the commonest tumour encountered in this study, where as syringoma was the predominant tumour in the study done by Saha et al.,[4].

Eccrine acrospiroma (nodular hidradenoma) [Table/Fig-4] was distributed in nearly all the sites including head, face, and extremities. Histopathology showed nodules with well circumscribed sheets and nests of tumour cells consisting of round cells with hyperchromatic nuclei and clear cytoplasm restricted to the dermis [7-10]. These clear cells and cystic change differentiate eccrine acrospiroma from eccrine spiradenoma.

Syringoma [Table/Fig-5] was the next common tumour of the eccrine origin. Differential diagnosis of syringoma includes microcystic adnexal carcinoma (MAC) which also has ductal structures.MAC differs from syringoma in its deeply invasive growth pattern, including perineural invasion, and in its lack of circumscription.

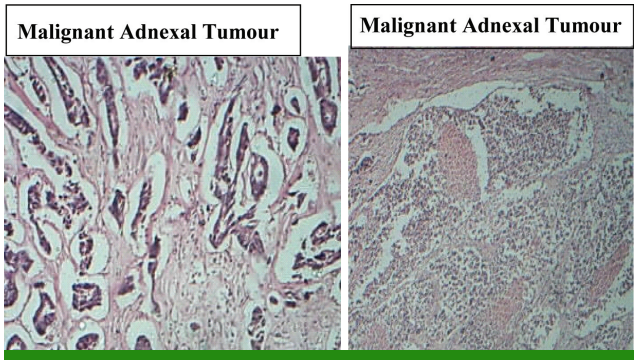
Nevus sebaceous of Jadassohn is not neoplastic rather a tumour like lesion because of its hamartomatous conglomerate of sebaceous glands and heterotropic apocrine glands and defective hair follicle [Table/Fig-9]. The tumours of hair follicle, like those of sweat gland, have varying histological features than with similar clinical presentations [11-13].There were five cases of hair follicle tumours in which three were pilomatricoma, one each of trichoepithelioma, trichoadenoma and proliferating trichilemmal tumour [Table/Fig-10]. The pilomatricoma is a frequently misdiagnosed entity in clinical practice [14-17].



[Table/Fig-9]: Dermis showing clusters of immature sebaceous glands, (H&E Stain), (20X).
[Table/Fig-10]: Cyst wall surrounded by calcification & foreign body reaction to keratin, (H&E Stain,(20X).

Solitary trichoepitheliomas are sometimes difficult to distinguish from a basal cell carcinoma (BCC).This confusion is understandable because of the linear differentiation of these tumours [6]. The BCC differs by peripheral palisading of cells and clefting of stroma around the tumour nests. The proliferating trichilemmal tumour [Table/Fig-2-7,9,10] mimics a well differentiated squamous cell carcinoma. The lack of stromal invasion, mitosis and malignant keratin eddies help in diagnosing proliferating trichilemmal tumour.

Malignant adnexal tumours are rare worldwide and especially in India [6]. Malignant appendage tumours were the least common in one study conducted by Adeyi O and Banjo A [8]. But in this study, three malignant cases were encountered [Table/Fig-11,12]. It represents 15% of the 20 tumours reviewed. These 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. They are commonly distributed



[Table/Fig-11]: Pleomorphic Irregular Glands (H & E Stain), (40X).
[Table/Fig-12]: Comedo Necrosis (H&E Stain), (40X).

in the head, neck and trunk [18-20]. The limitations of this study was the small sample size.

CONCLUSION

Dermal adnexal tumours are uncommon tumours. They arise and differentiate into various adnexal units of skin .This gives rise to characteristic patterns histologically, which may be helpful to identify the individual entities belonging to this group as well as to recognize from tumours of cutaneous and soft tissue origin. Adnexal tumours are often benign with occasional exceptions which also have to be differentiated from cutaneous metastasis. Histopathological pattern recognition serves as a sole criterion for the diagnosis of dermal adnexal tumours.

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