

Case Series of Skin Adnexal Tumours

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ABSTRACT

Background: Skin adnexal tumours (SATs) are a large and diverse group of benign and malignant neoplasms. They are uncommon. They can be single or multiple, sporadic or familial and they might be markers for syndromes associated with internal malignancies. Benign adnexal tumours are more common and malignant SATs are rare and are locally aggressive and have the potential for nodal involvement and distant metastasis with a poor clinical outcome. Therefore recognition of SATs and establishing a diagnosis of malignancy in SATs is important for therapeutic and prognostic reasons.

Aims and Objectives: SATs are rare benign and malignant neoplasms. They are not commonly encountered in the routine surgical pathology practice. Hence this study aims at finding the frequency, clinical presentation and the histopathological appearances of SATs, and the differentiating features between benign and malignant tumours.

Materials and Methods: This is partly a retrospective and partly a prospective study done in a tertiary care hospital over

a period of four years. All the SATs reported during this period are analysed for their clinical features, age, sex incidence and their gross and histopathological features.

Results: In the four years period 1,64,220 patients attended the hospital. The total number of SATs reported during this period were 21 cases (0.0128 %). Benign tumours were 19 (90.48%). Malignant tumours were 2 (9.52%). The mean age for males 36.9 years and for females 35.2 years. There were 11 male patients and 10 female patients. Tumours of hair follicular differentiation were 7 (33.33%). Tumour like lesion of sebaceous origin was 1 (4.76%). Tumours of sweat gland origin were 11 (52.38%). Malignant tumours of eccrine origin were 2 (9.52%).

Conclusion: SATs are not common. Their incidence in our study is only 0.0128 % of all cases. Even though benign SATs are more common than the malignant tumours, malignant SATs can occur both in young and elderly patients and they are aggressive and the SATs should be excised with wide tumour free margins.

Keywords: Adnexal, Benign, Gold Standard, Histopathology, Malignant, Skin

INTRODUCTION

SATs are a large and varied group of neoplasms which differentiate towards pilosebaceous apparatus, apocrine and eccrine sweat glands [1-3]. However, the apparent differentiation is not always distinct and some tumors can display elements of mixed differentiation. These divergences can be due to their origin from pluripotent stem cells [1-4]. Usually SATs present as papules and nodules but they have distinct histological features [1-5]. Most SATs are benign. However, diagnosing them may have 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 [1-3]. For every adnexal tumours described there is a malignant counterpart. Although malignant tumours are rare they are aggressive, have the potential for nodal involvement and distant metastasis with a poor clinical outcome [1-4]. Therefore, establishing the diagnosis of malignancy in SATs is important for therapeutic and prognostic purposes. In this study we have analysed the frequency, clinical features, gross and microscopic features and the differentiating features between benign and malignant SATs.

MATERIALS AND METHODS

This is partly a retrospective and partly a prospective study spanning over a period of four years from 2009 wise distribution of normal to 2013 in a tertiary care teaching hospital of a newly started medical college. The SATs diagnosed in the Department of Pathology are meticulously studied. Routine Haematoxylin and eosin staining and special stains wherever necessary are used. The age, sex, clinical presentation of the tumours including single or multiple tumours, their association with genetic inherited syndromes and their

gross and histopathological features were studied and tabulated. The gross features and histopathological features of benign and malignant tumours were studied.

RESULTS

Total of 1,64,220 patients attended the OPD in four years period and out of that 21 patients had SATs. The SATs formed only 0.0128% of all cases. Benign tumours were 19 (90.48%). Malignant tumours were two (9.52%), and all the cases attended the surgical OPD for their complaints. There were 10 cases with the tumours situated in the head and neck region. They presented as plaques, nodules and one case of syringo cystadenoma papilliferum showed surface ulceration with scab and another case of malignant cylindroma showed ulceration of overlying skin. Six tumours were more than 3cms size and the maximum diameter of 5cms was seen in one case of cylindroma of scalp. The rest of the 16 tumours measured less than 3cms. Tumours of hair follicular differentiation were seven (38.25%). Tumours of sweat gland origin were 11 (47.61%) (eccrine 8, apocrine 3). Tumour like lesion of sebaceous origin was one (4.76%). Malignant tumours were two and both were of eccrine sweat gland origin. The clinical diagnosis of all these cases was dermoid cyst, haemangioma, sebaceous cyst, granuloma and nevus. The clinical features, age, sex, gross and histopathological diagnosis are given in [Table/Fig-1].

DISCUSSION

SATs are a large and heterogeneous group of neoplasms. Most SATs are benign with low incidence of malignant neoplasms. In our study the incidence of SATs is 0.0128%. The male female ratio is 1.1:1. The benign malignant ratio is 9:1. All the 21 tumours reported in

sno	Biopsy no	Age	Provisional diagnosis	Gross	HistoPathological diagnosis
1.	718-09	23/M	cylindroma, scalp mass	skin attached soft tissue with a nodule beneath measuring 4x5x3.5cm with hair follicles along with areas of hemorrhage	cylindroma
2	482-10	31/M	right cervical lymphadenopathy	firm to hard globular mass measuring 3x1x1cm	Pilomatricoma
3	301-11	36/F	Non healing ulcer scalp wedge biopsy	Two pieces of greyish white soft tissue varying in size from 0.8 to 1.3cm in maximum dimension	Papillary syringocystadenoma
4	614-11	48 -M	Cyst eyelid	Small grayish white skin attached greyish white nodule measuring 1x0.5x0.5cm, cut section grey white with small cyst measuring 0.2cm	Apocrine hidrocystoma
5	1069-11	46/F	Swelling in the face	Soft tissue 1x1cm	Trichoepithelioma
6	1444-11	21/F	sebaceous cyst right arm	Soft tissue 2x2cms c/s whitish	Pilomatricoma
7	421/13	42/M	Cystic swelling right knee inferior aspect excision biopsy	Skin covered soft tissue measuring 1.2x0.8x0.5cm, cut section was grey white	Nodular hidradenoma
8	258-12	59/F	sebaceous cyst scalp	Soft tissue 1x1cms	Trichoblastoma
9	715-12	5/F	Subcutaneous swelling left arm	Calcified hard tissue measuring 3x2x2cm	Pilomatricoma
10	947-12	27/M	right side dermoid cyst in the index finger	2x2 cms cystic and solid tissue	Digital papillary adenocarcinoma
11	1253/12	37/M	Sebaceous cyst forehead, cyst wall excision biopsy	Skin covered soft tissue measuring 1x0.8x0.5cm	Steatocystoma multiplex
12	272-13	27/F	Sebaceous cyst in right labia majora, excision biopsy	Single grey white soft tissue measuring 1x0.8x0.5cm cut section is grey white	Hidradenoma papilliferum
13	421/13	42/M	Cystic swelling right knee inferior aspect excision biopsy	Skin covered soft tissue measuring 1.2x0.8x0.5cm, cut section was grey white	Nodular hidradenoma
14	561-13	24/M	left side face nevus	1x1 cm soft tissue	Chondroid syringoma
15	801-13	33/M	conjunctival cyst	received a cystic soft tissue measuring 1.2cm in diameter, C/S is unilocular, thin walled with serous fluid	eccrine cystadenoma
16	1415-13	33/F	Dermoid cyst	Single multinodular soft tissue measuring 3x2x1cm, C/S show grey white areas with focal areas of calcification	Proliferative trichilemmal tumor
17	1574-13	30/F	Lipoma forearm	single cystic soft tissue measuring 1x.8x.5cm, C/S is grey white with areas of hemorrhage	Pilomatixoma
18	1787-13	66/M	hemangioma palm left side	2 pieces of grey white soft tissue larger measuring 2.5x2x1cm, smaller measuring 1x.8x.5cm, random bits processed	Eccrine poroma
19	2202-13	41/F	Granuloma left knee	Skin attached soft tissue measuring 3x2x2cm, attached skin measures 2x2cm. The lesion was globular grey brown to pink in coloration. Cut section show grey brown areas.	Eccrine poroma
20	2206/13	54/F	Recurrent capillary hemangioma upper lip	Single soft grey white tissue measuring 2x1x1cm, cut section show grey white areas with focal areas of hemorrhage	Malignant dermal eccrine cylindroma
21	2179/13	33/M	Sebaceous cyst face excision biopsy	3 pieces of grey brown soft tissue measuring 2x1.2x0.6cm	Nodular hidradenoma with calcification and hyalinization

[Table/Fig-1]: Profile of SATs in present study with their mean age

our study were single lesions and they were not associated with any genetic syndrome. Ten cases were found in the head and neck region. Clinical diagnosis of these tumours is often difficult as most of them present as papules, plaques and nodules [1-5]. In our study in only one case of cylindroma the clinical and the histopathological diagnosis correlated. The rest of the SATs were clinically diagnosed as sebaceous cyst, dermoid cyst, haemangioma, granuloma, and lymphadenopathy. Though anatomic location, number, distribution can provide a clue to type of tumour it is only histopathology which is the gold standard in the diagnosis of SATs [4]. Most of the patients with SATs present to the Surgery OP for their complaints. In our series all our patients attended the Surgery OPD for their complaints. The benign & malignant tumours reported in our study are given in [Table/Fig-2].

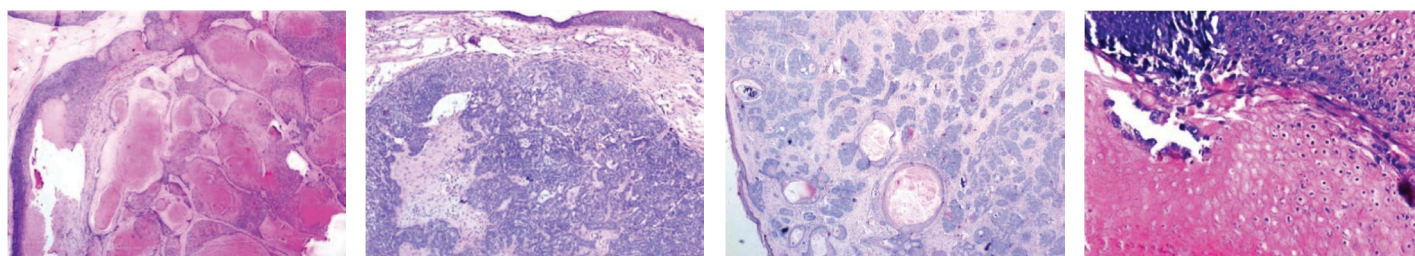
SATs are said to differentiate towards different adnexal cell line. They can also differentiate towards more than one cell line in the same tumour. This could probably be due to their origin from pluripotent stem cells [1-4]. In our study there was no differentiation towards more than one cell line and there was differentiation towards single cell line only. Even though most SATs are benign, malignant forms definitely occur but the incidence of malignant tumours is low. In our study there were two malignant tumours reported. Aggressive digital eccrine papillary adenocarcinoma reported in our study is a very

rare malignant SAT and most of the studies have not reported this tumour in their studies [5-7]. Present study shows pilomatricoma of hair follicular differentiation as the predominant tumour. In some other studies nodular hidradenoma is the predominant tumour [5]. Gayathri et al., in their study have described trichoepithelioma of hair follicular origin to be the predominant tumour [6]. Follicular differentiation is identified by Proliferation of basaloid bulbar follicular germinative cells, peripheral nuclear palisading, adjacent papillary mesenchymal bodies and matrical ghost cells [1-4]. Apocrine differentiation is by the presence of decapitation secretion [1-4]. Eccrine differentiation by the presence of tubules [1-4] sebaceous differentiation is seen by the presence of the mulberry cells with clear vacuolated cytoplasm [1-4].

There are certain general characteristic differentiating features between benign and malignant SATs. Benign tumours show symmetry, vertical orientation with V-shape, uniform collection of epithelial cells with dense fibrotic stromal reactions around tumour cells and absence of necrosis, atypia and mitosis [1-4,8]. Malignant SATs show asymmetry, horizontal orientation of tumour, irregular arrangement of cells with infiltration with necrosis, atypia and mitosis with diminished tumour associated sclerotic stroma. Tirumalee et al., have stressed the importance of examining under scanner view magnification to assess the silhouettes of SATs to

sno	Tumour	Site & clinical details in our study	Histopathology
1.	Proliferating trichilemmal tumour	single case in the scalp measuring 3cm in size	multiple lobules of squamous epithelium with typical abrupt trichilemmal keratinisation in the centre.[Table/Fig-3a]
2.	Trichoblastoma	single case reported in our study presented as a single Solitary nodule located in deep dermis and subcutis of scalp. Usually seen in the in the head and neck and can also be seen in extremities, trunk , pelvic region . Our case was typically less than 1cm .	well circumscribed with basaloid germ cells with lace like epithelial components. [Table/Fig-3b]
3.	Trichoepithelioma	single case reported in our study presented as a single plaque typically in the face. It can be sporadic or can be multiple and familial. Most common site is the head and neck region.	Symmetric lesion with a mixture of epithelial elements ranging from hair germs associated with papillary mesenchymal bodies and small horn cysts. [Table/ Fig-3c]
4.	Pilomatrixoma	reported 4 cases of Pilomatrixoma. They presented in the head and neck region and also in extremities. They typically presented as subepidermal tumour	Biphasic pattern of keratinized ghost cells surrounded by variable numbers of basaloid cells. [Table/Fig-3d]
5.	Steatocystoma	Single case reported, a skin coloured blue to black papule in the face.	cyst with lining similar to corrugated cuticle of sebaceous ducts with sebaceous glands was seen. [Table/ Fig-3e].
6.	Cylindroma	A single case reported in our study was in the scalp in a 54 y old female. Usual location is in the head and neck region. Smaller subsets can be seen in distal extremities	An unencapsulated dermal tumour with nests and islands of round cells with amphophilic cytoplasm in the centre with basaloid cells in periphery surrounded by hyaline basement membrane material. Tubular structures are also seen. Occasional cases can undergo malignant transformation. chondroid syringoma(mixed tumour of skin) The single case reported was a papule in the face. Histologically well circumscribed with Tubular or ductal structures of either eccrine type are loosely embedded in a myxoid, chondroid stroma matrix, located in the dermis or subcutis. [Table/ Fig-3f]. In our case only eccrine type of cells were seen.
7.	Eccrine poroma	Two cases reported in our study. One was in palm and the other in the knee region .	Extensions of epidermis into papillary dermis as anastomosing bands of uniform tumour cells that are smaller than adjacent keratinocytes.[Table/Fig-3g].
8.	Nodular hidradenoma	Two cases reported in our study were seen over knee. usually they are Circumscribed, non encapsulated., multilobular masses that lie in the dermis and subcutaneous tissue.	Cells with clear and eosinophilic cytoplasm. They are usually solid but they can be cystic also and ductal differentiation can be seen. [Table/Fig-3h].
9.	Hidrocystadenoma.	Reported one case of eccrine and one case of apocrine hidrocystoma .	Unilocular dermal cysts that are lined by two layers of flat cuboidal cells in eccrine hidrocystadenoma and in apocrine hidrocystadenoma lined by apocrine cells. We have reported one case of eccrine and one case of apocrine hidrocystadenoma . [Table/Fig-3i]
10.	Hidradenoma papilliferum	The single case in our study typically was seen in labia majora and they can be seen in perineal and perianal regions.	An adenoma with apocrine differentiation located in the dermis with tubular and cystic structures with papillae projecting in to them. [Table/Fig-3j].
11.	Syringo cystadenoma papilliferum	One case was reported in our study located in the scalp. Mostly seen in scalp and face.	Histologically cystic invaginations in the epidermis upper part lined by keratinizing squamous cells and papillary portions lined by two layers of epithelial cells showing apocrine differentiation. [Table/Fig-3k].
12.	Malignant dermal eccrine Cylindroma	A single case of malignant cylindroma reported in the study was a recurrent tumour located in the upper lip with ulceration in a 54y female. usual age range is 50 to 96 y, with a slight female predominance. clinical signs of malignant transformation are rapid growth, ulceration, bleeding and pain which were present in the case in our study also .	Disturbance in jigsaw pattern, loss of hyaline sheath around cell nests, loss of peripheral palisading of cells, loss of the bimorphic population of cells, cellular pleomorphism, frequent mitosis and foci of necrosis which were seen in our case signify the malignant features.[Table/Fig-3l].
13.	Aggressive Digital eccrine papillary adnecarcinoma	Our single case was seen in the palmar aspect of index finger measuring 1x 1cm. usually occurs in middle aged adults with slight male predominance. Location is mostly in digits Rare sweat gland neoplasm largely accepted to be of eccrine origin. 50% of the cases recur with 14 % risk for metastasis. They should be completely excised with or without amputation. All patients should be followed for local recurrence and metastatic disease.	Intraepidermal solid and cystic growth pattern composed of cuboidal to low columnar cells with back to back cribriform glands. Multiple cystic spaces containing eosinophilic material with luminal papillary projections are characteristically seen. There is cytonuclear atypia, increased mitotic activity and tumour necrosis. [Table/Fig-3m].

[Table/Fig-2]: Malignant & benign skin adnexal tumours



[Table/Fig-3a]: Proliferating trichilemmal tumour - with nests of basaloid cell proliferation with central trichilemmal keratinisation (H&E x10)

[Table/Fig-3b]: Well circumscribed with basaloid germ cells with lace like epithelial components with their mean age

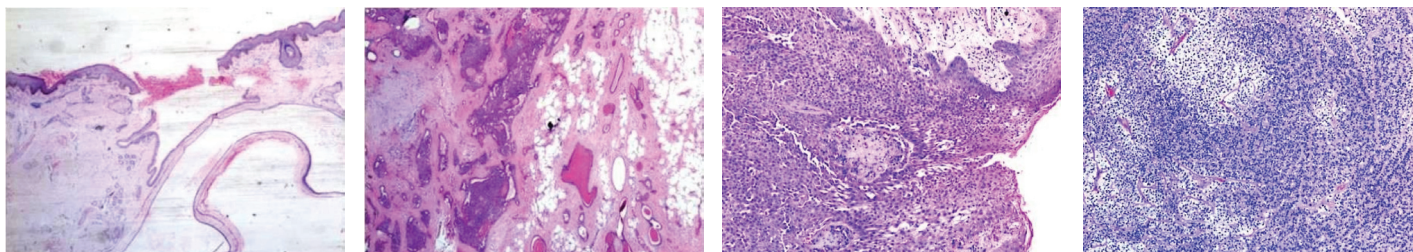
[Table/Fig-3c]: Trichoepithelioma- nests of basaloid cells, horn cysts and mesenchymal bodies (H&E X10)

[Table/Fig-3d]: Pilomatrixoma- basaloid cells and ghost cells (H&E X10)

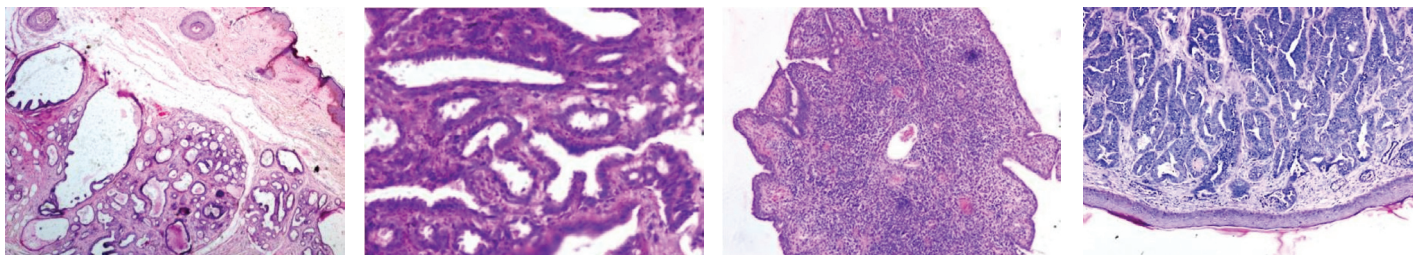
differentiate benign and malignant tumours [8]. In our study both the malignant tumours displayed asymmetry, horizontal orientation of tumour with lack of lobulation. Irregular arrangement of cells with infiltration with necrosis, atypia and frequent mitosis, with diminished tumor associated sclerotic stroma.

CONCLUSION

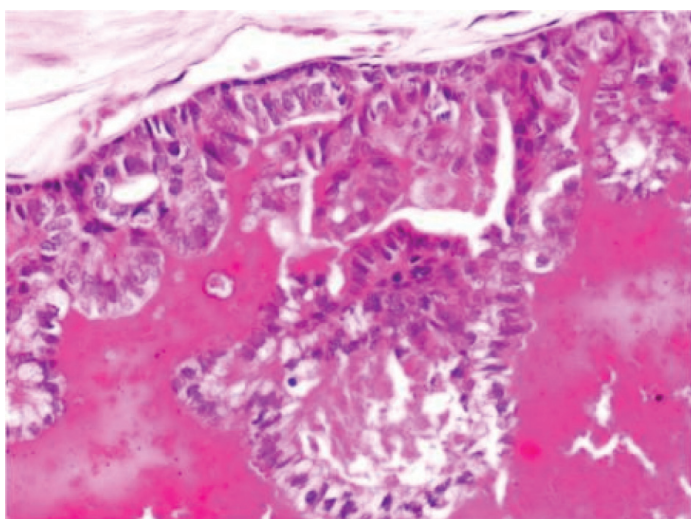
To summarise SATs are uncommon and they are not routinely encountered in the surgical Pathology practice. Most of the patients with SATs attended the surgery op only. Their clinical presentation is very nondescript and histopathology is the gold standard for



[Table/Fig-3e]: Steatocystoma multiplex: dermis showing intricately folded cyst wall lined by layers of epithelial cells with a thick cuticular layer and flattened sebaceous gland (H&E x 10), **[Table/Fig-3f]:** Chondroid syringoma: the tumor in the dermis with branching tubules in basophilic stroma with scattered epithelial and fibroblastic cells surrounded (H&E x 10), **[Table/Fig-3g]:** Eccrine poroma: the tumor arises from the lower portion of the epidermis extending into the dermis consisting of anastomosing broad bands of cells with intercellular bridges. (H&E x 10), **[Table/Fig-3h]:** The tumor shows two types of cells one with eosinophilic cytoplasm and other with clear cytoplasm



[Table/Fig-3i]: Apocrine hidrocystoma: the dermis contains the lesion with multi loculation lined by a row of columnar secretory cells with focal papillary projections (H&E x 10), **[Table/Fig-3j]:** Hidradenoma papilliferum: the tumour shows numerous papillary projections lined by cylindrical and cuboidal cells with active decapitation secretion. (H&E x 10), **[Table/Fig-3k]:** Syringocystadenoma papilliferum: the papillary projections are lined by two rows of cells with outer row having secretion. A prominent presence of plasma cells in the papillary cores (H&E x 10), **[Table/Fig-3l]:** Malignant cylindroma: Shows numerous islands of epithelial cells. The individual cells show nuclear anaplasia and pleomorphism, mitotic figures, loss of hyaline sheaths and infiltration into the surrounding tissue. (H&E x 10)



[Table/Fig-3m]: Aggressive digital papillary adenocarcinoma: shows malignant cuboidal cells with nuclear pleomorphism and anaplasia with papillary projection and eosinophilic secretions (H&E x 10)

diagnosis. Hence familiarity with the histopathology is mandatory for the surgical pathologists. Though the malignant SATs are rare, they are aggressive, and always it is important to look for malignant features and surgical margins before signing out the skin adnexal tumours.

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