Original Research Article

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Histopathologic Evaluation of Skin and Adnexal Tumors in a Tertiary Care Hospital

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Abstract

Introduction: The skin is the largest organ of the body. Skin tumors are abnormal growths of tissues that can be malignant or benign. Tumors of cutaneous appendages are uncommon, classified into tumors of sweat gland, hairfollicle and sebaceous gland. *Aim:* To study the spectrum of skin and adnexal tumors with respect to age, sex, and histopathological pattern. *Materials and Methods:* Present study is a retrospective study from Jan 2016 to June 2017 at department of pathology Shimoga institute of medical sciences, shimoga. All the specimens of skin /cutaneous adnexal tumors were analyzed and lesions were categorized according to WHO classification system. *Results*: out of 50 skin tumors, 38 were benign and 12 were malignant with benign to malignant ration of 3.16:1. Incidence of benign epidermal/keratinocytic tumors were highest 29 cases (58%), followed by adnexal tumors 13 cases (26%) and melanocytic tumors 8cases (16%). Maximum number of benign tumors was seen in 3rd and 4th decade of life and malignant tumors in 6th and 7th decade of life. *Conclusion:* Benign tumors were common in middle age where as malignant tumors showed an ascending trend in age. Most of the tumors were male predominant .Melanocytic tumors were female predominant. Keratinocytic tumors were the commonest lesion which included warts, seborrheic keratosis and fibroepithelial polyps (8% each). Among the malignant tumors squamous cell carcinoma (SCC) was commonest (66.6%) followed by basal cell carcinoma (22.2%).

Keywords: Skin/ Adnexal Tumors; Age; Sex Distribution.

Introduction

Skin is the largest organ of the body. Many internal diseases may manifest themselves in the skin [1]. Some of the benign tumors may mimic like malignant tumors. Many a time's clinical diagnosis may not be accurate because of similarity in clinical presentation and appearances [2]. Cutaneous adnexal tumors (CAT) are uncommon neoplasms, derived from eccrine and apocrine sweat glands, sebaceous glands and fair follicles [3].

They arise from multipontential undifferentiated cells present within the epidermis or its appendages, which on activation of molecular pathways forms mature adnexal structures [4]. Most of the tumors are benign, presenting as papule or nodule. Anatomic location, number, distribution of lesions provide important clue to the diagnosis [1,5,6]. However, diagnosing them may have important implications as they may be markers for syndromes associated with internal malignancies, such as trichelemmomas in Cowdens disease and sebaceous tumors in Muir – Torre syndrome. Malignant skin & adnexal tumors are very rare, they are aggressive, and have the potential for nodal involvement and distant metastasis with a poor clinical outcome. Therefore, establishing the diagnosis of malignancy in CAT is important for therapeutic and prognostic purposes. Skin and CAT are the real challenge to the dermatologist as well as pathologists because of varied and confusing clinical presentation as well as diversity in differentiation along different cell lines morphologically. It is important to intervene them early because some can become metastatic resulting in morbidity and mortality. Even sophisticated investigations such as CT scan and various tumor markers may not be useful in skin and adnexal tumors. In such cases histopathology alone remains a diagnostic tool [7].

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Aims

1. To determine the spectrum of skin and adnexal tumors in respect to age, sex and histopathological features of the tumor.
2. To find out the relative frequency of benign and malignant skin and adnexal neoplasms in hospital population.

Materials and Methods

The study was carried out in the department of pathology after obtaining approval from the institutional ethical committee, shimoga institute of medical sciences, shimoga from 1st Jan 2016 to 30th June 2017. This study was a retrospective, descriptive type of study. There were total 2479 specimens, out of which 159(6.41%) skin biopsies were reported which included 50 cases (31.44 %) of skin, melanocytic and adnexal tumors. Non neoplastic skin lesions, cysts, mesenchymal tumors, hematolymphoid lesions, Hansen's manifesting as nodules, skin secondaries were excluded from the study. All the skin biopsies were fixed in 10% neutral buffered formalin for 24 hours. Specimens were examined for any gross changes and sections were taken. Biopsies were routinely processed, embedded in paraffin wax. 3-5 micron thick sections were taken and stained with Haematoxylin and Eosin stain and studied microscopically. The tumors were categorized according to WHO classification of skin 2006 [6].

Results

The present study included 50 cases of skin and adnexal neoplasms. Total number of specimens during the study period was 2479. Skin and adnexal neoplasms contributed only to 2.01% of all the types histopathology specimens (Table 1).

Out of 50 lesions 38 (76%) were benign and rest 12 (24%) were malignant (Table 2)

Spectrum of benign skin and adnexal lesions seen in present study was as follows (Table 3).

In present study skin tumors were distributed in all the age groups, maximum number of benign tumors was found in 3rd and 4th decade and malignant tumors in 6th and 7th decade of life (Table 4).

Benign tumors – there were 18(36%) benign epidermal tumors which included warts, seborrheic keratosis, fibroepithelial polyps, papillomas, melanoacanthomas, angiokeratoma. Majority of benign tumors were male predominant, except for 2 cases of melanoacanthoma.

Among the 12 benign adnexal tumors 8 cases (66.66%) were females and 4 (33.33%) were males, with female to male ratio of 2:1 (Table 5). Most common lesion was pilomatricoma 4 cases (33.33%), followed by eccrine poroma 2 cases (16.66%). Among the 2 cases of eccrine poroma one case showed focal tubular structures, collections of sebocytes with vacuolated cytoplasm and follicular differentiation suggesting that it could be Apocrine poroma.

Among the 2 cases of eccrine spiradenoma, one case presented as a recurrent swelling showed features of eccrine spiradenoma along with areas of compact basaloid cells fit together like a jigsaw puzzle surrounded by thick basement membrane. Diagnosis of recurrent spiradenocylindroma was made.

There was one case (8.33%) of syringocystadenoma papilleferum, one case (8.33%) of eccrine angiomatous Hamartoma and 2 cases (16.66%) of Nodular hidradenoma.

In present study there were total 8 (16%) melanocytic tumors. Intradermal nevus was the commonest tumor 7 cases (87.5%). Melanocytic tumors were more common in females -5cases (75%) with female to male ratio of 3:1 (Table 2). Peak incidence was seen between 21-30 years of age.

Table 1: Frequency and occurance of skin and adnexal neoplasm's

Total number of Histopathology specimens	2479
Total number of skin biopsies	159
Total number of skin and adnexal neoplasms	50
Frequency of skin and adnexal neoplasm's	2.01%

Table 2: Benign and malignant skin and adnexal neoplasm's

S. N.	Neoplasm's	Frequency (no of cases)	Percentage %
1	Benign	38	76%
2	Malignant	12	24%
	Total	50	100%

Table 3: Spectrum of benign and malignant skin and adnexal lesions

Skin Tumors : 29 Cases	No of Cases	Percentage %
warts	04	8%
seborrheic keratosis	04	8%
keratoacanthoma	01	2%
fibroepithelial polyp	04	8%
squamous papilloma	02	4%
melanoacanthoma	02	4%
angiokeratoma	01	2%
squamous cell carcinoma	08	16%
basal cell carcinoma	02	4%
Bowens disease with invasion	01	2%
Adnexal Tumors :13 Cases	**No of Cases**	**Percentage %**
Pilomatricoma	04	8%
Syringe cystadenoma	01	2%
Eccrine poroma	02	4%
Eccrine spiradenoma	01	2%
Spiradenocylindroma	01	2%
Eccrine angiomatous hamartoma	01	2%
Nodular hidradenoma	02	4%
Hidradenocarcinoma	01	2%
Melanocytic Tumors : 8 Cases		
Intra dermal nevus	07	14%
Compound nevus	01	2%

Table 4: Age wise distribution of different skin and adnexal tumors

Name of the Tumor	<10	11-20	21-30	31-40	41-50	51-60	61-7O and Above
Warts (4)	-	1	2	-	1	-	-
Seborrheic Keratosis(4)	-	1	-	-	-	-	3
Keratoacanthoma(1)	-	-	-	-	-	1	-
Fibroepithelial Polyp (4)	-	-	1	1	1	1	-
Squamous Papilloma (2)	-	-	1	-	-	1	-
Melanoacanthoma (2)	-	-	-	2	-	-	-
Angiokeratoma (1)	-	-	-	-	1	-	-
Pilomatricoma (4)	1	-	2	1	-	-	-
Syringo Cystadenoma (1)	-	-	-	-	-	-	1
Eccrine Poroma (2)	-	-	-	-	1	-	1
Eccrine Spiradenoma (1)	-	-	-	1	-	-	-
Spiradenocylindroma (1)	-	-	-	1	-	-	-
Eccrine Angiomatous Hamartoma (1)	1	-	-	-	-	-	-
Nodular Hidradenoma (2)	-	-	-	-	2	-	-
Intradermal Nevus (7)	-	1	3	2	1	-	-
Compound Nevus (1)	-	-	1	-	-	-	-
SCC (8)	-	-	-	1	2	-	5
BCC (2)	-	-	1	-	-	-	1
Hidradenocarcinoma (1)	-	-	-	-	-	-	1
Bowens Disease with Invasion (1)	-	-	-	-	-	-	1
Total - 50	2	3	11	9	9	3	13

Table 5: Sex wise disrtibution of benign tumors of skin and adnexa

Tumor Type	Incidence	Male	Female
Warts	4(5.19%)	4	
Sq Papilloma	2(2.59%)	2	
Seborrheic Keratosis	4(5.19%)	2	2
Keratoacanthoma	1(1.29%)	1	
Fibroepithelial Polyp	4(5.19%)	2	2
Melanoacanthoma	2(2.59%)		2
Angiokeratoma	1(1.29%)	1	
Pilomatricoma	4(5.19%)	1	3
Syringocystadenoma	1(1.29%)	1	

Eccrine Poroma	2(2.59%)		2
Eccrine Spiradenoma	1(1.29%)		1
Spiradenocylindroma	1(1.29%)		1
Eccrine Angiomatous Hamartoma	1(1.29%)		1
Nodular Hidradenoma	2(5.19%)	2	
Intradermal Neuvs	7(9.09%)	2	5
Compound Nevus	1(1.29%)		1

Table 6: Sex wise distribution of malignant tumors of skin and adnexa

Name of the Tumors	Incidence	Male	Female
Squamous Cell Carcinoma	8 (16%)	6	2
Basal Cell Carcinoma	2 (4%)		2
Hidradenocarcinoma	1 (2%)	1	
Bowens Disease with Micronvasive Component	1(2%)	1	

Table 7: Comparative frequency of benign and malignant skin and adnexal neoplasms

Sr. No.	Authors	No of cases	Benign	%	Malignant	%	B:M ratio
1.	Sharma et al	56	45	80.4%	11	19.6%	4,1:1
2.	Vani D et al	51	38	74.51%	13	25.5%	2.9:1
3.	Narhire et al	36	25	69.41%	11	30.6%	2.3:1
4.	**Present study**	**50**	**38**	**76%**	**12**	**24%**	**3.1:1**

Verruca

It showed acanthosis, hyperkeratosis and papillomatosis. There was one case of Anthill (palmoplantar wart, mermycia) which presented as endophytic lesion showing abundant keratohyaline granules, numerous irregularly shaped homogeneous inclusion bodies, perinuclear halo and small intranuclear eosinophelic inclusion bodies (Figure 1).

Seborrheic Keratosis

All 4 cases showed acanthosis, hyperkeratosis, papillomatosis and horn cysts. 3 cases were acanthotic type and one hyperkeratotic type.

Squamous Papilloma

Showed acanthosis, hyperkeratosis, papillomatosis with elongated rete pegs. There were no koilocytic changes.

Fibro Epithelial Polyps

All the cases showed fibrovascular cores covered by squamous epithelium.

Melanoacanthoma

Showed features similar to seborrheic keratosis with heavy melanin pigmentation.

Angiokeratoma

Showed vascular ectasia of papillary dermis with hyperplasia of overlying epidermis.

Pilomatricoma

Composed of solid nests of basaloid cells with trichilemmal keratinization. Ghost cells, foreign body reaction, calcification was seen.

Syringocystadenoma Papille Feroum

Dermis showed broad villus projections with cystic spaces. Papillae lined by columnar epithelium, abluminal cuboidal epithelium. Interweaning spaces showed dense plasma cell infiltration.

Eccrine Poroma

Among the 2 cases, one was classical dermal eccrine poroma. Other tumor showed tubular, follicular and sebaceous differentiation suggestive of Apocrine poroma (Figure 2).

Eccrine Spiradenoma

Showed nodules of basaloid cells, composed of two types of epithelial cells, dark cells located in periphery and pale cells located in the centre of the clusters. (Figure 3).

Spiradenocylindroma

Showed both areas of spiradenoma and cylindroma (Figure 4)

Eccrine Angiomatous Hamartoma

Present case was seen in 3 days old female baby with nodule attached to her 6th finger. Epidermis was

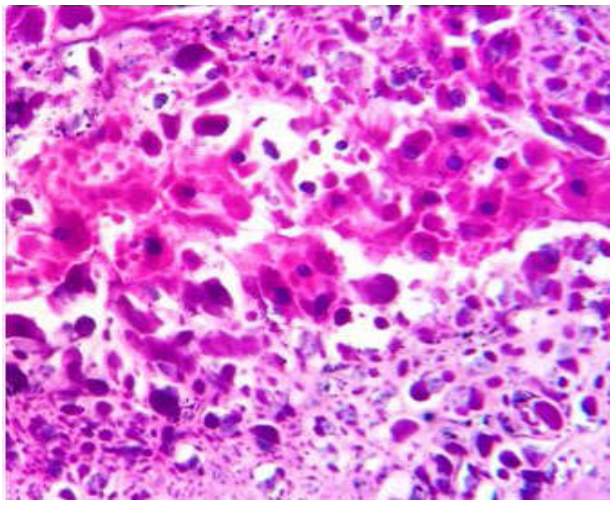

Fig. 1: Anthill–palmoplantar wart showing abundant keratohyaline granules, numerous irregularly shaped homogeneous inclusion bodies, perinuclear halo and small intranuclear eosinophelic inclusion bodies. Hand E x 400

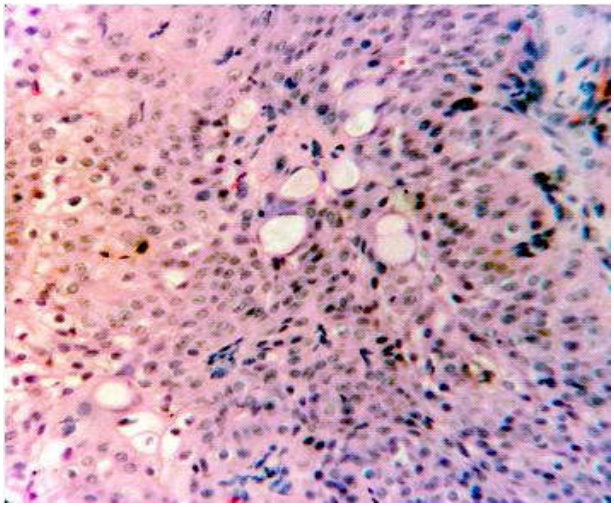

Fig. 2: Eccrine poroma with clear cell change and Sebocytes. Hand E x400

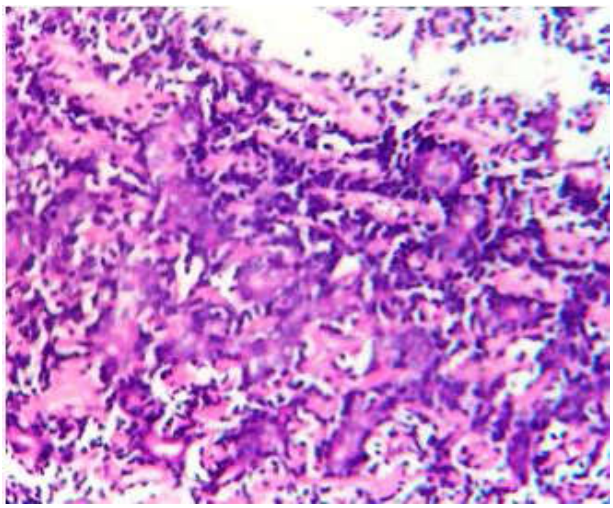

Fig. 3: Eccrine Spiradenoma showing two types of cells, Hand E x400

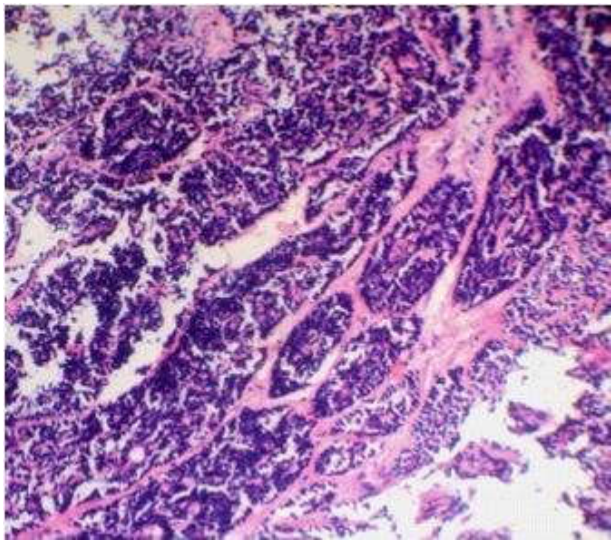

Fig. 4: Cylindroma component in eccrine Spiradenocylindroma

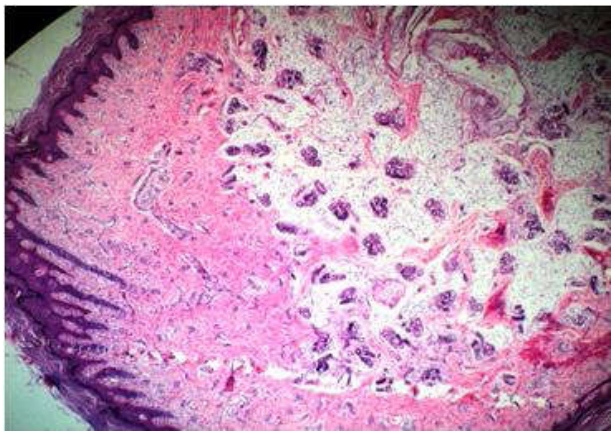

Fig. 5: Congenital eccrine angiomatous hamartoma, Hand E x100

unremarkable. Dermis showed increased number of eccrine glands with blood vessels, smooth muscle bundles, fat cells, nerve bundles, pilar structures and myxoid change (Figure 5).

Intradermal Nevus

Dermis contains nests, cords and sheets of nevus cells. Cells showed varied amount of intracytoplasmic melanin pigment.

Bowen's Disease

One case of extra genital Bowens disease was encountered, showed atypia which were prominent and throughout the epidermis. Multinucleation, individual cell dyskeratosis, increased mitotic figures including atypical mitosis were seen. Deeper and serial sections showed foci of invasion. (Figure 6).

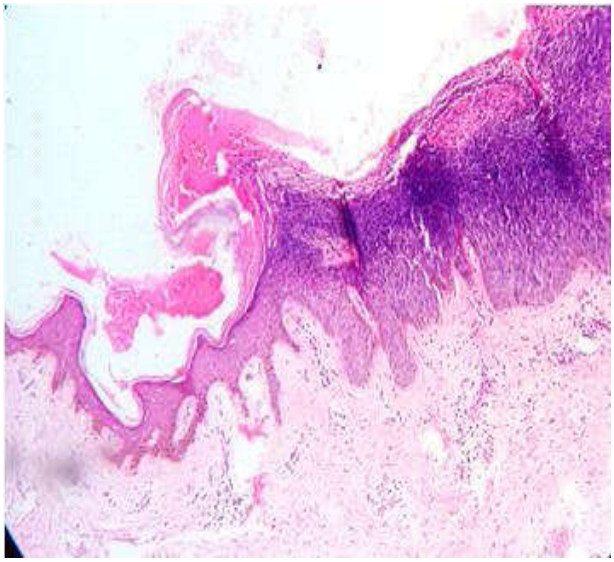

Fig. 6: Extragenital Bowens disease (carcinoma in situ) on deeper and serial sections microinvasive component was seen,Hand E x100

Malignant Tumors

In present study among malignant tumors maximum number of cases were that of squamous cell carcinoma with male to female ration of 3:1, found mostly between 6th to 7th decades (Table 3).

There were two cases of Basal cell carcinoma in the present study, both were in females. One case of malignant nodular hidradenoma was encountered.

Squamous Cell Carcinoma (SCC)

Majority of SCC were well differentiated. One case presented to us as nodular lesion was showing features of bowens disease. On serial and deeper sections we found foci of microinvasion. This case highlights the importance of high suspicion, through screening and serial sections to rule out invasive component in premalignant conditions like bowens.

Basal Cell Carcinoma

Showed basaloid cells with peripheral palisading, clefting artifact and mitotic arrest of cells.

Hidradenocarcinoma

Which was a nodular dermally based tumor invading the subcutaneous fat and irregularly infiltrating the surrounding dermis. Tumor cells were epithelioid with clear cell change. Foci of squamous differentiation and duct formation were noted.

Discussion

In the present study, skin and adnexal neoplasms comprised 2.01% of all types of histopathology specimens received over a period of 1.5 years in the department of pathology, which is comparable with the study of Kamyab-Hesari K (2013) et al [7] (3.3%) and Bari V (2014) et al [8] (1.3%).

A total of 50 skin and adnexal neoplasms were studied in the present study. Benign skin and adnexal neoplasms contributed (38 cases) 76% and malignant tumors contributed (12 cases) 24%. Data is comparable with Sharma A et al (2014,) [4] Vani D et al [16], Narhire et al [17] (Table 7).

In present study keratinocytic tumors were the commonest ones (58%), Incidence of warts and fibro epithelial polyps were highest among the benign tumors. Age range was from 3 days to 75 years. This study showed over all male predominance with male to female ratio of (1.9:1).

Study by Nandyal et al also showed similar age range and male predominance [9].

Female predominance was seen in melanocytic tumors both intradermal, compound nevus and melano-acanthomas [10].

In our study Seborrheic keratosis showed no sex predilections [11] and was found in 5th to 6th decade of life. Rajesh G et al [12] observed a male to female ratio of 1:1.04 and the most common age group affected was 60 years and above.

In present study intradermal nevus was 14% (7 cases) which was similar to Bari V et al [13]. Peak incidence was seen in 2nd -3rd decade (42.85%) similar to study by Nandyal et al [9]. There was a wide age range and female predominance in benign adnexal tumors.

In our study incidence of benign and malignant tumors were (76%) and (24%) respectively. In present study SCC accounted for maximum number of cases (66.6%) which is similar to observations made by Chakravarthy RC et al [14].

SCC was predominantly seen in males similar to study by budharaja SN et al [15]. Maximum number of tumors was found in 3rd to 7th decade of life.

This study also highlights the importance of through screening and serial sectioning to diagnose tumor variants like Apocrine Poroma, Spiradenocylindroma, and to detect microinvasive and invasive component in premalignant conditions like bowens disease.

Conclusion

Skin and adnexal neoplasms accounts to very small percentage among all histopathological lesions reported. Benign skin and adnexal neoplasms

Are more common than the malignant neoplasm. Commonest benign tumors were warts, seborrheic keratosis and fibroepithelial polyps. Most common malignancy was SCC. Maximum number of tumors was found in males. Melanocytic tumors were found in females. Skin and adnexal neoplasms affects all age groups.

However, benign neoplasm's shows peak in 2nd - 4th decade and malignant in 6th decade onwards. Most of our findings correlated with Indian published literature. This study provides a data base of age, sex distribution of skin and adnexal tumors which will be useful for the surveillance. This study also tells us the importance of through screening of slides so that the variants and malignancy are not missed.

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