

Histopathological Evaluation of Tumours And Cysts of The Epidermis and Dermal Adnexae in a Tertiary Care Hospital

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ABSTRACT

Background: Skin tumours are a challenging group of conditions, it is difficult to classify and these are diagnosed chiefly by histopathology. The aim of our study was to analyze the incidence and classify the histopathological pattern of tumours and cysts of the epidermis and dermal appendages.

Methods: The current study was a retrospective observational study of epidermal and adnexal tumours and cysts over a period of five and half years from January 2007 to December 2012 reported in the department of Pathology, SMVMCH, Pondicherry over a 5 year period from were analysed and correlated statistically.

Result: Out of 160 skin lesions 62 were found to be epidermal and dermal adnexal tumours, among these benign adnexal tumours (14%) were the commonest followed by benign epidermal tumours (12.5%), malignant epidermal tumours (10.5%) and malignant adnexal tumours (2%). The ratio of benign (42) to malignant (22) tumour was 1.9:1. The ratio of benign (20) to malignant (17) epidermal tumour was 1.17:1. The ratio of benign adnexal (22) to malignant counterpart (3) was 7.3:1 and the ratio of skin tumours (62) to cystic lesion (98) was 1:1.5. The commonest epidermal tumour was seborrheic keratosis. Epidermal cysts were the commonest type of cyst in the epidermis. Common skin appendage tumours were nodular hidradenoma followed by pilomatrixoma. The common malignant tumour was basal cell carcinoma.

Conclusion: Cutaneous tumours represent the complexity of the epidermal and dermal adnexae since they have a similar morphology to their cell of origin. Hence the histopathological examination is mandatory for diagnosis and categorization of these tumours

Keywords: Squamous Cell Carcinoma, Basal Cell Carcinoma And Adnexal Tumour

Introduction

Skin is a complex organ in which precisely regulated, cellular and molecular interaction govern many crucial responses to our environment and it indicates many internal diseases and cutaneous neoplasia they may be divided into number of categories, reflecting their different biologic behaviours, and decreasing differentiation. These include hamartoma, hyperplasia, cyst, benign tumours, malignant epidermal tumours and appendageal tumours, [1-3] some of them can be a metastatic deposits of some internal malignancies [4] leading to morbidity and mortality. Some of the tumours associated with syndromes like Cowden disease. Clinical diagnosis of different entities is often difficult, because of the identical gross findings and morphological overlap of various epidermal tumours and cystic lesions with many appendageal tumours. Hence the histopathological examination is mandatory for diagnosis and its pattern analysis. [5-7]. The aim of the present study was to observe and analyze the incidence and identify the common type of cutaneous lesions and the variety of histopathological patterns of skin tumours.

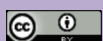
Materials and Methods

It was a descriptive and retrospective (observational) study conducted over a period of five and half years

from January 2007 to December 2012 in the Pathology Department of Sri Manakula Vinayagar Medical College and Hospital [SMVMCH], Puducherry. The materials for this study included only the histopathologically diagnosed tumours and cysts of the epidermis, dermal adnexal tumours and cutaneous secondaries. The other tumours and cysts of the genitalia, tumours of the mucous membranes were excluded. The formalin fixed paraffin embedded skin biopsy tissue sections stained with Hematoxylin and eosin slides were retrieved and studied and their patterns were analysed to distinguish each entity. We had totally 160 cases in this study and the tumours were categorized based on the classification of Lever's textbook. Ethical clearance for this study was approved by the institutional ethical committee. The results were expressed in percentage by using a software Statistical Package for Social Science (SPSS), version 16.0.

Result

The retrospective study of medical records showed that 160 cases of epidermal tumours, dermal adnexal tumours and cystic lesions. Out of these 160 cases, Males were 82 cases (51.3%) & Females were 78 cases (48.8%). The male-female ratio was 1.05:1. Cystic lesions formed the major component of our study consisting of 98



cases(61.3%) with epidermal and dermal adnexal tumours comprising of 37(23.1%) &25(15.6%) respectively .In these 62 tumours, 42(26.3%) were benign and 20(12.5%) were malignant. Benign tumours was found to be more common among males whereas malignant tumours were found common in females .Although overall skin lesions were more common in males according to our study were shown in Table 1. It was observed that the mean age group of skin lesions ranges from 42.23±18.33 the peak incidence of epidermal tumours are 4th to 6th decade and the dermal adnexal tumours and the cystic lesions are more common in 2nd and 4th decade and malignant tumours are in 5th to 7th decade with a significant P value of 0.000 were shown in Table 2. In this present study lesions are more common in trunk ,face and extremities with a significant P value of 0.013.

Out of 160 cases Epidermal tumours constitute 23.1 % of total neoplastic lesions of which 20 were benign, 17 were malignant, 98(61.3%) were tumor like cystic lesions. Among the tumor like cystic lesions commonest was Epidermal cyst which occurred more often in face, next common was dermoid cyst followed by Trichilemmal cyst, which was commonly seen in scalp with a significant P value of 0.00 were shown in Table 3. .

In this present study benign tumours accounted for 42(26%) out of 160 cases in that Seborrheic keratosis17(41%) were found to more common followed by keratoacanthoma 2(5%)in epidermal tumor followed by tumour with eccrine differentiation (6.8%) were common. Among the malignant tumours basal cell carcinoma(40%) was the commonest tumour according to our study followed by squamous cell carcinoma(35%) and then malignant adnexal tumours(15%). Apart from that two cases of cutaneous metastasis were observed in this study were shown in Table 4&5 respectively.

Appendageal tumours encountered were 25(15.6%) of the study group, 22(13.8%) of them were benign and 3(1.8%) were malignant. The tumours derived from eccrine were11(6.8%) cases ,apocrine were 2(1.3%),follicular were 7(4.4%) and sebaceous differentiation were 2(1.3%) .The maximum occurrence of adnexal tumour was at extremities 10(6%) followed by face 6(4%) and trunk 6(4%) . Most of them occurred as nodules and papules. Tumours of follicular differentiation were more often seen in scalp and face. There were 10 males and 15 females ,aged 8 years to 80 years , (median –36 years). Out of these 25 cases nodular hidradenoma and pilomatricoma was the two most common benign skin adnexal tumours in the current study Table 6.

Table 1: Sex Distribution of Tumours and Cysts.

Sex	Epidermal tumour	Adnexal tumour	Cystic lesions	%
Female	15(9.4%)	15(9.4%)	48(30.0%)	78(48.8%)
Male	22(13.7%)	10(6.3%)	50(31.3%)	82(51.3%)
SEX DISTRIBUTION IN BENIGN AND MALIGNANT TUMOURS OF SKIN				
NATURE	MALE	FEMALE	TOTAL	PERCENTAGE
EPIDERMAL TUMOUR				
Benign	10	12	22	36
Malignant	--	3	3	5
ADNEXAL TUMOUR				
Benign	14	6	20	32
Malignant	8	9	17	27
TOTAL	32(52%)	30(48%)	62	100

Table 2: Age Distribution.

Age	Epidermal tumours		Adnexal tumours		Cystic lesions	Total %
	Benign	Malignant	Benign	Malignant		
0-20	---	--	3(1.8%)	--	21(13.0%)	14.8%
21-40	4(2.5%)	--	11(6.8%)	--	40(25.0%)	34.3%
41-60	8(5.0%)	10(6.3%)	6(3.8%)	1(0.6%)	30(19.0%)	34.5%
61-80	8(5.0%)	7(4.4%)	2(1.3%)	2(1.3%)	7(4.3%)	16.3%
TOTAL	37(23.1%)		25(15.6%)		98(61.3%)	100 .0

Mean ± SD: 42.23±18.33. Chi square=33.22, P value= 0.000[Significant]

Table 3: Epidermal Tumours and Cysts.

LESIONS	Number of cases	Percentage
Benign tumours		
Seborrheic keratoses	17	10.6%
Keratoacanthoma	2	1.25%
Warty dyskeratoma	1	1.0%
Malignant tumours		
Squamous cell carcinoma	7	4.3%
Basal cell carcinoma	8	5.0%
Cutaneous metastasis	2	1.25%
Cystic lesions		
Epidermal cyst	58	36.3%
Dermoid cyst	20	12.5%
Trichilemmal cyst	17	10.6%
Steatocystoma multiplex	1	1.0%
Eruptive vellus hair cyst	2	1.25%

The chi-square value is 76.0766 and the p value is 0.00(significant)

Table 4: Distribution of Benign Tumours of Skin.

TUMOURS	NUMBER OF CASES	PERCENTAGE
EPIDERMAL	20	48
Seborrheic keratosis	17	41
Keratoacanthoma	2	5
Warty dyskeratoma	1	2
ADNEXAL	22	52
Tumours With Eccrine Differentiation	11	26
Tumours With Apocrine Differentiation	2	5
Tumours With Hair Follicle Differentiation	7	16
Tumours With Sebaceous Differentiation	2	5
Total number of cases	42	100

Table 5: Distribution of Malignant Tumours of Skin.

TUMOURS	NUMBER OF CASES	PERCENTAGE
EPIDERMAL	17	85
Squamous cell carcinoma	7	35
Basal cell carcinoma	8	40
Cutaneous metastasis	2	10
ADNEXAL	3	15
Malignant eccrine spiradenoma	1	5
Porocarcinoma	1	5
Malignant adnexal tumour unclassifiable	1	5
TOTAL	20	100

Table 6: Distribution of Adnexal Tumours.

Adnexal tumours	Number of cases	Percentage
Benign tumours with eccrine Differentiation	11	44
Nodular hidradenoma	7	28%
Eccrine poroma	1	4%
Syringoma	2	8%
Chondroid syringoma	1	4%
Malignant tumours with eccrine differentiation	3	12
Eccrine porocarcinoma	1	4%
Malignant eccrine spiradenoma	1	4%
Malignant adnexal tumour	1	4%
Apocrine Differentiation	2	8
Apocrine hidrocystoma	1	4%
Syringocystadenoma pappiliferrum	1	4%
Follicular Differentiation	7	28
Pilomatricoma	4	16%
Trichoepithelioma	1	4%
Trichoadenoma	1	4%
Proliferating trichilemmal tumour	1	4%
Sebaceous differentiation	2	8
Nevus sebaceous	2	8%
TOTAL	25	100

Table 7: Comparison of Skin Lesions Between Other Studies.

	De silva et al ^[4]	Qiu JH Zhonghua Zhong et al ^[10]	Present study
Total no.of cases	1181	32425	160
Benign tumours	1024(86.4%)	2137(62.4%)	42(26.3%)
Malignant tumours	157(13.3%)	1288(37.68%)	20(12.5%)
Benign epidermal tumours and cysts	915(89.35%)	1742(81.5%)	140(87.5%)
Distribution of individual tumor groups:			
Benign adnexal tumours	83(7.03%)	395(18.5%)	22(52.38%)
Malignant epidermal tumours	157(13.3%)	1254(97.3%)	17(85%)
SCC	96(61.1%)	958(74.4%)	7(35.0%)
BCC	61(38.8%)	296(23.0%)	8(40.0%)
SCC:BCC	1:1.5	3.2:1	1:1.4
Malignant adnexal tumours	---	34(2.6%)	3(15.0%)
Site	---	Head&neck	Trunk&Face
Sex	1:1	1.5:1	1.1:1

Table 8: Comparison of Adnexal Tumours.

	Yaqoob N et al ^[19]	Nair P et al ^[20]	Samaila MO et al ^[21]	Solanki AL et al ^[22]	Present study
Total no of cases	166	33	52	94	25
Period of study	4 year	3 year	16 year	27 year	5 year
Sweat gland tumour(eccrine&apocrine)	86(51.8%)	19(57.5%)	41(78.8%)	50(53.2%)	16(64.0%)
Hair follicle tumour	64(38.5%)	12(36.36%)	4(7.7%)	22(23.45%)	7(28.0%)
Sebaceous gland tumour	5(3.0%)	2(6.06%)	7(13.5%)	22(23.4%)	2(8.0%)
Mean age	41 years	9 years	33 years	30years	42 years
M:F	1:1	1:2.3	1:1	1:1	1:1.5
Common benign tumour	Nodular hidradenoma (41.16%)	Syringoma (42.42%)	Eccrine acrospiroma (32.7%)	Eccrine acrospiroma (48.14%)	Nodular hidradenoma (28.0%)

Discussion

Many occasions clinicians are challenged by difficult diagnostic problem where skin biopsy becomes mandatory and facilitates the easy clinical diagnosis and treatment. Several study quoted that histopathological confirmation is the standard tool for evaluating patterns of skin diseases with correct diagnosis .

In this present study Lever ^[8] classification of cysts , epidermal tumours and dermal adnexal tumours was followed

During the 5 year study period, there was a total of 160 cases. Out of 160 skin lesions 62 were found to be epidermal and dermal adnexal tumours ,among these benign adnexal tumours(14%) were the commonest tumours followed by benign epidermal tumours(12.5%), malignant epidermal tumours(10.5%) and malignant adnexal tumours(2%).The ratio of benign(42) to malignant(22) tumour was 1:2.1.The ratio of benign(20) to malignant(17) epidermal tumour was 1.17:1 .The ratio of benign adnexal(22) to malignant counterpart (3) was 7.3:1 and the ratio of skin tumours (62) to cystic lesions (98) was 1:1.5.

In India skin malignancies are less than 1% of all cancers compared to western countries. Various reports from India show wide variations in the incidence and types of skin tumours from different parts of the country ^[9].

From this observation it is confirmed that epidermal tumours(23.1%)and cystic (tumour like) lesions(61.3%) are more common than adnexal tumours(15.6%) in the present study .And it is compared with the other similar studies were shown in Table 7.

The present study showed slight predilection for males compared to females,the M:R ratio is 1.1:1 it was similar with the study done by Reizner et al (3.16:1)^[11] &Tan SH et al (1.4:1),^[12].

Some studies have shown a marked predilection for female Chaung TY et al,^[13] .

In the present study that most of the patients were in the age group of 40-80 years and it is agin concordance with the Reizner GT et al,^[11] and Tan SH et al,^[12] and they found the occurrence of malignant tumour in fourth, sixth and eighth decades of life.

Benign cases in the present study were 26.3% and the malignant cases were 12.5%.This findings were comparable with Sabir et al,^[3] .However Kapoor et al found more frequency of malignant cases.

In the study conducted by Chandrasekaran V et al,^[14] observed that cystic lesions were predominant123 and male to female ratio was 2:1 9 it was similar to our present study. Chiu MY et al,^[15] reported a case of squamous cell carcinoma arising from an epidermal cyst.

In this present study the maximum number of cases encountered were basal cell carcinoma[BCC] 40% and it was contrasting from the observations of Deo SV et al,^[16] and Chakravarthy RC et al,^[9] followed by SCC(35%) and adnexal tumour(15.6%). Diepgen TL et al,^[17] in 2002 conducted a population based study in Australia and concluded that BCC (2%) is more common than SCC(1%) and is concurrent with our study.

Tumours of skin appendeges: Adnexal tumours (ATs) are relatively rare and the overall incidence of adnexal tumours

were 15.6% and this was more than the observation of 12.8% cases documented by Sanjay N et al,^[18]. Our study over a period of five and half year shows the rarity and indicates that these tumours are relatively uncommon Importance of diagnosing ATs are in some instances the presence of ATs may lead to the recognition of a genetic syndrome ,like Muir-torre syndrome associated with sebaceous tumours ,Cowdens syndrome with trichilemmomas .^[7]

In this present study we observed sweat gland tumour was the most common tumour (64.0%) followed by hair follicle tumour(28.0%) and it is concurrent with the studies conducted by Yaqoob et al ^[19],Nair et al^[20], Samila et al^[21] Solanki AL et al,^[22] its comparison with other studies were shown in Table 8.

Metastatic skin disease: In the present study we observed two cases of cutaneous metastatic deposits of adenocarcinoma of stomach and the infiltrating ductal carcinoma of breast respectively .It was accounting for 10 % of the skin cancer. Histopathologically it showed highly pleomorphic cells with hyperchromatic nuclei and prominent nucleoli.It was concurrent with the study done by Yoskovitch A et al,^[7].

Conclusion

Skin tumours are a challenging group of conditions that can mimic other disorders .Many at times it can be an important clue for a genetic syndrome requiring appropriate management, like sebaceous tumours in Muir-Torre syndrome, trichoepithelioma,, basal cell carcinoma in Cowden syndrome. They may also be a marker for internal malignancy such as ‘Sign of Leser Trelat’ with multiple seborrheic keratosis representing underlying visceral malignancy . Most of the times these skin lesions and tumours will pose a diagnostic difficulties clinically. Hence histopathological evaluation is mandatory for diagnosis and it is useful for determining the treatment and prognosis and also to diagnose the associated familial syndromes.

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