

## Histomorphological Motif Of Skin Lesions – A Model Analysis In A Tertiary Care Teaching Hospital

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### Abstract

**Introduction:** Even though the skin disorders are common worldwide, the patterns of lesions differ depending upon various environmental and socioeconomic factors. In spite of lesions being diagnosed based on clinical features, histopathological evaluation plays a pivotal role in confirmation and management.

**Material and Method:** This is a retrospective and prospective study conducted at a tertiary care teaching hospital. Histopathological evaluation of skin lesions was carried out for three years correlating with old records and histopathology slides. Relative frequency of various lesions, distribution of age and sex were analysed.

**Results:** A total of 234 cases were included with 140 (60%) males and 93 (40%) females. The commonest lesion found was epidermal cyst with second common being squamous cell carcinoma. Cutaneous cysts comprised of majority of non neoplastic lesions. A considerable number of skin adnexal tumors were also noted - 20 (8.5%)

**Conclusion:** In present study benign skin lesions are commoner with male preponderance, attributing to the changing environmental conditions and more exposure. Histopathological examination plays a major role in analysis, classification and management of skin lesions. There is a definite need for a wide scale population studies to derive definite conclusions regarding skin lesions.

**Key Words:** cutaneous cysts, epidermal cyst, histopathological examination, skin adnexal tumors, squamous cell carcinoma

Date of Submission: 01-05-2018

Date of acceptance: 17-05-2018

### I Introduction

Dermatological disorders are common in all countries but the pattern of lesions varies greatly. Skin diseases are influenced by various factors like environment, economy, literacy, racial and social customs [1]. Majority of skin lesions are diagnosed on the basis of clinical presentation & history. The histological diagnosis in turn is used by clinicians to aid in the management of patients and most appropriate clinical interventions [2]. Not all the skin lesions require skin biopsy but some of them require it for proper diagnosis and identification of etiological agent. With growing awareness and improvement in medical facilities, spectrum of diseases has been highly variable. Clinical diagnosis of different entities is often difficult, as most of the appendageal tumors present as asymptomatic papules or nodules. Anatomical location, number and distribution of lesions provide important clue but histopathology is invaluable in confirmation of the diagnosis [3]. Incidence of skin tumours has increased dramatically over the last several decades at least in part as a result of increasing sun exposure necessitating vigorous surveillance [4]. Skin tumours at time pose a great challenge to surgeons as some of benign tumours can be confused with malignant tumours and it is vitally important to intervene as some can become metastatic resulting in morbidity and mortality. Most of the time clinical diagnosis may not be accurate because of similarity in gross appearance [5].

The present study focussed on spectrum of various dermatological lesions i.e., skin as well as appendages in different age groups and sexes during last three years. The diagnosis was based on the clinical presentation of the patient, histopathology and additional studies depending on the case.

### II Material And Method

In present study, both retrospective analysis from archives and prospective study was done in Department of Pathology, Sri Venkateswara Medical College, Tirupati, from January 2013 to December 2015.

The diagnosis in all cases was made on routine histological examination on haematoxylin & eosin stained tissue sections. Relative frequency of various lesions, distribution of age & sex were analyzed.

**Inclusion Criteria:** All biopsies that showed definite signs of any specific pathology were included.

**Exclusion Criteria:** All skin biopsies that didn't showed definite signs of any specific pathology or inadequate were excluded. Oral mucosa biopsies were excluded.

Patients' history such as age, sex and other relevant clinical details such as site of lesion & character were noted as provided by dermatologist. All tissue specimens were subjected to gross examination & all dimensions were taken from archives.

### **III Results**

The present study was both retrospective and prospective study of skin lesions during the period of 2013 to 2015. A total of 234 cases were included in the study, out of which 136 (58.11%) were non neoplastic and 98 (41.88%) were neoplastic. There were 141 (60%) males and 93 (40%) females with male: female ratio of 1.5:1. In both males and females, the commonest lesion was epidermal cyst (n=47, 33.3% & n=18, 19.4% respectively). The second commonest lesion in both males and females was Squamous cell carcinoma (n=17, 11.34%, n=14, 15.05% respectively). The distribution of skin lesions is depicted in Figure no: 1. Classification of skin lesions in various groups according to histopathological examination is tabulated in Table no: 1.

A large proportion of the cases in the present study were cutaneous cysts (36.32%) followed by malignant skin tumors (24.78%) and benign skin tumors (17.09%). The distribution of non neoplastic skin lesion according to age and sex is tabulated in Table no: 2. Cutaneous cysts comprise majority of non neoplastic lesions (n=85, 64.88%), followed by miscellaneous skin lesions (n=28, 17.55%) and infectious skin diseases (n=14, 10.68%). Most common cutaneous cyst was Epidermal cyst (n=47, 20.08%) which showed male preponderance. Sex distribution of various non neoplastic skin lesions reflected that Epidermal cyst, Dermoid cyst, Pilonidal sinus and infective skin lesions were more commoner in males. All the patients of skin tuberculosis and Pyogenic granuloma were males.

Among non infectious maculo-papular skin lesions, there was one case each of Kyrles disease, Annular elastolytic giant cell granuloma, Porokeratosis of Mobbille and all were males. A single case of Lichen planus was reported in a female patient. There were 3 (1.28%) cases of Bullous pemphigoid which showed a slight male predominance. Only 1 (0.42%) case of Neutrophilic dermatosis was reported in a female patient and 1 (0.42%) case of Tuberous xanthoma was reported in a young female patient who presented with multiple skin swellings over the elbow joint and little toe. There were 12 (5.12%) cases of Calcinosis cutis with equal sex distribution. Most cases of non neoplastic lesions were falling under the age group < 50 years.

A Total of 98 cases presented as skin tumors; of these 40 (40.81%) cases were histologically diagnosed as benign and 58 cases (59.18%) were diagnosed as malignant lesions. Distribution of benign and malignant skin lesions is depicted in Figure no: 2. Distribution of benign and malignant tumors based on nature and origin is tabulated in Table no: 3. Out of 40 benign lesions, benign tumors of epidermis constituted 14 (35%) cases, benign adnexal tumors - 16 (40%) cases, benign melanocytic tumors - 7 (17.5%) cases and benign soft tissue tumors - 3(7.5%) cases. Out of 58 malignant lesions, malignant epidermal tumors constituted 43 (74.13%) cases, malignant adnexal tumors - 4 (6.89%) cases, malignant melanocytic tumors - 5 (8.62%) cases and malignant soft tissue tumors - 6 (10.34%) cases. Thus, malignant epidermal tumors were the most common lesions among skin tumors.

The age and sex distribution of benign and malignant skin tumors is tabulated in Table no: 4 & 5 respectively. In the present study maximum number of benign skin tumors i.e., 25 (62.5%) cases were seen between 31-60 yrs and male predominance in distribution of benign skin tumors with male to female ratio of 1.35: 1. Maximum number of malignant skin tumors 39 (67.24%) were seen between 41 to 70 yrs and showed slight female predominance in distribution of malignant skin tumors with male to female ratio of 0.93: 1.

In the present study there were 20 (8.5%) cases of skin adnexal tumors out of which 16 (80%) cases were benign and 4 (20%) cases were malignant. The distribution depending upon diagnosis is tabulated in Table no: 6. In the present study, majority of adnexal tumors 16 (80%) were benign compared to malignant tumors 4 (20%) cases. Among these adnexal tumors, the frequency of sweat gland tumors was commonest accounting for 10 (50 %) cases, followed by tumors of hair follicle - 6 (30%) cases.

### **IV Discussion**

A total of 234 patients of skin lesions were included in the present study, out of which 136 (58.11%) cases were non - neoplastic and 98 (41.88%) cases were neoplastic. There was a male (60%) preponderance in skin lesions when compared to females (40%) similar to the study done by Rakesh et al [2]. Most of the non neoplastic skin lesions were seen under the age of 50 years, which is in concordance with studies done by Gulia et al [6]. Majority of non neoplastic skin lesions in the present study were cutaneous cysts (n=85, 64.88%),

followed by miscellaneous skin lesions (n=23, 17.55%) and infectious skin diseases (n=14, 10.68%), which is in contrast to the other studies.

In a study done by Gulia et al [6] non infectious erythematous papulo squamous lesions comprised majority of the cases (24%) followed by vascular disorders (16%). There were only 2 cases of Epidermal cyst (1.6%) reported in that study in contrast to the present study. Das et al [7] reported higher incidence of eczematous lesions (83.25%) followed by infectious skin diseases (9.7%). Similar observations were made by N Asokan et al [8] and Sarkar SK et al [9].

The number and variety of cutaneous tumors is truly startling. Virtually every anatomic structure and cell type associated with skin has a nevoid or neoplastic counterpart—in most cases, multiple counterparts — and each of these in turn can present with microscopic variations that create additional diagnostic difficulties. In this study WHO classification (2005) of skin was followed [10]. In the 3 years of study period, there were total 98 cases presented as skin tumors of these 40 cases (40.81%) were histologically diagnosed as benign and 58 cases (59.18%) were diagnosed as malignant lesions.

The ratio of benign tumors (40) to malignant tumors (58) was 0.68:1. Skin malignancies are rare in India compared to western countries. Comparative distribution of different malignant tumors of skin in India in various studies is tabulated in Table no: 7.

In the present study Squamous cell carcinoma accounted for maximum number (53.44%) of cases followed by Basal cell carcinoma (20.68%). These findings were similar to other studies like Bhudraja SN et al [11], Deo SV et al [12] and Shivanand G et al [13]. A slightly higher incidence of SCC (64.4%) was found in the study done by Chakravarthy et al [14] because; the geographical area selected by that study belonged to latitude 22.5N, with maximum sun exposure. Frequency of Malignant melanoma in the present study was 8.62% which is in comparison with the study carried out by Chakravarthy RC et al [14]. In the present study, the frequency of occurrence of Dermato fibrosarcoma protuberans (10.34%) was considerably high when compared to other studies. This considerable difference in frequency of occurrence of squamous cell carcinoma, Basal cell carcinoma, malignant melanoma and adnexal carcinomas as compared to with the present study is due to the variable sample sizes of other studies and different geographical areas selected for their studies.

In the present study there were 20 cases of skin adnexal tumors out of which 16 (80%) cases were benign and 4 (20%) cases were malignant. Similar findings are noticed in the studies performed by various other authors as tabulated in Table no: 8. There were 16 cases of benign adnexal tumors in the present study, majority of which were sweat gland tumors, comprising 56.25%, followed by hair follicular tumors (31.25%). This finding is in concordance with the studies done by Kartha et al (54.2%) [17], Solanki et al (53.2%) [18], Nair SP et al (57.56%) [19] and Shivanand G et al (56.25%) [13]. In the present study there were 4 cases of malignant adnexal tumors, of which Sebaceous carcinoma was the most common type (50%), which is similar to the studies done by Reddy et al (57.7%) [16] and Shivanand G et al (50%) [13].

## V Conclusion

Even though skin lesions are commonly reported and are widely distributed in both the sexes, majority are found in males. Clinical features alone cannot help in diagnosis of skin lesions. Histopathological evaluation plays a major role and also helps in classification of the lesions. But, to analyse and stratify the spectrum of lesions – a wider aspect study including larger population groups is needed. These studies in turn help in diagnosing evolving lesions and to derive definitive guidelines for accurate classification, diagnosis and management of benign and malignant skin lesions.

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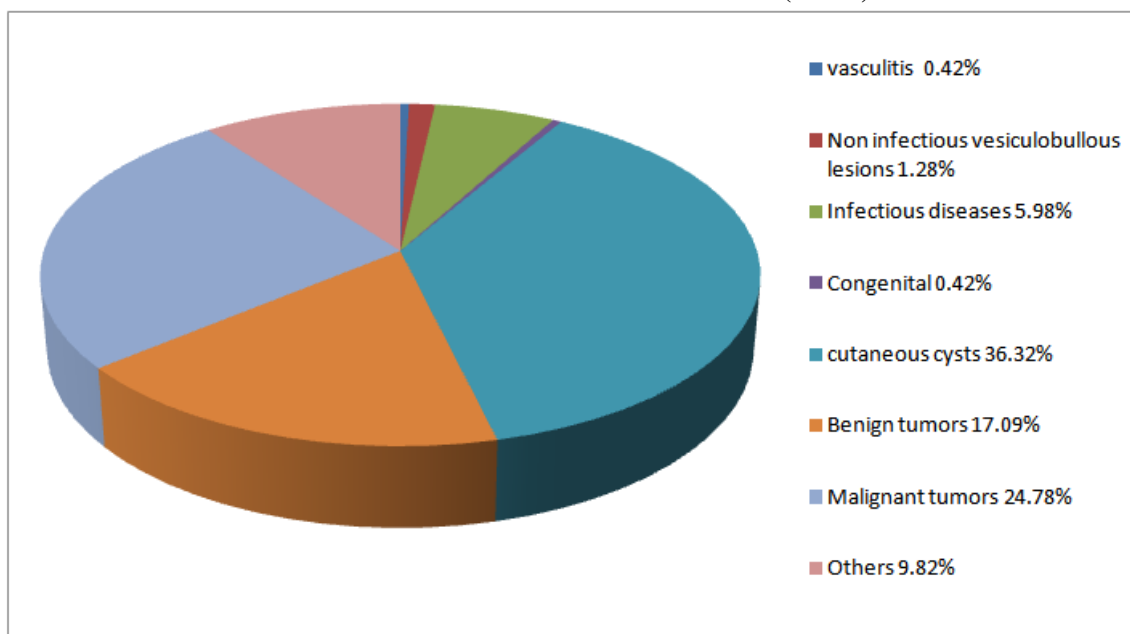
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**Figures & Tables**

**FIGURE NO: 1. Distribution of skin lesions (n=234)**



**TABLE NO: 1. Classification of skin lesions in various groups according to the histopathological examination**

Nature of Skin Lesion	Diagnosis	Total no.	Percentage (%)
Non infectious erythematous maculo-papular lesions	Lichen planus, Kyrles disease, Annular elastolytic giant cell granuloma, Porokeratosis of Mobille	4	1.70%
Vasculitis	Neutrophilic dermatosis	1	0.42%
Non infectious vesiculobullous lesions	Bullous pemphigoid	3	1.28%
Infectious diseases	Tuberculous verruca cutis, Leprosy, Condyloma accuminatum, Actinomycosis, Cysticercosis	14	5.98%
Congenital lesions	Dariers disease	1	0.42%
Cutaneous cysts	Epidermal cyst, trichilemmal cyst, dermoid cyst, implantation dermoid,	85	36.32%
Benign tumors	Squamous papilloma, Seborrheic keratosis, Verruca vulgaris, Actinic keratosis, Bowens' disease, Trichoepithelioma, Proliferating trichilemmal cyst, Pilomatrixoma, Trichoblastoma, Hidradenomas, Cylindroma, Chondroid syringoma, Naevus sebaceous of jadosahn, Sebaceous denoma, Melanocytic naevus, Dermatofibroma	40	17.09%
Malignant tumors	Squamous cell carcinoma, Basal cell carcinoma, Melanoma, Trichoepithelial carcinoma, Malignant	58	24.78%

	cylindroma, Sebaceous carcinoma, Dermato fibrosarcoma protruberans.		
Others	Hypertrophic scar, Corn, Calcinosis cutis, Pilonidal sinus, Tuberos xanthoma, Non specific chronic granulomatous inflammation, Pyogenic granuloma	28	11.96%

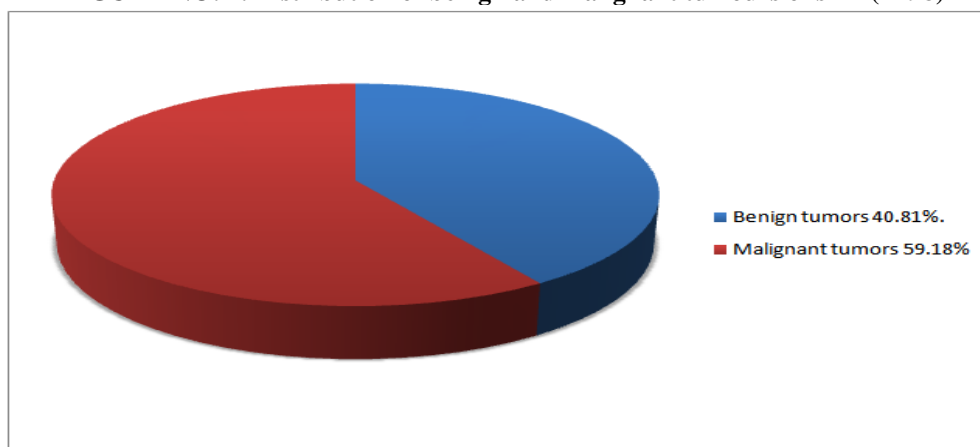
**TABLE NO: 2. Age and sex distribution of Non neoplastic skin lesions**

DIAGNOSIS	Male	Female	0-10 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	71-80 yrs	81-90 yrs
Leprosy	4	3	1	1	3	2	-	-	-	-	-
Skin TB	3	-	-	-	1	2	-	-	-	-	-
Actinomycosis	-	1	-	-	1	-	-	-	-	-	-
Condyloma accuminata	1	1	-	-	-	-	2	-	-	-	-
Cysticercosis	-	1	-	1	-	-	-	-	-	-	-
Neutrophilic dermatosis	-	1	-	-	-	-	-	1	-	-	-
Bullous pemphigoid	2	1	-	-	-	1	-	1	-	1	-
Lichen planus	-	1	-	-	-	-	-	1	-	-	-
Annular elastolytic gaint cell granuloma	1	-	-	-	-	-	-	-	1	-	-
Kyrles disease	1	-	-	-	-	-	-	1	-	-	-
Porokeratosis of mobille	1	-	-	1	-	-	-	-	-	-	-
Dariers disease	1	-	1	-	-	-	-	-	-	-	-
Epidermal cyst	47	18	4	1	15	13	12	10	7	3	-
Trichilemmal cyst	3	4	-	1	1	2	1	2	-	-	-
Dermoid cyst	7	4	4	1	1	2	2	1	-	-	-
Implantation dermoid	1	1	-	-	-	-	1	-	1	-	-
Calcinosis cutis	6	6	-	-	1	1	3	1	3	3	-
Pyogenic granuloma	5	-	1	3	-	1	-	-	-	-	-
Pilonidal sinus	4	1	-	1	3	-	1	-	-	-	-
Hypertrophic scar	-	1	-	1	-	-	-	-	-	-	-
Corn	1	1	-	1	1	-	-	-	-	-	-
Chronic non specific granulomatous inflammation	2	-	-	-	-	1	1	-	-	-	-
Tuberos xanthoma	-	1	-	1	-	-	-	-	-	-	-

**TABLE NO: 3. Distribution of benign and malignant tumors of skin.**

	Epidermal tumors	Adnexal tumors	Melanocytic tumours	Soft tissue tumors	TOTAL
	N (%)	N (%)	N (%)	N (%)	N (%)
<b>Benign</b>	14 (35%)	16 (40%)	7 (17.5%)	3 (7.5%)	40 (40.81%)
<b>Malignant</b>	43 (74.13%)	4 (6.89%)	5 (8.62%)	6 (10.34%)	58(59.18%)
<b>Total No of cases</b>	57 (58.16%)	20(20.40%)	12 (12.24%)	9 (9.18%)	98

**FIGURE NO: 2. Distribution of benign and malignant tumours of skin (n=98)**



**TABLE NO: 4. Age and sex distribution of benign tumors of skin.**

	M	F	0-10 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	71-80 yrs	81-90 yrs	TOTAL
<b>Epidermal</b>												
Squamous papilloma	3	4		1	2		2	1		1		7
Verruca vulgaris	3		1		1	1		1	1			3
Seborrheic keratosis	2					1			1			2
Actinic keratosis	1		1									1
Bowens disease	1								1			1
<b>Adnexal - hair follicle</b>												
Pilomatrixoma		2	1				1					2
Trichoepithelioma	1									1		1
Trichoblastoma		1								1		1
Proliferating trichilemmal cyst	1							1				1
<b>Sweat gland</b>												
Cylindroma	1					1						1
Chondroid syringoma	3	2				2	2	1				5
Hidradenoma	1	1					1	1				2
Hidradenoma papilleferum	1			1								1
<b>Sebaceous gland</b>												
Sebaceous adenoma	1					1						1
Naevus sebaceous of Jadonsahn		1			1							1
<b>Melanocytic</b>												
Naevus	3	4				2	2	1	2			7
<b>Soft tissue</b>												
Dermatofibroma	1	2				2		1				3
<b>TOTAL</b>	<b>23</b>	<b>17</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>10</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>		<b>40</b>

**TABLE NO: 5. Age and sex distribution of malignant skin tumors.**

	M	F	0-10 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	71-80 yrs	81-90 yrs	TOTAL
<b>Epidermal</b>												
Squamous cell carcinoma	17	14			2	3	6	5	10	1	4	31
Basal cell carcinoma	6	6				1	2	2	4	3		12
<b>Adnexal - hair follicle</b>												
Trichoepithelial carcinoma		1							1			1
<b>Sweat gland</b>												
Malignant Cylindroma		1				1			1			1
<b>Sebaceous gland</b>												
Sebaceous carcinoma	1	1			1				1			2
<b>Melanocytic</b>												
Melanoma	2	3			1		2	1	1			5
<b>Soft tissue</b>												
Dermato fibrosarcoma protuberans	2	4	1			1	2		1		1	6
<b>TOTAL</b>	<b>28</b>	<b>30</b>	<b>1</b>	<b>-</b>	<b>4</b>	<b>5</b>	<b>12</b>	<b>8</b>	<b>19</b>	<b>4</b>	<b>5</b>	<b>58</b>

TABLE NO: 6. Distribution of skin adnexal tumors according to their histological differentiation.

Type of skin adnexal tumor	Number of benign tumors (%)	Number of malignant tumors (%)	Total number of tumors (%)
Hair follicular differentiation	5 (31.25%)	1 (25%)	6 (30%)
Sweat gland differentiation	9 (56.25%)	1 (25%)	10 (50%)
Sebaceous differentiation	2 (12.5%)	2 (50%)	4 (20%)
Total number of cases	16 (80%)	4 (20%)	20 (100%)

TABLE NO: 7. Distribution of malignant tumors of skin in various studies carried out in India.

Author Type of tumor	Chakravarthy RC et al [14] (1968) n=115	Bhudraja SN et al [11] (1972) n=102	Deo SV et al [12] (2005) n=77	Shivanand G et al [13] (2015) n=80	Present study (2015) n=58
Squamous cell carcinoma	64.4%	49.02%	55.8%	46.25%	53.44%
Basal cell carcinoma	16.5%	17.65%	18.1%	26.25%	20.68%
Malignant melanoma	8.7%	29.41%	26.1%	11.25%	8.62%
Adnexal carcinomas	2.6%	0.98%	-	7.5%	6.89%
Dermatofibrosarcoma protuberans	5.2%	2.94%	-	-	10.34%

TABLE NO: 8. Comparison of frequency of adnexal tumors in various studies.

Cases Author	Benign		Malignant		Total No of cases (N)
	(n)	(%)	(n)	(%)	
Vaishnav and Dharkar et al [15] (1974)	43	89.6	5	10.4	48
Reddy et al [16] (1982)	59	69.4	26	30.6	85
Shivanand G et al [13] (2011)	29	82.85	6	17.1	35
<b>Present study</b>	<b>16</b>	<b>80</b>	<b>4</b>	<b>20</b>	<b>20</b>

C Sushma " Histomorphological Motif Of Skin Lesions – A Model Analysis In A Tertiary Care Teaching Hospital."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 5, 2018, pp 70-76.