

Histopathological Study of Skin Tumours

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Abstract: The present study was a retrospective and prospective study of skin tumours during the period September 2004 to September 2011. Total 133 cases presented as skin tumours of these 53 cases (39.84%) were histologically diagnosed as benign and 80 cases (60.16%) were diagnosed as malignant lesions. The ratio of benign to malignant skin tumours was 0.66:1 indicating predominance of malignant lesions.

Total 15405 specimens were received in the histopathology section during the study period from September 2004 to September 2011. Out of these 3200 were diagnosed as cancers of various sites in the body and cancers of skin accounted for 80(2.5 %) cases.

In the present study the most common malignancy was squamous cell carcinoma with occurrence of 46.25% cases of total skin malignancies followed by basal cell carcinoma (26.25%), verrucous carcinoma (5%), adnexal carcinoma (7.5%) and malignant melanoma (11.25%).

Keywords: skin tumours, malignant lesions, cancers, and carcinoma.

I. INTRODUCTION

Skin with its appendages is a complex dynamic organ that produces a variety of tumours.¹ More than being just a barrier to fluid loss and mechanical injury, skin is composed of cells that contribute to protective functions.¹ Skin tumours are a frequent occurrence in the clinical set up. Many times this is the patient's reason for seeking medical attention. Skin tumours exhibit a great variation in clinical presentation, biologic behavior and histologic pattern.²

The histopathology of tumours related to follicular, sebaceous, apocrine epithelium are at times difficult to interpret. Difficulties arise because of the variety and complexity of histologic, ultra structural and histochemical study, complex nomenclature, multiple classifications and conflict in opinion regarding histogenesis of some of the entities and relative rarity of these tumours.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.²

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.⁴

Even sophisticated investigations such as computerized tomography (CT) and tumour markers may not be useful in skin tumours. In such cases histopathology alone remains a diagnostic tool.⁴

In conclusion, histopathological investigation of excised skin lesions yields a high percentage of pre-malignancies and malignancies. This indicates that all excised skin lesions must undergo histopathological investigation to ensure that malignancies are not missed. Thus early recognition, diagnosis and treatment offer the best chance for cure.⁵

The knowledge of histopathological patterns can help in prognosis and planning an effective management.⁶

II. MATERIALS AND METHODS

The present study was carried out in the department of pathology in a tertiary care centre. This study included tumours of epidermis along with melanocytic tumours and adnexal tumours of skin including secondaries without restricting the study to any particular age limit. Mesenchymal tumours of skin, haematological tumours of skin, neural tumours of skin, nonneoplastic lesions of skin and all tumours arising from mucosal area of mucocutaneous junction such as glans penis and eyelid margin were excluded. The study was prospective (2years) as well as retrospective (5 years) and was done during the period of September 2004 to September 2011 i.e.7 years. Data for retrospective study was obtained from departmental records, tissue blocks and slides. Data for prospective study was obtained from clinical records, tissue specimens; tissue blocks and slides Clinical details were obtained and maintained according to the proforma.

All the biopsies and resected specimens received in the histopathology section were immediately fixed in 10% formalin for 24 hours. Gross features of the specimen were noted. Multiple sections of the specimen were taken. Then they were processed and embedded in paraffin wax. Three-five microns thick sections were prepared and then stained with Haematoxylin & Eosin.

Detailed study of the sections was performed under the light microscope and then the final diagnosis was given.

Ethical clearance: Ethical clearance has been obtained from Ethical committee of institution.

Statistical methods applied:

Following Statistical methods were applied in the present study.

1. Number and percentage
2. Descriptive statistics

III. RESULTS

The present study was a retrospective and prospective study of skin tumours during the period September 2004 to September 2011. Total 133 cases presented as skin tumours of these 53 cases (39.84%) were histologically diagnosed as benign and 80 cases (60.16%) were diagnosed as malignant lesions. The ratio of benign to malignant skin tumours was 0.66:1 indicating predominance of malignant lesions.

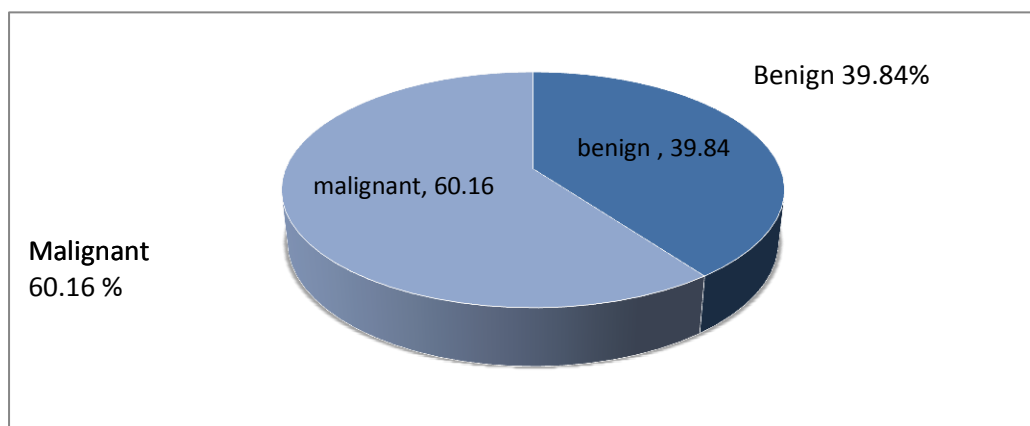


Figure 1: Distribution of benign and malignant tumours of skin.

Table 1: Distribution of skin cancers

Total number of cancers of all organs including skin cancers	Number of skin cancers	Percentage
3200	80	2.5

Total 15405 specimens were received in the histopathology section during the study period from September 2004 to September 2011. Out of these 3200 were diagnosed as cancers of various sites in the body and cancers of skin accounted for 80(2.5 %) cases.

Table 2: Distribution of benign and malignant tumours of skin

	Number and percentage of epidermal tumours	Number and percentage of adnexal tumours	Number and percentage of melanocytic tumours	Total Number and percentage
Benign	11 (20.75%)	29(54.71%)	13(24.54%)	53(39.84%)
Malignant –Primary	62(80.51%)	6 (7.81%)	9 (11.68%)	77(57.89%)
Malignant –Secondaries	3 (2.27%)	-	-	3(2.27%)
Total No of cases	76(57.14%)	35(26.32%)	22(16.54%)	133

Out of 133 skin tumours, malignant lesions accounted for 80 (60.16%) cases and benign lesion constituted 53 (39.84%) cases. Out of 80 malignant skin tumours malignant epidermal lesions were the most common lesions comprising of 62(80.51%) cases followed by malignant adnexal tumours 6(7.81%) cases, malignant melanoma 9 (11.68%) cases and 3(2.27%) cases were of metastatic lesions. Out of 53 benign lesions, benign tumours of adnexae constituted 29 (54.71%) cases, benign melanocytic tumours 13(24.54%)cases and and benign tumours of epidermis 11cases (20.75%).Thus malignant epidermal tumours were the most common lesions.

Following table shows age distribution of benign tumours of skin.

Table 3: Age distribution of benign tumours of skin

Age in years	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Total
Benign tumours										
Epidermal										
Actinic keratosis	-	-	-	-	1	1	-	-	-	2
Verruca vulgaris	1	-	-	-	1	1	1	-	-	4
Verruca plantaris	-	-	1	-	-	-	-	-	-	1
Seborrheic Keratosis	-	-	-	-	-	-	1	1	-	2
Warty dyskeratoma	-	-	-	1	-	-	-	-	-	1
Keratocanthoma	-	-	-	-	1	-	-	-	-	1
Adnexal-Hair follicle										
Pilomatricoma	-	2	2	1	-	-	2	1	-	8
Trichofolliculoma	1	-	-	-	-	-	-	-	-	1
Trichoepithelioma	-	1	-	-	1	1	-	-	1	4
Sweat gland										
Chondroid syringoma	-	-	1	-	2	1	1	-	-	5
Hidradenoma	-	-	-	1	-	-	-	-	-	1
Apocrine Hydrocystoma	-	-	-	1	-	-	-	-	-	1
Poroma	-	1	1	-	2	-	-	1	-	5
Spiradenoma	-	-	1	-	1	1	-	-	1	4
Melanocytic										
Intradermal naevus	-	1	1	7	1	-	-	-	1	11
Compound naevus	1	-	-	-	-	-	1	-	-	2
Total	3	5	7	11	10	5	6	3	3	53

As shown in the above table in the present study the maximum number (highlighted in bold) that is 28 (52.83%) among 53 cases of benign skin tumours belonged to 3rd to 5th decade.

Table 4: Age distribution of malignant tumours of skin

Malignant tumours	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Total
SCC	-	-	2	1	2	7	16	8	1	-	37
Verrucous Carcinoma	-	-	-	1	1	1	1	-	-	-	4
BCC	-	1	-	-	3	4	8	4	1	-	21
Malignant melanoma	-	-	-	1	1	1	4	1	-	1	9
Adnexal carcinoma	-	-	-	-	1	2	3	-	-	-	6
Secondaries	-	-	-	-	-	-	2	1	-	-	3
Total	-	1	2	3	8	15	34	14	2	1	80

As shown in the above table maximum number of cases that is 63(78.75%) among 80 malignant skin tumours including secondaries belonged to the age group of 6th to 8th decade.

Following table shows sex distribution of benign tumors of skin.

Table 5: Sex distribution of benign tumors of skin

Sex	Number of cases	Percentage
Male	20	37.74
Female	33	62.26
Total	53	100

The study showed female predominance in distribution of benign tumors of skin with the male to female ratio of 0.60:1.

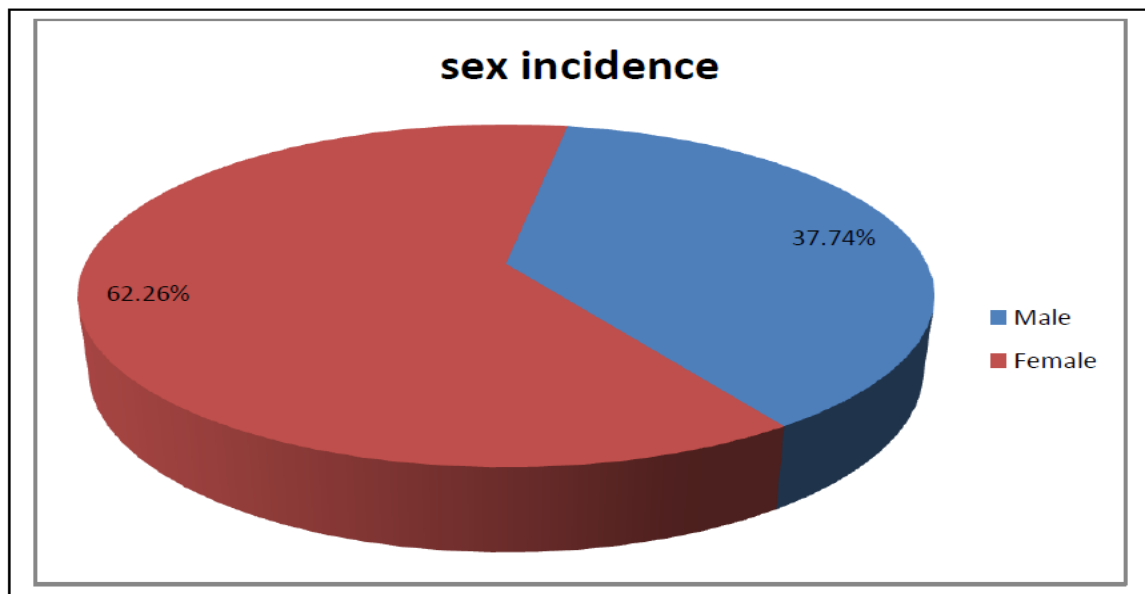


Figure 2: Sex distribution of benign tumours of skin.

The above pie chart shows female predominance in distribution of benign tumors of skin.

Following table shows sex distribution of malignant tumors of skin.

Table 6: Sex distribution of malignant tumors of skin

Sex	Number of cases	Percentage
Male	51	63.75
Female	29	36.25
Total	80	100

As shown above there was male predominance in sex distribution of malignant tumors of skin with the male to female ratio of 1.75:1.

Adnexal tumours of skin.

In the present study there were 35 cases of skin adnexal tumours out of which 29(82.85%) were benign and six(17.15%) were malignant.

Following table shows distribution of skin appendageal tumours according to their histological differentiation.

Table 7: Distribution of skin appendageal tumours according to their histological differentiation

Skin appendage and differentiation	Number of benign tumours(%)	Number of malignant tumours(%)	Total number of tumours(%)
Hair follicle differentiation	13(55.17%)	1(16.6%)	14(40%)
Sweat gland Differentiation	16(44.83%)	2(33.4%)	18(51.42%)
Sebaceous differentiation	0	3(50%)	3(8.58%)
Total No of cases	29(82.85%)	6(17.15%)	35(100%)

In the present study benign tumours formed the majority (82.8%) of tumours compared to malignant adnexal tumours (17.2%).

Among these benign adnexal tumours the frequency of occurrence of sweat gland tumours was highest (55.17%) followed by hair follicle tumours (44.83%).

Table 8: Sex distribution of various benign adnexal tumours of hair follicle differentiation.

Hair follicle tumours	Males	Females	Total	%
Pilomatricoma	4	4	8	61.5
Trichofolliculoma	1	0	1	7.7
Trichoepithelioma	1	3	4	30.8
Total	5	8	13	100

The above table shows distribution of cases of benign adnexal tumours with hair follicle differentiation according to sex and histological types.

Hair follicle tumours constituted 44.8% of the 29 benign adnexal tumours out of which majority (61.5%) of cases were pilomatricoma followed by trichoepithelioma (30.8%) and trichofolliculoma (7.7%). Majority of cases were seen in females with male to female ratio of 0.62:1.

IV. DISCUSSION

Skin tumours constitute a small but significant proportion of patients. Skin tumours are so ubiquitous that they can affect people of all ages and is an ideal subject for study from clinical and morphological point of view.

In this study, the WHO classification (2003) of skin tumours was followed.

During the seven year study period, there were total 133 cases of skin tumours. Among these, skin cancers were 80 in number constituting 2.5 % of total diagnosed cancers of all organs in the Department of Pathology.

The ratio of benign tumours (53) to malignant tumours (80) was 0.66:1

Skin malignancies are rare in India compared to western countries.²⁹ In India, skin malignancies constitute about 1-2% of all diagnosed cancers.²⁷

Table 9: Following table shows distribution of skin cancers in various studies with respect to cancers of other organs.

Author	Percentage of skin cancer
Deo S V et al ⁷ (2005) (n=77)	2.4%
Bhudraja SN et al ⁹ (1972) (n=102)	2.08%
Chakravorthy R C et al ¹⁰ (1968) (n=115)	1.87%
Kapoor R et al ¹² (1993) (n=148)	8.16%
Present study (2011)(n=80)	2.5%

As shown in the above table the frequency of occurrence of malignant neoplasms of skin studied by different authors ranged from 1.87% to 8.16% of all malignancies. **It was 2.5% in the present study.** This finding of present study is comparable to the study of Chakravorthy R C et al¹⁰ (1968), Deo S V et al⁷ (2005), Budharaja S N et al⁹ (1972).

However Kapoor et al¹² (1993) found higher frequency of occurrence of malignant neoplasms of skin.

The table below shows comparative distribution of different malignant neoplasms of skin in various studies.

Table 10: Comparative distribution of different malignant tumours of skin in India in various studies

Author Type of tumour	Bhudraja SN et al ⁹ (1972) (n=102)	Chakravorthy RC et al ¹⁰ (1968) (n=115)	Deo SV et al ⁷ (2005) (n=77)	Present study (2011) (n=80)
Squamous cell carcinoma	49.02%	64.4%	55.8%	46.25%
Verrucous carcinoma	-	-	-	5%
Basal cell carcinoma	17.65%	16.5%	18.1%	26.25%
Malignant melanoma	29.41%	8.7%	26.1%	11.25%
Adnexal carcinomas	0.98%	2.6%	-	7.5%
Dermatofibrosarcoma	2.94%	-	-	-
Dermatofibrosarcoma protuberance	-	5.2%	-	-
Rhabdomyosarcoma	-	1.8%	-	-
Kaposi sarcoma	-	0.8%	-	-
Secondaries	-	-	-	3.75%

In the present study SCC accounted for maximum number (46.25%) of cases. This finding is similar to the study of Budharaja S N et al⁸ 1972. However Chakravarthy⁹ et al¹⁹⁶⁸ found higher incidence of squamous cell carcinoma (64.4%) because geographical area selected by him for the study belonged to latitude of 22.5N, which is an area with maximum sun exposure. In the present study the most common malignancy was squamous cell carcinoma with occurrence of 46.25% cases of total skin malignancies followed by basal cell carcinoma (26.25%), verrucous carcinoma (5%), adnexal carcinoma (7.5%) and malignant melanoma (11.25%).

In the study by Deo S V et al⁷(2005) ,Bhudraja S N et al⁸(1972), Chakravorthy R C et al⁹(1968), there was considerable difference in frequency of occurrence of squamous cell carcinoma, basal cell carcinoma malignant melanoma and adnexal carcinoma as compared with the present study which is due to the variable sample sizes of other studies and different geographical areas selected for their studies.

Tumours of skin appendages:There were 35 cases of appendageal tumours out of which 29 were benign and six were malignant. The table below shows frequency of adnexal tumours in various studies.

Table 11: Comparison of frequency of adnexal tumours in various studies

Cases Author	Benign		Malignant		Total No of cases
	No	%	No	%	
Reddy et al ⁶ (1982) (n=85)	59	69.4	26	30.6	85
Vaishnav and Dharkar et al ¹¹ (1982) (n=48)	43	89.6	5	10.4	48
Present study (2011) (n=35)	29	82.85	6	17.15	35

In the present study there were 35 cases of adnexal tumours, with benign adnexal tumours forming the majority (82.85%). In the study by Vaishnav and Dharkar¹¹ et al (1982) benign adnexal tumours formed the majority. Thus findings of present study are comparable with the study of Vaishnav and Dharkar¹¹ et al (1982).

Benign tumours of skin adnexae.

There were 29 cases of benign adnexal tumours in the present study.

Table 12: Comparison of frequency of benign adnexal skin tumours

Author Tumours	Solanki RL et al ¹² (1989) (n=94)	Nair SP et Al ¹³ (1989) (n=33)	Kartha et al ¹¹ (1982) (n=83)	Present study (2011) (n=29)
Hair follicle tumours	22(23.4%)	12(36.36%)	35(42.2%)	13(44.83%)
Sweat gland tumours	50(53.2%)	19(57.56%)	45(54.2%)	16(55.17%)
Sebaceous gland tumours	22(23.4%)	2(6.06%)	3(3.6%)	-
Total No of cases	94	33	83	29

As shown in the above table the frequency of occurrence of sweat gland tumours was higher (55.17%) in the present study. Solanki RL et al¹⁴ (1989), Nair SP et al¹³ (1989) and Kartha et al⁶ (1982) also noted higher frequency of sweat gland tumours in their study. Sebaceous gland carcinoma was the most common type (50%) followed by sweat gland carcinoma (33.3%) and hair follicle carcinoma (16.7%).

In the study by Reddy⁶ et al (1982) sebaceous carcinoma was the most common type (57.7%) followed by sweat gland carcinoma (42.3%). Our findings are similar to study of Reddy⁶ et al (1982).

Metastatic skin lesions: Three cases of metastasis were observed in the present study with female predominance as two cases occurred in females and one in male within age range of 50-66 years. One case was seen in 50 year female with ulcer on skin of left scapula with metastasis from well differentiated squamous cell carcinoma of cervix. In other two cases primary was located in oropharynx. In these two cases the metastatic lesions were located on right side of neck and leg underneath the epidermis of skin of that region.

Imachi M et al¹⁵ (1993), observed skin metastasis from carcinoma of the uterine cervix in 15 patients of total 1190 patients with most common sites of skin lesions were the abdominal wall and vulva, followed by the anterior chest wall. Yoskovitch A et al¹⁶ (2001) also observed skin metastasis from in squamous cell carcinoma of head and neck in 798 patients.

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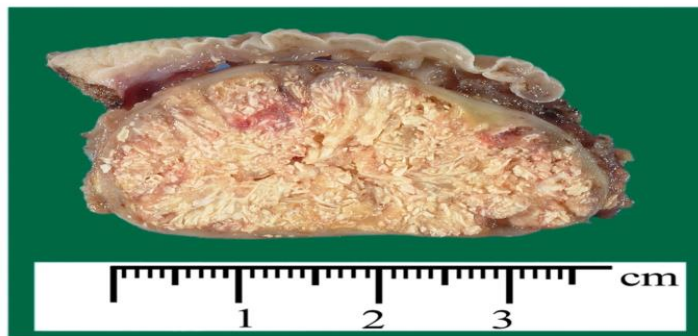
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APPENDIX – A

Specimen Photographs:



Gross specimen photograph of amputated specimen of left lower limb showing squamous cell carcinoma measuring of size 10 x 6cm.



Gross specimen of pilomatricoma showing lobulated mass measuring 2x2cm with variable amounts of chalky white material on the cut surface