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Comparative Distribution of Squamous Cell Carcinoma in India - A 7 Year Study

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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%).

Key words: *skin tumours, malignant lesons, cancers, carcinoma.*

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]

Incidence of skin tumours has increased dramatically over the last several decades at least in part as a result of increasing sun exposure necessitating vigourous 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]

MATERIALS AND METHODS

The present study was carried out in the department period 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 of the 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

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.[8] In India, skin malignancies constitute about 1-2% of all diagnosed cancers.[7]

As shown in the below table the frequency of occurrence of malignant neoplasms of skin studied by different authours 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 al[9](1968), Deo S V et al[7] (2005), Budharaja S N et al[8](1972).

However Kapoor et al[10] (1993) found higher frequency of occurrence of malignant neoplasms of skin.

Table 1: 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 al27 (2005) (n=77)	2.4%
Budharaja S N et al29 (1972) (n=102)	2.08%
Chakravorthy R C et al29 (1968) (n=115)	1.87%
Kapoor R et al73 (1993) (n=148)	8.16%
Present study (2011)(n=80)	2.5%

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

Table 2: Comparative distribution of different malignant tumours of skin in India in various studies

Author / Type of tumour	Bhudraja SN et al8(1972) (n=102)	Chakravarthy RC et al9 (1968) (n=115)	Deo SV et al7 (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 protuberaence	_	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 al[8] 1972. However Chakravarthy[9]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 al[7](2005) ,Bhudraja S N et al[8](1972), Chakravorthy R C et al[9](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.

Malignant tumours of epidermis

Squamous cell carcinoma

In the present study 37 cases of SCC were encountered accounting for 46.25% of total skin cancers.

Following table shows the sex and location wise distribution of cases of Squamous cell carcinoma.

Table 3: Location wise distribution of Squamous cell carcinoma in both sex.

Site	Males		Females		Total	
	No	%	No	%	No	%
Head and neck	10	38.47	4	36.36	14	37.8
Extremities	4	15.38	4	36.36	8	21.7
External genitalia	12	46.15	3	27.28	15	40.5
Total	26	100	11	100	37	100

The above table shows that in males external genitalia was the most common site of squamous cell carcinoma and in females the commonest locations of squamous cell carcinoma were head, neck and extremities.

Following table shows age and sex distribution of squamous cell carcinoma.

Table 4: Age and sex distribution of squamous cell carcinoma

Age in years	Males		Females		Total	
	No	%	No	%	No	%
20-29	2	7.6	0	0	2	5.40
30-39	1	3.8	0	0	1	2.70
40-49	1	3.8	1	2.7	2	5.40
50-59	5	19.2	2	5.4	7	18.94
60-69	11	42.3	5	45.2	16	43.24
70-79	6	23.1	2	18.1	8	21.62
80-89	0	0	1	9.09	1	2.70

As shown in the above table the maximum number (83.8%) of cases of squamous cell carcinoma were seen in the age group of 6th to 8th decade in both males and females.

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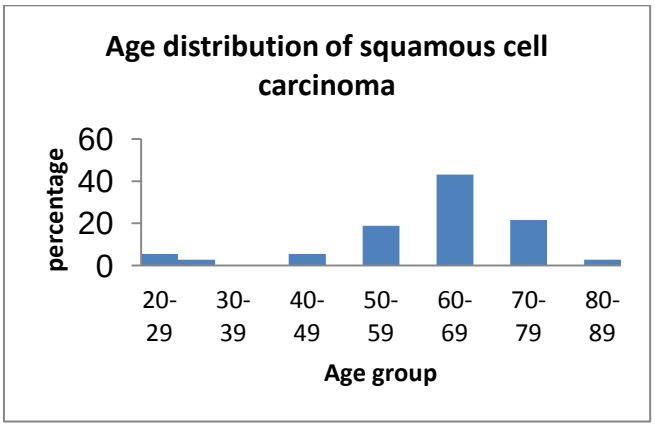


Figure 1: Age distribution of squamous cell carcinoma

As shown in the above bar diagram maximum number (43.2%) of cases of squamous cell carcinoma were in the age group of 60-69 years.

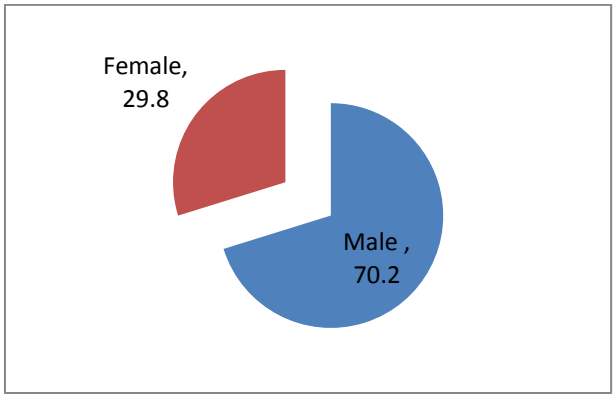


Figure 2: Sex distribution of squamous cell carcinoma

In the present study squamous cell carcinoma was predominantly seen in males (70.2%cases) with the male to female ratio of 2.3:1.

Table below shows grading of squamous cell carcinoma in 37 cases.

Table 5: Conventional grading of squamous cell carcinoma

Grade	Number of cases	Percentage (%)
Well Differentiated	25	67.57
Moderate Differentiated	8	21.62
Poorly Differentiated	4	10.81
Total	37	100

As shown in the above table out of 37 cases, majority of squamous cell carcinoma were graded as well differentiated tumours, followed by moderate and poorly differentiated carcinoma.

Table 6: Broder's grading of squamous cell carcinoma

Grade	Number of cases	Percentage
I	25	67.57
II	4	10.81
III	4	10.81
IV	4	5.41

As shown in the above table all squamous cell carcinomas were graded conventionally as well, moderate and poorly differentiated and this was in accordance with Broder's grading. Majority of the squamous cell carcinomas were well differentiated (67.5%). All the 25 cases of Broder's grade I correspond to well differentiated squamous cell carcinoma. Four cases of grade (II&III) belonged to moderate differentiated and 4 cases of grade IV correspond to poorly differentiated squamous cell carcinoma.

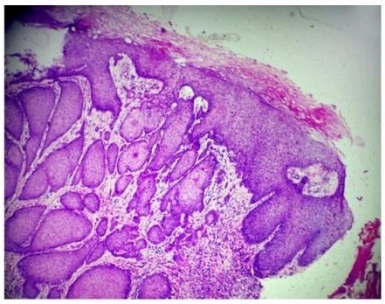
Verrucous carcinoma: In the present study there were four cases of verrucous carcinoma . Patient's age group was from 35 to 65 years.

Microscopically these tumours showed a classical exo and endophytic growth pattern. The down growths of the epidermis were bulbous with varying depths with an intact basement membrane. The neoplastic squamous cells were pale eosininophilic and nuclear size was small. Cellular atypia, mitotic activity and other characteristics of malignancy were absent.

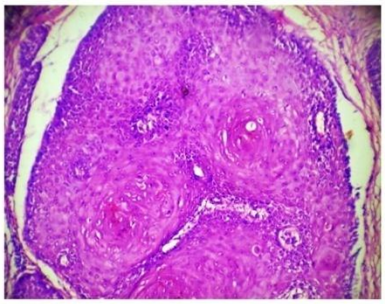
In the present study all four cases of verrucous carcinoma were males, the most common location of verrucous carcinoma was foot followed by external genitalia .

DISCUSSION

Skin tumours constitute a small but significant proportion of patients with cancer. Skin tumours are an ideal subject for study from clinical and morphological point of view and so ubiquitous that they can affect people of all ages.A histopathological study of 133 cases of skin tumours (this includes tumours of epidermis, melanocytes and skin appendages) was carried out in Department of Pathology , over a period of 7 years.Out of 133 cases, 53 were diagnosed as benign and 80 as malignant tumours of skin constituting 39.84% and 60.16% respectively.The ratio of benign to malignant skin tumours is 0.66:1 indicating predominance of malignant lesions with male to female ratio of 1.14:1.Out of a total 3200 cancers detected in the Department of Pathology, 80 cases of skin malignancies were encountered which accounted for 2.5 % of all diagnosed cancers.Among the 53 benign tumours, 29 (54.71%) were tumours of skin appendages, 11 (20.75%) were epidermal in origin and 13 (24.54%) were of melanocytic origin.Out of 80 malignant tumours, 62 (80.51%) were tumours of epidermal origin, 6 (7.81%) were of skin appendages and 9 (11.68%) were from the melanocytic origin and 3(2.27%)were metastatic in origin . 62 cases of malignant epidermal tumours were encountered, of which squamous cell carcinoma was the commonest (37 cases-46.25%), followed by basal cell carcinoma (21 cases -26.25%) and Verrucous carcinoma (four cases-5%). Thirty seven cases of SCC were encountered accounting for 46.25 % of all the malignant neoplasms of skin with maximum number of cases in 7th decade in both males and females with male preponderance (70.2%) and highest number of cases 15(40.5%) occurred on the skin of external genitalia(penis and vulva) and 14(37.8%) cases on head and neck and 8(21.7)cases on extremities. Majority(67.5) of the squamous cell carcinomas were well differentiated. Four cases of verrucous carcinoma were encountered.Patients age ranged from 25 to 75 years. All cases occurred in males (100%).The sites of occurrence of these tumours according to decreasing order of distribution were foot–3 cases and external genitalia-1 case.



Photomicrograph of squamous cell carcinoma (100 x H&E) showing large round to polygonal cells with abundant eosinophilic cytoplasm with pleomorphic hyperchromatic nucleus. Many well fomed keratin pearls are seen.



Photomicrograph of squamous cell carcinoma (400 x H&E) showing many well fomed keratin pearls.

CONCLUSION

Skin being the largest organ, it is only to be expected that large number and large variety of tumors occur in this organ. As different types of tissues constitute skin, a large number of tumors including both epithelial and non-epithelial occur in the organ. Some of the tumors are not common and others show a wide spectrum of morphological features that are confusing the pathologists. It is rarely that a general surgical pathologist is fairly conversant with all the skin tumors.

Skin tumours constitute a small but significant proportion of patients with cancer. The skin is a complex organ. Because of its complexity a wide range of diseases develop from the skin including tumors from surface epidermis, epidermal appendages and dermal tissue.

The diagnosis of skin tumours presents unique difficulties, in part, related to the wide variety of tumors and the complicated nomenclature. The study of histogenesis of the adnexal tumours is interesting, fascinating and challenging because of wide range of differentiation.

Unlike in the Western countries, Squamous cell carcinoma is the commonest malignant skin tumour in India. Histopathological study is one of the most valuable means of diagnosis in dermatopathology and the diagnosis of skin tumours can be done by correlating clinical features, gross and histological appearances.

The present study emphasizes the various patterns of skin neoplasms in this geographic location in and around city.

Finally the quintescence of the subject of study of skin tumours is it's vastness, it's enormity and its interesting histomorphology

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