Original Article

A Clinicopathological Study of Cutaneous Malignancies from a Tertiary Care Hospital in Central Punjab, Pakistan

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Abstract

Background: Cutaneous malignancies, the most common malignancies in the Caucasian population, affect millions worldwide.

Objective: To know the frequency and clinicopathological spectrum of different cutaneous malignancies presenting at a Tertiary care hospital in Kharian, Pakistan.

Methods: This cross sectional study was conducted at Dermatohistopathology Department of a tertiary care hospital in Kharian, Central Punjab, Pakistan, from December 2018 to November 2021 for a duration of three years. The sample was collected from the biopsy specimens with clinical diagnosis indicating tumours of the skin and subcutaneous tissue. Patient information was gathered from the clinical details submitted by the clinicians. Site of tumour, type of biopsy performed and the specialty of the clinician submitting the specimen was recorded. The specimens were examined by a team comprising a dermatologist and a histopathologist. The malignancies were grouped into Keratinocyte carcinoma which included Basal cell carcinoma and squamous cell carcinoma, Keratoacanthoma, Malignant Melanoma and other rare malignancies. The data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 23.

Results: Out of 122 specimens included in the study 72 (59.0%) belonged to male patients and 50 (41.0%) to female patients. 50% of Cutaneous malignancies were seen in sixth and seventh decade of life. Face was the most common body site affected. Keratinocyte carcinomas were the most common Cutaneous malignancies (n=92, 75.4%). Basal cell carcinoma was the commonest cutaneous malignancy detected in 41.0% of patients. BCC and Cutaneous Squamous cell carcinoma (cSCC) comprised 54.3% and 45.7% of all Keratinocyte carcinomas respectively. Cutaneous Melanoma was an uncommon tumour and it was detected in only 4.9% of cases.

Conclusion: Keratinocyte Carcinomas account for majority of Cutaneous Malignancies. Basal cell carcinoma is the most common skin malignancy, followed by squamous cell carcinoma. The frequency of Cutaneous Melanoma is very low.

Keywords: Basal Cell Carcinoma, Clinicopathological spectrum, Cutaneous Malignancies, Cutaneous Squamous Cell Carcinoma, Keratinocyte Carcinomas, Non Melanoma Skin Cancers, Cutaneous Melanoma.

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Introduction

Cutaneous malignancies, the most common malignancies in the Caucasian population, affect millions worldwide.[1-3] These malignancies can be broadly classified into two main groups namely Keratinocyte carcinomas (KCs) and Malignant melanoma (MM). Together these two groups account for more than 95% of total cutaneous malignancies.[3] Keratinocyte carcinomas (KCs) which comprise Basal cell carcinoma (BCC) and Squamous cell carcinoma (SCC) are the most common malignancies worldwide and their incidence is increasing.[4] In the United States, BCCs and SCCs account for approximately 70% to 80%

and 15% of all skin malignancies respectively.[4-5] Melanoma of the skin and other uncommon malignancies like, Lymphomas, adnexal malignancies, Merkel cell carcinoma, sarcomas, and metastasis from internal malignancies account for the remaining 5%.[3-5]

Cutaneous malignancies account for approximately 20% to 30% of all malignancies in Caucasians in the United States but their incidence is very low in Asian Indians in whom they represent only 2% to 4% of all malignancies.[4,6] The low prevalence of cutaneous malignancies in darker skin races can be explained on the basis of the fact that they possess larger and more melanized melanosomes in their melanocytes which give them photoprotection from the harmful effects of ultraviolet radiations twice as compared to the melanosomes of their Caucasian counterparts.[6]

In the developed world, incidence of tumors is obtained by special surveys or registries of population.[4] In developing countries like ours no population based studies or National cancer registries are available.[7] Given the state of affairs knowledge of frequency of various cancers can only be estimated on the basis of hospital based studies and hospital-based cancer registries.[3,7,16] However there is paucity of such studies in Pakistan.[8,10-13,15] To know the frequency of different cutaneous malignancies and their clinical spectrum a clinicopathological study was conducted at a Tertiary care hospital in Central Punjab. The aims of our study were to know the frequency and clinicopathological spectrum of different cutaneous malignancies presenting at a Tertiary care hospital in Kharian, Pakistan.

Methods

This cross-sectional study was conducted at the Dermatopathology department of a tertiary healthcare hospital in Kharian, Central Punjab, Pakistan for three years, from December 2018 to November 2021. Ethical approval was obtained from the ethics review committee of the hospital. The laboratory data was searched for cutaneous malignancies The sample was collected from the biopsy specimens with clinical diagnosis indicating tumours of the skin and subcutaneous tissue. The cases without notes were included in the study if a pathological diagnosis of cutaneous malignancy was made. Patient information was gathered from the clinical details submitted by the clinicians along with the histopathological specimen. The site of tumour, type of biopsy performed and the specialty of the clinician submitting the specimen was recorded. Recurrent tumours were compared with the data from earlier diagnoses and duplicate cases were excluded.

The specimens were examined by a team comprising a dermatologist and a histopathologist who jointly made a histopathological diagnosis for each case. The cutaneous malignancies were grouped into Keratinocyte carcinoma which included Basal cell carcinoma and squamous cell carcinoma, Keratoacanthoma, Malignant Melanoma and other rare malignancies. The rare malignancies included Lymphomas, adnexal malignancies, Merkel cell carcinoma, sarcomas, and metastasis from internal malignancies.

Statistical Package for Social Sciences (SPSS) version 23 was used to analyze the recorded data. Frequencies, percentages and, mean with standard deviations were used to express data, as appropriate. Pearson's chi-square test was used to compare the categorical data. p value < 0.05 was considered significant.

Results

Out of 122 specimens included in the study 72 (59.0%) belonged to male patients and 50 (41.0%) to female patients (Table I). The Male: Female ratio was 1.44:1. The mean age of the patients was 61.06±17.40 years with a range of 18 years to 100 years. The mean age of male patients was 61.86±17.27 years with a range of 18 years to 100 years and that of female patients was 59.92±17.70 with a range of 22 years to 97 years.

Excision biopsy was the most common procedure performed in 97 (79.5%) cases followed by Incisional biopsy in 20 (16.4 %) and Wide local excision in 5 (4.1%) cases.

50% of Cutaneous malignancies were seen in sixth and seventh decade of life (Table II). Cutaneous malignancy was detected in only one patient in second decade of life in the form of Secondary from dysgerminoma.

Of the 122 specimens included, 16 (13.1%) were sent by dermatologists and 106 (86.9%) by non-dermatologists. 53.3% of Cutaneous malignancies were seen on the Head and neck region and 13.1% were seen on the lower extremities (Table III). Face was the most common body site affected by Cutaneous Malignancies in 56 (86.2%) cases.

Out of the 97 excision biopsies and five wide local excisions, margins were clear in only 27 cases and were involved in 24 cases. In 51 cases the margin clearance could not be commented because of fragmentation of specimen.

Distribution of each histological type of Cutaneous Malignancies according to body regions has been summarized in Table IV.

Keratinocyte carcinomas were the most common Cutaneous malignancies (n=92, 75.4%).

Basal cell carcinoma was the commonest cutaneous malignancy detected in 41.0% of patients (Table I). Nodular BCC was the commonest histopathological type. Basi-squamous BCC was found in three cases. This tumour type was more aggressive (Figure 1). BCC and Cutaneous Squamous cell carcinoma (cSCC) comprised 54.3% and 45.7% of all Keratinocyte carcinomas respectively. 56% of cases BCC occurred in sixth and seventh decade and there was no gender predilection (Table I & II).

Cutaneous Melanoma was an uncommon tumour and it was detected in 4.9% of patients (Table I). The mean age of patients with diagnosis of Melanoma was 47.00±17.92 years. Acral Lentiginous Melanoma was the main clinical type found in 50% of cases. Melanoma involved big toes in two cases, thumb and face each in one case out of six cases. 50 % of cases occurred in fourth decade (Table II). Five out of six excisions were performed by General surgeons. Margins were clear on Histopathological analysis in two cases.

Figure 1: *Basi-squamous BCC in a female patient.*

Clinico-pathological characteristics of all malignancies have been summarized in Table 1, 2, 3 and 4.

Discussion

Malignancies of skin are the commonest malignancies.[1-2,6,17-18] The true incidence is not available because Keratinocyte cancers are excluded from the estimates of cancer cases worldwide due to their higher incidence and relatively low mortality rates.[4,19] So different types of studies are used to estimate the numbers for BCC and SCC. In the United States the incidence of Keratinocyte cancers exceeds the number of all other cases of human malignancies combined.[4]

Our study found Keratinocyte Carcinomas to be the commonest cutaneous malignancies (n=92, 75.4%). A wide variation in frequency of Keratinocyte Carcinomas has been reported. Our findings were consistent with Jaffar N et al,[8] Azad S et al,[9] Sarfraz T et al,[13] Goel P et al,[14]Arab KA et al[16] and Hammad MF et al,[20] Ahmad M.[11] reported frequency of Keratinocyte Carcinomas to

Table 1: *Frequency, Mean age and Gender distribution of Cutaneous Malignancies.*

Cutaneous Malignancy	Total N (%age)	Histological types of malignant tumour	Mean age (Years)	Total N (% of Cutaneous Malignancy	Gender	
					Male N (%age in Histological type)	Female N (%age in Histological type)
Basal Cell Carcinoma (BCC)	50 (41.0%)	Nodular BCC	65.98±12.350	42 (84.0%)	22 (52.4%)	20 (47.6%)
		Basisquamous BCC	35.67±12.503	3 (6.0%)	1 (33.3%)	2 (66.7%)
		Micronodular BCC	-	1(2.0%)	1 (100%)	0
		Pigmented BCC	58.25±14.57	4 (8.0%)	1 (25.0%)	3 (75.0%)
			64.16±14.98	50 (100%)	25 (50%)	25 (50%)
Squamous Cell Carcinoma (SCC)	42 (34.4%)	SCC Well differentiated G1	67.44±15.36	32 (76.2%)	18 (59.3%)	14 (43.7%)
		SCC Moderately Differentiated G2	64.78±12.64	9 (21.4%)	8 (88.9%)	1(11.1%)
		CA in Situ	-	1 (2.4%)	0	1 (100%)
			67.17±14.66	42 (100%)	26 (61.9%)	16(38.1%)
Keratoacanthoma	9 (7.4%)	Keratoacantoma	39.67±16.51	9 (100%)	6(66.7%)	3 33.3%)
Cutaneous Melanoma	6 (4.9%)	Cutaneous Melanoma	47.00±17.92	6 (100%)	5 (83.3%)	1 (16.7%)
Soft-tissue Sarcomas	3 (2.4%)	Dermatofibrosarcoma Protuberans	50.33±21.39	3 (100%)	3 (100%)	0
		Mixoid Liposarcoma	33.50±14.85	2(100%)	2 (100%)	0
		Undifferentiated soft tissue sarcoma	-	1 (100%)	1 (100%)	0
			47.00±19.09	3 (100%)	6 (100%)	0
Appendageal Carcinoma	1 (0.8%)	Pilomatrical Carcinoma	-	1 (!00%)	0	1 !00%)
Cutaneous Lymphoma	2 (1.6%)	Cutaneous T Cell Lymphoma	-	1 (50%)	1 !00%)	0
		Diffuse large B cell lymphoma	-	1 (50%)	0	1 (100%)
			53.50±2.12	2 (100%)	1 (50%)	1 (50%)
Kaposi Sarcoma	1 (0.8%)	Kaposi Sarcoma	76.00	1 (100%)	1 (100%)	0
Merkel Cell CA	1 (0.8%)	Merkel Cell CA	75.00	1 (100%)	0	1 (100%)
Secondary from elsewhere	4 (3.3%)	Secondary from elsewhere	45.00±23.64	3 (75%)	2 (66.7%)	1 (33.3%)
		Extramammary Paget's disease	-	1 (25%)	0	1 (100%)
			45.0±19.31	4 (100%)	2 (50%)	2 (50%)
Total	119 (100%)		61.06±17.40	122	72 (59.0%)	50 (41.0%)

Table 2: *Decade-wise frequency of Cutaneous Malignancies.*

Malignancy	Age decade									Total
	Second decade	Third decade	Fourth decade	Fifth decade	Sixth decade	Seventh decade	Eighth decade	Ninth decade	Tenth decade	
Soft-tissue Sarcomas	0	1 (16.7%)	2 (33.3%)	1 (16.7%)	0	1(16.7%)	1(16.7%)	0	0	6
Adenexal Tumours	0	0	0	0	0	1 (100%)	0	0	0	1
Squamous Cell Carcinoma	0	2 (4.8%)	0	2 (4.8%)	13 (31.0%)	9 (21.4%)	8 (19.0%)	7 (16.7%)	1 (2.4%)	42
Basal Cell Carcinoma	0	2 (4.0%)	1 (2.0%)	5 (10.0%)	16 (32.0%)	12 (24.0%)	6 (12.0%)	5 (10.0%)	3 (6.0%)	50
Melanoma	0	1	3 (50.0%)	0	1(16.7%)	0	1(16.7%)	0	0	6
Kerato-acanthoma	0	5 (55.6%)	0	0	2 (22.2%)	2 (22.2%)	0	0	0	9
Cutaneous Lymphoma	0	0	0	0	2 (100%)	0	0	0	0	2
Secondary from elsewhere	1 (25.0%)	0	0	1 (25.0%)	1 (25.0%)	1 (25.0%)	0	0	0	4
Kaposi Sarcoma	0	0	0	0	0	0	1 (100%)	0	0	1
Merkel Cell CA	0	0	0	0	0	0	1 (100%)	0	0	1
Total (%age)	1 (0.8%	11(9.0%)	6 (4.9%)	9 (7.4%)	35 (28.7%)	26 (21.3%)	18 (14.8%)	12 (9.8%)	4 (3.3%)	122

Table 3: *Frequencies of Cutaneous Malignancies according to site.*

Sr.	Body region	Frequency (%age of Total)	Site	Total (%age in Body region)	Gender (%age in body region	
					Male	Female
1.	Head and Neck	65 (53.3%)	Face	56 (86.2%)	31 (47.7%)	25 (38.5%)
			Scalp	9 (13.8%)	6 (9.2%)	3 (4.6%)
			Total		37 (56.9%)	28 (43.1%)
2.	Upper Extremities	12 (9.8%)	Arm	3 (25%)	2 (16.7%)	1 (8.3%)
			Axilla	1 (8.3%)	1 (8.3%)	0
			Forearm	1 (8.3%)	0	1 (8.3%)
			Hand	6 (50%)	5 (41.7%)	1 (8.3%)
			Shoulder	1 (8.3%)	1 (8.3%)	0
			Total		9 (75.0%)	3 (25.0%)
3.	Trunk	11 (9.0%)	Abdome	1 (9.1%)	1 (9.1%)	0
			Abdomen	1 (9.1%)	1 (9.1%)	0
			Back	4 (36.4%)	1 (9.1%)	3 (27.3%)
			Chest	4 (36.4%)	2 (18.2%)	2 (18.2%)
			Chest back	1 (9.1%)	0	1 (9.1%)
			Total		5 (45.5%)	6 (54.5%)
4.	Ano-Genital	5 (4.1%)	Penis	3 (60.0%)	3 (60.0%)	0
			Perianal	1 (20.0%)	1 (20.0%)	0
			Vulva	1 (20.0%)	0	1 (20.0%)
			Total (%age in gender)		4 (80.0%)	1 (20.0%)
5.	Lower Extremities	16 (13.1%)	Buttock	4 (25.0%.)	1 (6.3%)	3 (18.8%)
			Foot	4 (25.0%.)	4 (25.0%.)	0
			Inguinal region	1 (6.3%)	1 (6.3%)	0
			Knee	2 (12.5%)	2 (12.5%)	0

			Leg	2 (12.5%)	2 (12.5%)	0
			Thigh	3 (18.8%)	3 (18.8%)	0
			Total		13 (81.3%)	3 (18.8%)
6.	Site not specified	13 (10.7%)	Total		4 (30.8%)	9 (69.2%)
	Total		Total		72 (59.0%)	50 (41.0%)

Table 4: *Distribution of Cutaneous Malignancies according to body regions.*

Disease group		Total	Body region, N (%age of Type of Malignancy)					
			Head and Neck	Upper Extremities	Trunk	Ano-Genital	Lower Extre-mities	Not specified
Basal Cell carcinoma	Nodular BCC	42	33 (78.6%)	0	3 (7.1%)	0	2 (4.8%)	4 (9.5%)
	Basisquamous BCC	3	1 (33.3%)	0	1 (33.3%)	0	0	1 (33.3%)
	Micronodular BCC	1	1 (100%)	0	0	0	0	0
	Pigmented BCC	4	4 (100%)	0	0	0	0	0
	Total	50	39 (78.0%)	0	4 (8.0%)	0	2 (4.1%)	5 (10.0%)
	Undifferentiated soft tissue sarcoma	1	0	0	0	0	1 (100%)	0
	Dermatofbrosarcoma Protuberans	3	1 (33.3%)	0	2 (66.7%)	0	0	0
	Mixoid Liposarcoma	2	0	0	0	0	2 (100%)	0
	Total	6	1(16.7%)	0	2 (33.3%)	0	3 (50.0%)	0
Squamous Cell Carcinoma	SCC Well differentiated G1	32	15 (15.6%)	4 (12.5%)	2 (6.3%)	5 (15.6%)	4 (12.5%)	2 (6.3%)
	SCC Moderately Differentiated G2	9	3 (33.3%)	3 (33.3%)	0	0	1 (11.1%)	2 (22.2%)
	CA in Situ	1	0	0	1 (100%)	0	0	0
	Total	42	18(42.9%)	7 (16.7%)	3 (7.1%)	5 (11.9%)	5 (11.9%)	4 (9.5%)
Keratoacanthoma	Keratoacantoma	9	4 (44.4)	2 (22.2%)	0	0	2 (22.2%)	0
Melanoma	Melanoma	6	1	1	0	0	3	1
Soft-tissue Sarcomas	Undifferentiated soft tissue sarcoma	1	0	0	0	0	1 (100%)	0
	Dermatofbrosarcoma Protuberans	3	1 (33.35)	0	2 (66.7%)	0	0	0
	Mixoid Liposarcoma	2	0	0	0	0	2 (100%)	0
	Total	6	1(16.7%)	0	2 (33.3%)	0	3 (50.0%)	0
Cutaneous Lymphoma	CTCL	1	0	0	0	0	0	1 (100%)
	Diffuse large B cell lymphoma	1	0	0	0	0	0	1 (100%)
	Total	2	0	0	0	0	0	2
Secondary from elsewhere	Secondary from elsewhere	3	1 (33.3%)	0	1 (33.3%)	0	0	1 (33.3%)
	Paget's disease	1	0	0	1 (100%)	0	0	0
	Total	4	1 (25.05)	0	2 (50.0%)	0	0	1 (25.0%)
Kaposi Sarcoma	Kaposi Sarcoma	1	0	1 (100%)	0	0	0	0
Merkel Cell CA	Merkel Cell CA	1	0	1 (100%)	0	0	0	0
Adenexal Tumours	Pilomatrical Carcinoma	1	1 (100%)	0	0	0	0	0
Total		122	65 (53.3%)	12 (9.8%)	11 (9.0%)	5 (4.1%)	16 (13.1%)	13 (10.7%)

be 96% in the patients attending Private clinic in Islamabad, Pakistan. Similar higher frequency of Keratinocyte Carcinomas has been reported by Ahmed A et al,[10] Soomro FR et al,[12] Almutairi R et

al,[17] and Yasmeen N et al,[21] Paracha MM et al,[15] reported frequency of 50%. Asuquo ME et al,[18] reported frequency of 43.2% from Nigeria.

Basal cell carcinoma was the commonest cutaneous malignancy recorded in our study. BCC and Cutaneous Squamous cell carcinoma (cSCC) comprised 54.3% and 45.7% of all Keratinocyte carcinomas respectively. BCC:SCC ratios was 1.19. Our findings were consistent with Ahmad M.[11] and Goel P et al,[14] and Yasmeen N et al,[21] Soomro FR et al,[12] and Sarfraz T et al,[13] reported a higher ratio of 1.8 and 1.91 respectively. Almutairi R et al,[17] reported a much higher ratio of 5.5 from Kuwait. A recent study by Lukowiak TM et al,[21] found BCC to be more prevalent as compared to cSCC in all races. The BCC: cSCC ratios was 1.60 for Asian patients, 1.45 for Black patients and 1.69 for White patients of all ages. Furthermore, they concluded that the odds of a Keratinocyte Carcinoma being a Basal cell carcinoma tend to decrease with advancing age in both sexes.

56% of cases BCC occurred in sixth and seventh decade and there was no gender predilection (Table I & II). Face was the most common site of involvement and 78.0% of BCCs occurred on the head and neck. Nodular BCC was the main histopathological type found in 84.0% of cases (Table I). Similar findings have been reported previously.[11-13,15] BCC was the most common malignancy submitted by Dermatologists in 9 (18%) patients. However, 54% of BCCs were sent by Plastic surgeons. Margins were clear on Histopathological analysis in 14 (31.8%) out of the 44 cases of BCC.

Squamous cell carcinoma (SCC) was the second most common malignancy, detected in 34.4% of patients (Table I). SCCs accounted for 45.65 % of Keratinocyte carcinomas. SCC was well differentiated G1 in 76.2% of cases and in 21.4% of cases it was moderately differentiated G2 (Table I). CA in Situ (Bowen disease was found in only one patient. 52.4 % of cases occurred in sixth and seventh decade (Table II). The site distribution of SCC was 18(42.9%)on the head and neck was the most common site (Table V). Our findings were consistent with Jaffar N et al,[8] Azad S et al,[9] Soomro FR et al,[12] and Ahmed A et al[10] and Khullar G et al,[23] Sarfraz T et al,[13] reported frequency of 25% for cSCC. Paracha MM et al,[15] reported squamous cell carcinoma to be the most common skin malignancy (40%), followed by basal cell carcinoma (30%) and melanoma with 13 (13%) cases. Majority of specimen with diagnosis of cSCC, i.e. 42.9% were submitted by General surgeons (Table III). Dermatologists submitted 11.9% of specimens. Margins were clear on Histopathological analysis in 14 (31.8%) out of the 22 excision biopsies with diagnosis of SCC.

Cutaneous Melanoma was found to be an uncommon tumour and it was detected in 4.9% (n=6) of patients (Table I). Similar frequency has been reported previously.[10-14,24] Azad S et al,[9] and 9.1% Paracha MM et al,[15] reported frequencies of 9% in their patients. As reported previously Acral Lentiginous Melanoma was the most common variant (n=3, 50%). Although Cutaneous Melanomas comprise only 4-11% of all cutaneous malignancies but, these account for upto 80% the skin cancer related deaths deaths.[24]

Keratoacantoma was detected in 9 (7.4%) cases. Although it is positioned on the border between benignity and malignancy, we included the tumour in our list of Cutaneous Malignancies because a protocol of treatment similar to Well differentiated cSCC has been recommended for this tumour.[25]

Conclusion

Keratinocyte Carcinomas account for majority of Cutaneous Malignancies. Basal cell carcinoma is the most common skin malignancy, followed by squamous cell carcinoma. The frequency of Cutaneous Melanoma is very low and Acral Lentiginous Melanoma was the most common variant. Kaposi Sarcoma and Soft tissue sarcomas are very rare.

Ethical Approval: The study was approved by the Ethical Committee of the CMH Hospital, Kharian Cantt (Ref No. 34, / Ethical Committee/ DME)

Conflict of Interest: There was no conflict of interest to be declared by any author.

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Author's Contribution

AH: Conceptualisation, methodology, data curation, validation, investigation, visualisation, Writing-original draft, writing, reviewing, and editing.

AQ: Data curation, visualisation, investigation, writing, reviewing, and editing. Both authors have approved the final version of the manuscript to be published.

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