



HISTOPATHOLOGICAL PROFILE OF PRIMARY CUTANEOUS MALIGNANCY: A REPRESENTATIVE STUDY OF CENTRAL INDIA

Pathology

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ABSTRACT

Background: Indian population is continuously exposed to harmful effects of ultra violet radiations. Of all the diagnosed cancers in India, less than 1% is skin cancer.

Material and Methods: This retrospective cross sectional study was carried out on 50 cases, at Histo-pathology Department, GMC Akola from January 2017 to December 2019. Malignant skin tumours were categorised into 4 groups -Squamous Cell Carcinoma (SCC), Basal Cell Carcinoma (BCC), Malignant Melanoma (MM) and malignant adnexal tumours. Their subtypes, age, sex and site were also studied.

Results: Most common histopathological diagnosis, was BCC - 25 cases (50%), SCC in 13 cases (26%) and MM 8 cases (16%) while adnexal malignancy was least common - 4 cases (8%). Males outnumbered females.

Conclusion: Histopathology is the gold standard to diagnose all cutaneous malignancies. Proper selection of site and depth of biopsy are mandatory along with good clinico-histological correlation between Dermatologist and Pathologist.

KEYWORDS

Cutaneous malignancy, Ultraviolet radiation, Basal cell carcinoma, Malignant Melanoma, Histopathology

INTRODUCTION:

Although skin cancer is a less common malignancy, its incidence is noted to be progressively increasing over last few decades^{1,2}. Basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant melanoma are the most frequent primary skin cancers. BCC and SCC are together known as Non-Melanomatous Skin Cancers (NMSC). Skin cancers are relatively uncommon malignancies worldwide not ranking among the first ten common cancers¹, although there has been progressive increase in the skin cancers over last few decades².

Of all the diagnosed cancers in India, less than 1% is skin cancer. Hence, there are very few studies available in the literature and probably, ours is one of them especially in Central India. Worldwide, BCC is the commonest cutaneous malignancy, but in India, SCC is reported to be the most prevalent skin cancer³. Skin cancer incidence in India is relatively lower in comparison to the Western world⁴, but absolute number of cases is estimated to be quite significant due to larger population base. In India, skin cancer constitutes less than 1% of all diagnosed cancers. BCC is the commonest skin cancer worldwide, but various studies from India have consistently reported SCC as the most prevalent skin malignancy³.

Conventional thinking is that the incidence of all varieties of skin cancer is lower among Indian population due to protective effect of melanin⁵. However, this is not proved many a times due to large Indian population, being labour class is continuously exposed to harmful effects of ultra violet radiations.

MATERIAL AND METHODS:

The present study was a retrospective cross sectional study carried out on 50 cases. It was conducted in the Histopathology section of Pathology Department of GMC Akola which is a tertiary care centre of Vidharbha region, Maharashtra, India. Skin punch biopsies were received from Department of Dermatology and Surgery over a period of 3 years from January 2017 to December 2019 were included in the present study. Inadequate biopsies were excluded from the study. All biopsy specimens were fixed in 10% formalin, processed and stained with Haematoxylin and Eosin. Special stains like Periodic acid-Schiff (PAS), Masson's Trichrome, Fontana Masson and Reticulin were

studied wherever indicated⁶. Malignant skin tumours were categorised into 4 groups -Squamous Cell Carcinoma (SCC), Basal Cell Carcinoma (BCC), Malignant Melanoma (MM) and malignant adnexal tumours. Their subtypes were also studied. Age, sex, site was studied in details and information was tabulated and following results were obtained.

RESULTS:

Histopathological findings of skin punch biopsies are as follows

Figure 1: Histopathological diagnosis of skin biopsies (n=50)

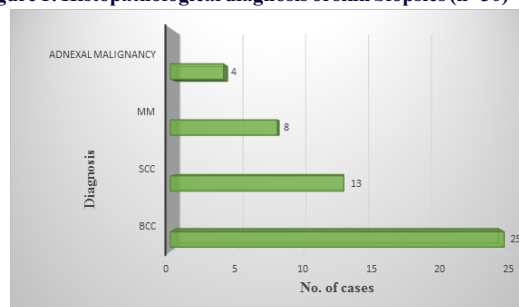


Figure 1 shows, most common histopathological diagnosis, in present study, was BCC - 25 cases (50%), followed by SCC in 13 cases (26%) and MM 8 cases (16%) while adnexal malignancy was least common - 4 cases (8%) in the present study.

Table 1: Distribution of cases as per Site (n=50)

Site	Head, neck	Axilla, arm	Trunk	Penis	Vulva, vagina	Rectum, Anus	Leg, foot	Total
BCC	18	1	4	-	-	-	2	25
SCC	1	-	-	4	2	-	6	13
MM	-	-	1	-	1	2	4	8
Adnexal malignancy	2	1	-	-	1	-	-	4
Total	21	2	5	4	4	2	12	50

Most common site of BCC was head and neck in 18 cases (72%), followed by trunk in 4 cases (16%) (Fig A, B, C & D). Most commonly affecting site of SCC was leg and foot 6 cases (46.15%) followed by penis in 4 cases (30.76%) (Fig G, H & I). Leg and foot was also most

common site for melanoma in 4 cases (50%), followed by rectum and anus in 2 cases (25%) (Fig J). Whereas adnexal malignancy was commonly seen affecting head and neck in 2 cases (50%) (Fig E & F). (Table 1)

Table 2: Type of malignancy and its variants (n=50)

BCC variants		SCC variants		MM variants		Adnexal Malignancy	
Papulonodular	07(28%)	Verrucous	03(23.07%)	Acral lentiginous	04(50%)	Syringoid Eccrine Ca	02(50%)
Pigmented	04(16%)	SCC	02(15.38%)	Lentigo malignant	01(12.5%)	Malignant Nodular hidradenoma	01(25%)
Basosquamous	04(16%)	Adenoid	02(15.38%)	Superficial spreading	01(12.5%)	Sebaceous Carcinoma	01(25%)
Keratotic	3(12%)	Spindle	2(15.38%)	Nodular	1(12.5%)	Total	4
Adenoid	3(12%)	Clear cell	1(7.69%)	Desmoplastic	1(12.5%)		
Superficial multifocal	02(8%)	Pigmented	01(7.69%)	Total	8		
Sclerosing	2(8%)	Basoloid	1(7.69%)				
Total	25	Adenosquamous	1(7.69%)				
		Total	13				

Out of 25 cases of BCC papulonodular variant was most common 7 cases (28%), followed by pigmented type in 4 cases (16%). Out of 13 cases of SCC verrucous type was most common i.e. 3 cases (23.07%), followed by SCC, Adenoid and spindle type 2 cases each (15.38%). Out of 8 cases of Melanoma acral lentiginous was most common i.e. 4 cases (50%). In Adnexal tumors, Syringoid type was most common i.e. 2 cases (50%). (Table 2)

Table 3: Age group and sex distribution (n=50)

Types	Age group				Sex		
	51-60	61-70	71-80	81-90	Male	Female	Total
BCC	5 (20%)	14 (56%)	4 (16%)	2 (8%)	15 (60%)	10 (40%)	25
SCC	2 (15.38%)	11 (84.61)	-	-	11 (84.61%)	2 (15.38%)	13
MM	-	4 (50%)	3 (37.5%)	1 (12.5%)	6 (75%)	2 (25%)	8
Adnexal malignancy	1 (25%)	3 (75%)	-	-	2 (50%)	2 (50%)	4
Total	8	32	7	3	34	16	50

As seen in table 3, malignant cutaneous tumors arise in elderly age above 50 years. Males were commonly affected than females with male to female ratio being 2.1:1.

Most commonly affected age group in BCC was 61-70 years with 14 cases (56%) followed by 71-80 years having 4 cases (16%). BCC was commonly seen in 15 male cases (60%) as compared to 10 female cases (40%). SCC was commonly seen in 61-70 years with 11 cases (84.61%) followed by 2 cases (15.38%) in 51-60 years. SCC was commonly seen in males (11 cases - 84.61%) as compared to females (2 cases - 15.38%). Maximum of 4 cases (50%) of MM was seen in 61-70 years of age, again males (6 cases - 75%) outnumbering females (2 cases - 25%). Also Adnexal malignancy was seen mainly affecting 61-70 years of age with equal number of male and female i.e. 2 cases (50%) each.

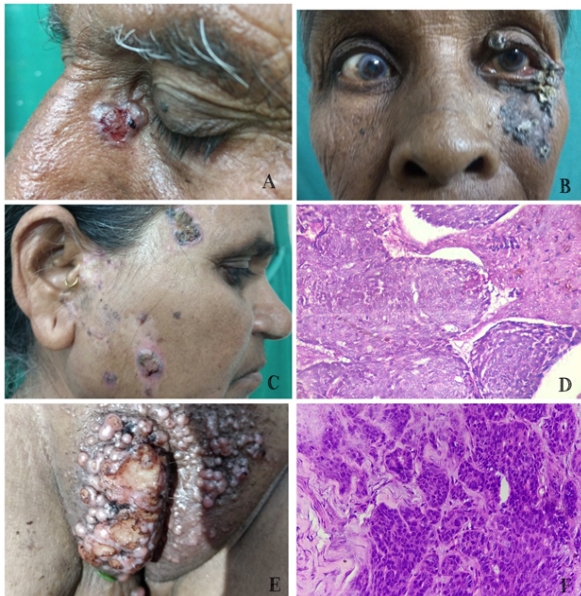


Figure A: Nodulo-ulcerative BCC over nasolabial fold.

Figure B: Pigmented BCC over cheek and eyelid.

Figure C: Superficial Spreading Multiple BCC over forehead and cheek.

Figure D: Microphotograph of BCC showing peripheral palisading of basaloid cells (H&E 200x)

Figure E: Syringoid Eccrine Carcinoma of vulva with extramammary Paget's disease

Figure F: Microphotograph of Syringoid Eccrine Carcinoma of vulva (H&E 200x)

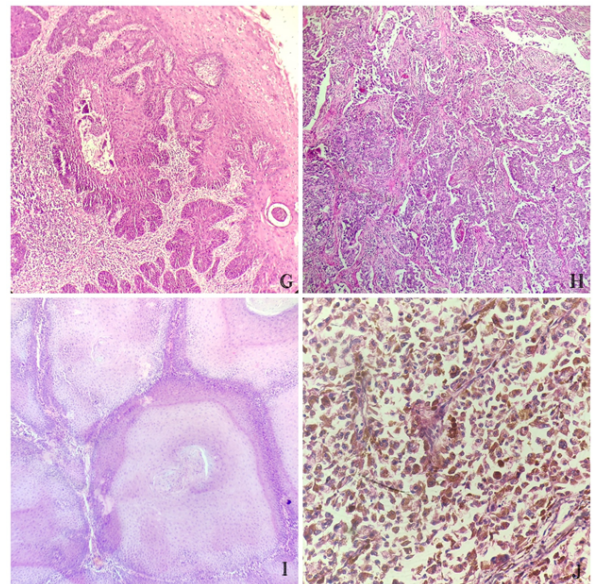


Figure G: Microphotograph of Basosquamous Carcinoma (H&E 200x)

Figure H: Microphotograph of Invasive Squamous Carcinoma (H&E 200x)

Figure I: Microphotograph of Verrucous Carcinoma (H&E 200x)

Figure J: Microphotograph of Melanoma (H&E 200x)

DISCUSSION:

Literature shows very scant studies done over cutaneous malignancies, and hence, probably ours is the first study to be carried out in Central India, conducted at a tertiary care centre.

Table 4: Comparison of different parameters in present study to that of others in literature

Study	Sonal Tina lai ⁷	Abdulkader MA ⁸	Present Study
Age group	62+/-14.2years	60-69years	61-70 years
Sex	Female	Male	Male
Type of malignancy	BCC (54.76%), SCC (36.9%), MM (8.33%)	BCC (61.4%), SCC (16.3%), MM (1.5%), adnexal carcinoma(0.5%)	BCC (50%), SCC (26%), MM (16%), adnexal tumor (8%)
Site	Head and neck(79.76%)	Head and neck (73.7%)	Head and neck (42%)

Most commonly affected age group amongst all types of skin cancers in present study was 61-70 years. This was in concordance with the studies done by Sonal Tina lal and Abdulkader MA. Males were having the preponderance of skin cancers in present study similar to study done by Abdulkader MA, whereas Sonal Tina lal found female dominance. BCC was most common finding in present study followed by SCC, MM and adnexal tumor which was similar to studies done by Sonal Tina lal and Abdulkader MA. (Table 4) Various studies from India reported SCC to be most prevalent skin malignancy.^{3,4,5,9,10}

BCC are most common cutaneous tumors making 70%, exceeding SCC by 5:1. BCC occurs exclusively on hair bearing skin of face and never from mucous membrane. 80% of BCC occurs on head and neck, 15% on shoulders, back or chest. Rare sites are breast, nipple, axilla, perianal, vulva, penis, palm and soles. It is commonly seen in older males than females. Clinically appear as papulonodular lesion or plaque. Giant lesions up to 20 cm are known. Most BCC are slow growing, non-progressive and arise from basal layer. Main etiology is UV-B wavelengths. There are 5 known types of BCC – 1) Nodulo-ulcerative (commonly called as 'Rodent ulcer') (Figure A), 2) Pigmented (Figure B), 3) Morphea-like, 4) superficial type (Figure C) and 5) Fibroepithelioma. 5% recurrence is known in BCC. Metastases occurs in 0.05% of cases only to lungs, bones and lymph nodes.^{11,12}

SCC is the second most common skin cancer after BCC. SCC is a true invasive carcinoma of surface epithelium and arises anywhere on skin and mucous membrane lined with squamous epithelium (Figure G & H). Occur with direct exposure to sun, on forehead, face, neck, hand.^{13,14} Ear, scalp, lips are rare sites¹³. Non-exposed areas like buttocks, genitalia are also affected. SCC develop at sites of chronic ulceration, trauma, burns, vaccination scars. 'Marjolin's ulcer' is SCC arising at sites of chronic injury or scars. UV-B wavelength is mainly responsible. Metastasis of SCC arising from sun damaged skin is 0.5% in contrast to 2% to 3% from non-sun damaged skin. Rate of metastases is 31% from osteomyelitic sinuses, 20% in radiation induced and 18% in burn scars. Variants of SCC are spindle cell (composed entirely of squamous cells), adenoid (nests of squamous cells with central acantholysis), clear cell 'signet ring', pigmented, inflammatory, basaloid, desmoplastic. Recurrences occur with deep invasion, poor differentiation, perineural invasion and acantholytic features.^{11,12}

Verrucous carcinoma (Figure I) is a variant of SCC. It is a low grade, slow growing large, warty tumor seen on genitalia and plantar aspects. Patients with HPV 6, 11, 16 and 18 infections are more prone. Multiple biopsies are required to diagnose Verrucous carcinoma. Blunted projections, down growth in contrast to Pseudo-epitheliomatous Hyperplasia, which have sharply pointed, jagged down growths (Figure I).¹¹ Very rarely regional metastases are seen. Three major forms of Verrucous carcinoma are known, all of them occurring in areas of maceration – 1) Verrucous carcinoma of oral cavity, 2) Verrucous carcinoma of genito-anal region on penis, vulva (Figure E & F), anus and 3) Plantar.¹²

MM has following 5 types – Lentigo malignant melanoma (5-15%), Superficial spreading type (50-75%), Nodular (15-35%), Acral lentiginous (5-10%) and Desmoplastic type. (Figure J)¹¹

CONCLUSION:

All malignant cutaneous tumors are attributed to climate changes, exposure to UVB and high levels of arsenic in potable water. They are seen in elderly population, above 50 years of age and males are commonly affected than females. As the incidence rate of skin cancers is dramatically increasing, a clear understanding of the multiple causative factors is an essential step in their prevention. Implementation of comprehensive cancer registry, which includes exposure to environmental agents, is essential in pinpointing the actual causes.

Histopathology is the gold standard to diagnose all cutaneous malignancies. Their subtyping is important as BCC has extreme slow growth and carries excellent prognosis, SCC and adnexal malignancy has moderate prognosis while MM has rapid onset with worst prognosis. Hence, high index of suspicion is required with earliest biopsy and histopathological correlation. Proper selection of site and depth of biopsy are mandatory along with good clinico-histological correlation between Clinician and Pathologist.

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