

Original Research Article

Clinicoepidemiological study of pre malignant and malignant lesions among patients attending the dermatology OPD in a tertiary care centre in Puducherry: a retrospective cross-sectional study

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ABSTRACT

Background: The growing prevalence of skin cancer worldwide can be understood as the result of increased exposure to ultraviolet radiation. Fitzpatrick skin type 1 and 2 are at higher risk. They are poorly studied in Asians. Skin cancers accounts for 20%-30% of neoplasms in Caucasians and 2%-4% in Asians. Three million cases of non-melanoma skin cancer and 132 thousand melanomas are diagnosed worldwide every year. The aim of the study is to study the profile of patients with premalignant and malignant skin lesions visiting the dermatology OPD in Puducherry for a period of 3 years.

Methods: Case records of 57,316 patients were studied. 82 case records of premalignant and malignant skin lesions were reviewed and analysed using SPSS software. The prevalence was calculated and also their distribution among age, gender and race was analysed.

Results: 82 cases with 93 premalignant and malignant skin lesions were recorded. 77.4% (n=72) were premalignant lesions and 22.5% (n=21) were malignant lesions. The commonest premalignant lesion was leukoplakia (n=38, 52.78%) followed by actinic Keratosis (n=31, 43.05%), keratoacanthoma (n=2, 2.78%) and Bowens disease (n=1, 1.39%). The commonest malignant tumor in the study was basal cell carcinoma (n=12, 57.14%), followed by squamous cell carcinoma (n=9, 42.86%). There were no melanomas or lymphomas reported during the study period.

Conclusions: The index of suspicion for the atypical presentations and earlier identification of the premalignant and malignant skin lesions can aid in the selection of appropriate treatment modality and thereby reducing their associated morbidity and mortality.

Keywords: Caucasians, Indians, Malignant, Prevalence, Premalignant

INTRODUCTION

Premalignant skin lesions are those that has not yet become invasive or aggressive, but has the potential to turn malignant.^{1,2} The common premalignant lesions are actinic keratosis, Bowen's disease, Keratoacanthoma.³ The risk factors include age and increased ultraviolet light exposure, especially UVB.^{2,4} The commonest premalignant lesion among Indians as well as Caucasians is actinic keratosis.^{1,3} The incidence of cutaneous

malignancies has been increasing in recent years. One out of every 3 diagnosed cancer is said to be a skin cancer globally.⁵ The incidence of cutaneous malignancies are increasing as well in India.³ They account for about 1-2% of all cancers in India. The malignant skin lesions can be broadly divided into cutaneous melanoma and Non melanoma skin cancers (NMSC). NMSC include basal cell carcinoma and squamous cell carcinoma.³ Around 132,000 new cases of melanoma occur each year. 80% of deaths due to skin cancer is caused by invasive melanoma

worldwide.⁶ Common cutaneous malignancy among Indians is squamous cell carcinoma (83.9 %).⁴ Basal cell carcinoma, the commonest malignancy among Caucasians accounting for 75 %. Though there are multiple treatment options available for both the premalignant and malignant skin conditions, the diagnosis becomes difficult unless there is a high index of suspicion.³ Owing to the current trend of cutaneous malignancies, we undertook this study to highlight the proportion of the premalignant and malignant lesions among the patients attending the OPD.

METHODS

This was a 3 years retrospective cross sectional study from January 2021 to December 2023. Case records of 57,316 outpatients who visited dermatology OPD during the period were reviewed. All patients who were diagnosed with premalignant and malignant lesions were included in the study irrespective of age, gender and race. Patients who had cutaneous metastasis from another primary carcinoma were excluded. Patients had been diagnosed based on the history, clinical presentation and investigations. Their case records, clinical images, dermoscopic, histopathological findings and other investigations were evaluated retrospectively. We analysed various variables such as diagnoses, patient age at presentation, gender, race, location and number of lesions. A comparison to the existing domestic and international statistics was undertaken. After collection of data, they were analysed using SPSS software.

RESULTS

Over the 3 years study period, 82 patients with 93 premalignant and malignant skin lesions were recorded. Among skin tumors presented to the department, 77.4% (n=72) were premalignant lesions and 22.5% (n=21) were malignant lesions. The premalignant lesions were most commonly seen in the 5th and 7th decade of life. The age of the patients varied between 19 and 83 years (mean=58.83years). The prevalence was higher among the males (n=40, 64.52%).

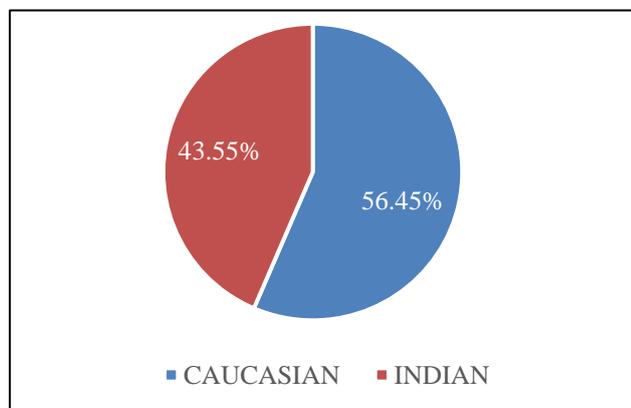


Figure 1: Distribution of premalignant lesions between Caucasians and Indians.

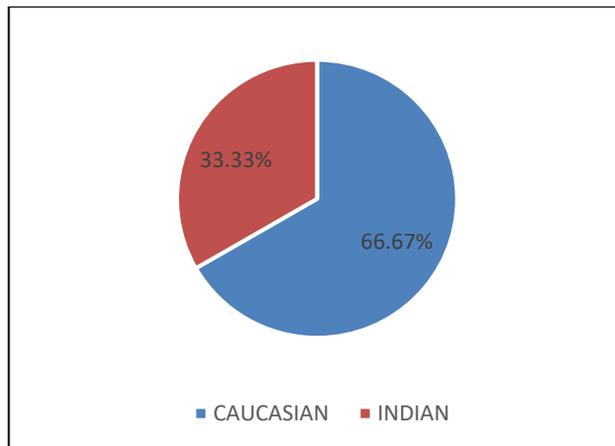


Figure 2: Distribution of malignant lesions between Caucasians and Indian.

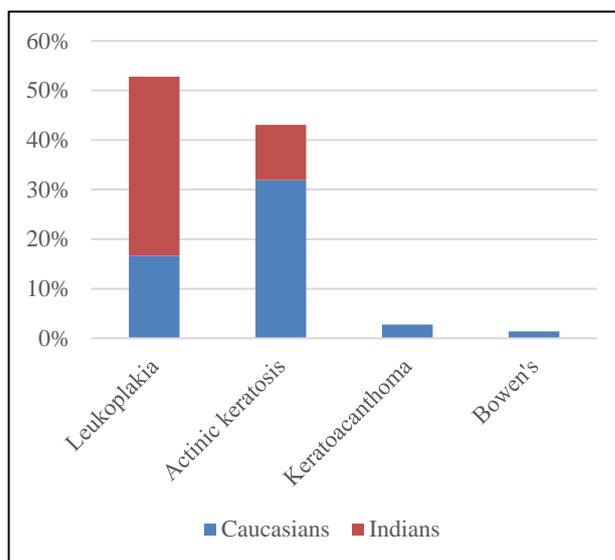


Figure 3: Distribution of various premalignant lesions between Caucasians and Indians.



Figure 4: Clinical image showing well to ill-defined erythematous plaque with scaling seen over the right preauricular region, suggestive of actinic keratosis.

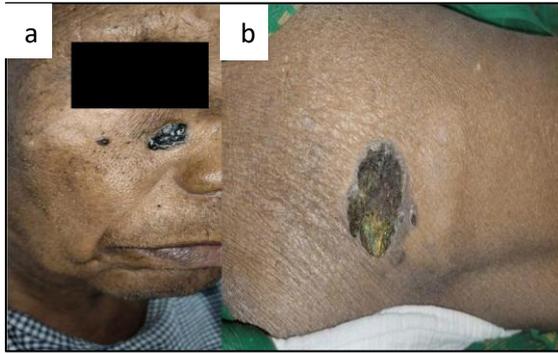


Figure 5: (a) Clinical image showing a well-defined hyperpigmented black coloured ulcer with rolled out margins over the right side of the face, suggestive of basal cell carcinoma; (b) clinical image showing a well-defined ulcerated plaque with irregular margins and blackish crusting and hyperpigmentation on the surrounding skin present over posterolateral aspect of right thigh, suggestive of squamous cell carcinoma.

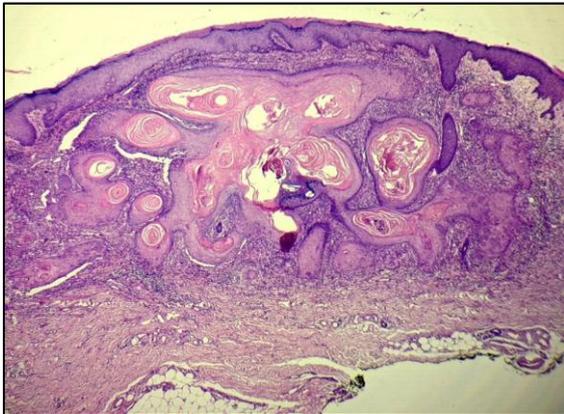


Figure 6: Histopathological image showing keratoacanthoma-central keratin filled crater (H&E, x10).

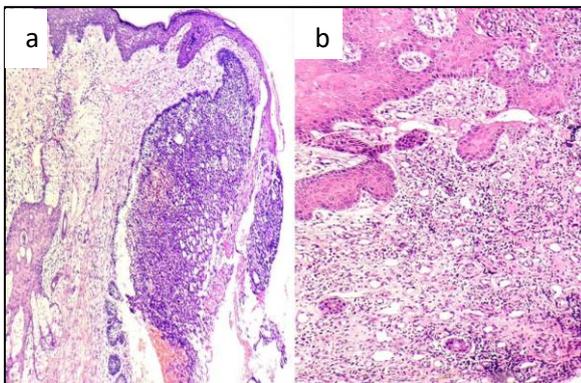


Figure 7: (a) Histopathological image showing nodular type of basal cell carcinoma -nests of tumor cells with peripheral palisading pattern (H&E, x10); (b) histopathological image showing well differentiated type of squamous cell carcinoma (H&E, x40).

The distribution of premalignant lesion among Indians was 51.3% (n=37) and among the Caucasians was (n=35) 48.6%. It commonly presented as a single lesion (n=54, 87.10%) over the head and neck region (n=61, 89.7%) followed by trunk.

The overall common premalignant lesion was leukoplakia (n=38, 52.78%) followed by actinic Keratosis (n=31, 43.05%), keratoacanthoma (n=2, 2.78%) and Bowens disease (n=1, 1.39%). Leukoplakia (n=26, 76.47%) was the commonest tumor among Indians and actinic keratosis (n=23, 60.52%) was the commonest among Caucasians.

The malignant lesions were more frequently distributed in the 6th–8th decade of life, whereas the premalignant lesions presented in the younger age group. The mean age of the patients having malignant tumors was found to be 64.6 years with the range of 36-84 years. The malignant tumors were more common among the males (n=13, 61.90%).

There was a predilection towards Caucasians (n=14, 66.67%). All the tumors presented as a single lesion and commonly over the head and neck region. The commonest being basal cell carcinoma (n=12, 57.14%), followed by squamous cell carcinoma (n=9, 42.86%). There were no melanomas or lymphomas reported during the study period. Basal cell carcinoma was the commonest malignant lesion among Caucasians (n=9, 75%) and squamous cell carcinoma (n=4, 44.4%) was the commonest among Indians.

We analysed 12 cases of basal cell carcinoma in the study. Nodular variant of basal cell carcinoma was the most common clinical type (n=10, 83.3%), followed by superficial variant (n=1, 8.3%) and pigmented variant (n=1, 8.3%). In the present study, all the lesions of basal cell carcinoma (n=12) were found in the photo exposed area i.e., head and neck. Histopathologically, non-infiltrating- nodular subtype was the commonest (n=10, 83.3%)

There were 9 cases of squamous cell carcinoma in the present study. Nodular variant of squamous cell carcinoma with early ulceration was the frequently found clinical morphology. The lesions were commonly found over the upper extremities (n=4, 44.44%) followed by head and neck (n=3, 33.33%) and then lower extremities (n=2, 22.22%).

The commonest histopathological variant was found to be well to moderately differentiated type of squamous cell carcinoma. Over the 3 years the incidence of basal cell carcinoma is increasing and squamous cell carcinoma showed a downward slope. The definitive diagnosis was reached after histopathological examination. Some patients with premalignant lesions were advised for application of 5-fluoro-uracil and some patients underwent cryotherapy. Excision biopsy was done for

suspected malignant lesions wherever possible and referred to department of plastic surgery for further

surgical management. Necessary curative and palliative measures appropriate for each patient was undertaken.

Table 1: Comparison of various parameters of malignant tumors in our study with other similar studies.

Characteristics	Current study	Lal et al ⁴	Supekar et al ⁶	Azad et al ¹⁰	Jina et al ¹¹
Mean age in years	64.6	62	55.71	55.8	54.5
Gender (m:f)	1.8:1	1:1.3	1:1.5	1.1:1	1.9:1
Commonest malignancy	Basal cell carcinoma	Basal cell carcinoma	Basal cell carcinoma	Squamous cell carcinoma	Squamous cell carcinoma
Common site	Head and neck	Head and neck	Head and neck	N/a	Head and neck
Risk factor	UV exposure	UV exposure	UV exposure	UV exposure	UV exposure
HPE subtype					
Basal cell carcinoma	Nodular	N/a	Nodular	N/a	N/a
Squamous cell carcinoma	Well differentiated	N/a	Nodular	N/a	N/a

DISCUSSION

Skin cancers are the most common malignant tumors accounting for 20%-30% of neoplasms in Caucasians and 2%-4% in Asians. Early identification of the tumor, proper staging and treatment is very essential for favourable outcome. This demands an appropriate local and systemic examination followed by a dermoscopic examination of lesion and thereby proceeding with the definitive management.³

The study was conducted in tertiary care centre in Puducherry which provides health care services to patients from Puducherry and neighboring districts of Tamil Nadu. Most of the beneficiaries belong to rural farming and fishing communities. Also, the institute where the study was conducted is located in close proximity to Auroville—an experimental township in Tamil Nadu and some parts located in the union territory of Pondicherry.

It has residents from almost 54 countries with almost 20% from both France and Germany. They are exposed to sub humid tropical climate. The average maximum temperature here is 32.2°C and average minimum temperature is 20°C. The immigrants living there are exposed to a climate which is different from their native place and also to a very high UV index-11.

Also, there is lower concentration of melanin in the skin of Caucasians, it is more susceptible to sun damage. Melanin increases the absorption of UVA and UVB rays, thereby decreasing the adverse effects of solar radiation, which is the main cause for premalignant and malignant skin lesions. All these factors together predispose Caucasians for developing premalignant and malignant skin tumors.¹ This emphasizes the strict and appropriate use of sunscreen among susceptible population.

Incidence of premalignant lesions constitute about 0.13% (n=72) in the present study. The incidence of premalignant skin lesions in an Korean study was found to be 0.16%.⁷ A study conducted by Bhat et al, showed higher proportion of premalignant tumors compared to the malignant tumors in their study population comparative with 77.4% (n=72) of premalignant lesions in the present study.³ Mean age of the patients with premalignant lesions in the present study was 58.83 years which was similar to the study done by Meibodi et al.⁸

The prevalence was higher among the males (n=40, 64.52%) and in Indian skin type (n=37, 51.38%). Meibodi et al and Bhat et al, in their study showed a higher proportion of cases among males, 67.5% and 68% respectively which is similar to the present study.^{3,8} The lesion was commonly present over the head and neck region (n=54, 87.10%) followed by trunk which was similar in the study done by Choi et al. They attributed the cause to be continuous sun exposure and accumulation of ultraviolet radiation.²

The common premalignant lesion in the present study was found to be leukoplakia followed by actinic keratosis, keratoacanthoma and Bowen’s disease which was similar to the study done by Choi et al, Meibodi et al and Holmstrup et al.^{2,8,9} Actinic keratosis is a common precancerous lesion with a 0.1%-20% risk of conversion to squamous cell carcinoma. It occurs frequently in the Caucasians who are chronically exposed to solar radiation and at risk of developing skin cancer. There are only few epidemiological studies on premalignant lesions in India and worldwide compared to studies on malignant lesions.

Cutaneous malignancies account for 1-2% of all cancers diagnosed in India.⁶ The incidence of malignant tumors was 0.036% in the present study. The mean age for

diagnosis of malignancy in the present study was 64.6 years, which is slightly higher when compared to the study conducted by Supekar et al and Bhat et al.^{3,6} There was a higher proportion of cases among men (61.90%) compared to women. Azad et al and Jina et al, also found a men predominance in their study.^{10,11} But, Lal et al, found a higher proportion of cases among women.⁴ There is high proportion of malignant cases in the Caucasians which is consistent with the literature.⁴

Non-melanoma skin cancer is 70 times more common among fair skinned individuals.¹ Most of the malignant lesions in the present study were found on the photo exposed sites of head and neck region. Lal et al, Jina et al and found similar results in their study.^{4,6,11} The commonest malignant tumor was basal cell carcinoma followed by squamous cell carcinoma. Basal cell carcinoma was frequently found in Caucasians while squamous cell carcinoma was frequent among Indians. Similar results were produced by Lal et al.^{4,12}

Among the 12 cases we reviewed in the present study, nodular variant of basal cell carcinoma was the commonest type in the study followed by superficial and pigmented variant. A study done by Supekar et al, in central India showed basal cell carcinoma to be the commonest tumor and most common clinical type was nodular variant of basal cell carcinoma.⁶ Dermoscopy of few cases of nodular basal cell carcinoma were documented which commonly showed large blue grey globules with a white veil over it.

Nodular basal cell carcinoma, which is the common clinical and histopathological variant in the study, frequently shows the presence of arborizing vessels, large blue-grey ovoid nests, multiple blue-grey dots, globules and ulceration. Appearance of arborizing vessels is the most typical dermoscopic feature suggestive of basal cell carcinoma. The arborizing vessels and ulceration coexisting together is more suggestive towards basal cell carcinoma with a higher risk of local recurrence.¹³ Histopathologically, nodular variant of basal cell carcinoma was commoner followed by superficial variant and pigmented variant which is supported by study done by Malhotra et al.¹⁴

Out of the 9 cases of squamous cell carcinoma in the study, nodular variant of squamous cell carcinoma with early ulceration was the frequently found clinical morphology. Diaz-Corpas et al, showed Keratinizing tumors to be the most common morphologic type followed by nodular variant.¹⁵ The lesions were commonly found over the upper extremities (n=4, 44.44%) followed by head and neck (n=3, 33.33%) and then lower extremities (n=2, 22.22%). Khullar et al, showed the commonest location of the tumor to be lower limbs followed by head and neck.¹⁶ According to the study done by Diaz-Corpas et al, the commonest location was the face, followed by scalp.¹⁵ Histopathologically, well differentiated type of squamous cell carcinoma was

commonest in the present study which is similar to study done by Adinarayan et al and Diaz-Corpas et al.^{15,17-21} However, Khullar et al, showed Keratinizing variety to be the commonest histological variant.¹⁶ Dermoscopy of the lesion of squamous cell carcinoma shows keratin/scales, red to black dots, white circles, white structureless areas, hairpin vessels, linear-irregular vessels and perivascular white halos.²² There were no melanomas or lymphomas reported in the present study period. Table 1 compares various parameters of malignant lesions between different studies.^{4,6,10,11}

Smaller sample size was a major limitation in the study. Immunohistochemistry and Dermoscopy were not performed for most cases due to unavailability of resources. Management, outcome and follow up of the cases were not taken into consideration.

CONCLUSION

As there is a raising trend towards the cutaneous malignancies, the awareness and increased suspicion in dermatologists helps in early diagnosis and prompt treatment which leads to a better outcome in patients. More studies evaluating the risk factors, management and follow up are required for better understanding and appropriate treatment of the patients. This study may help to understand the proportion of various premalignant and malignant skin tumors and necessity of creating awareness among people regarding periodic self-examination of the skin.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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