

A Retrospective Histopathological Study of Non-Melanocytic Skin Tumors

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ABSTRACT

Background: Three most frequent primary skin cancers are basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant melanoma. Together SCC and BCC are referred to as non-melanoma skin cancers (NMSC). NMSCs comprise of 1-2% of all diagnosed cancers in India in contrast to one-third in whites. SCC represents 30%-65% of skin cancers in blacks and Indians, whereas BCC contributes to 65%-75% of skin cancers in whites.

Methods: Total 100 cases of Non-melanocytic skin Tumors were studied retrospectively by paraffin section and H&E staining.

Result: A histopathological study of 100 cases of non-melanocytic skin tumors was carried out in Department of pathology, B.J. Medical College, Ahmedabad over a period of two years from January 2015 to December 2017. Out of 100 cases, histopathologically 57 were diagnosed as benign and 43 as malignant lesions. Among 57 benign lesions, 31 (55%) were tumors of epidermal in origin, 10 (17%) were epidermal appendageal in origin and 16 (28%) were soft tissue in origin. Out of 43 malignant cases, 37 (87%) were tumors of epidermal origin, 04 (09%) were lymphoma, 01 (2%) was leiomyosarcoma and 01 (2%) was metastatic carcinoma.

Conclusion: Unlike in the western countries, in India Squamous cell carcinoma is the commonest histologic variety. Diagnosis of skin tumor can be done by correlating clinical features, gross and histologic appearances. In some cases, rare entities and problems of differential diagnosis may be solved with the help of immunohistochemical and/or electron microscopic studies.

Keywords: Non-Melanocytic Skin Tumors, SCC, BCC, Appendageal Tumors, Metastatic Tumors

Introduction

The skin is a complex and the largest organ in the body. It is composed of cells with varied functions like mechanical and photoprotection, immunosurveillance, nutrient metabolism and repair. Because of its complexity a wide range of diseases can develop from the skin including tumors from surface epidermis, epidermal appendages and dermal tissue.

Skin cancers are relatively uncommon malignancies worldwide, not ranking among the first ten common cancers.^[1] Three most frequent primary skin cancers are basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant melanoma. Together SCC and BCC are referred to as nonmelanoma skin cancers (NMSC). NMSCs comprise of 1-2% of all diagnosed cancers in India in contrast to one-third in whites. This is due to protection offered by melanin pigment against ultraviolet radiation induced DNA damage. SCC represents 30%-65% of skin cancers in blacks and Indians and 15%-25% in whites, whereas BCC contributes to 65%-75% of skin cancers in whites and 20%-30% in Asian Indians.^[2] Various cancer registries in India reported cumulative incidence of skin cancer varying from 0.5 to 2 per 100000 population.^[3] Appendageal tumors (ATs) are neoplasms

which differentiate toward or arise from pilosebaceous apparatus, apocrine gland or eccrine sweat gland. ATs predominate over head and neck area.^[4] Clinical diagnosis of different entity is often difficult, although anatomic location, number, gross appearance and distribution of lesions provide important clues but histopathology is invaluable in confirmation of the diagnosis.^[5] Majority of these tumors are benign. Local recurrence is well recorded but metastasis is rare.^[6]

Material and Methods

This study of “Non-melanocytic Skin Tumors” was carried out retrospectively. Total 100 cases of Non-Melanocytic Skin Tumors were studied by paraffin section and H & E staining method.

Specimens were fixed in 10% formalin for 2-24 hours and the gross features were examined.

3-4 mm paraffin sections were taken and stained with H&E stain.

Inclusion Criteria

All Non melanocytic neoplastic specimens of skin and adnexal tumors received at the Department of the Pathology, B. J. Medical College, Ahmedabad from patients consulting

in various departments of Civil Hospital, Ahmedabad were included.

Exclusion Criteria:

All Non-neoplastic and melanocytic lesions of skin were excluded.

Statistical Methods:

All results were statistically analysed for age, sex and site distribution and type of tumor. Percentage of each parameter was derived and compared.

Results

In the present study, 100 cases of non-melanocytic skin tumors were studied and results were compared with other studies, as per availability of their data.

Incidence of various non-melanocytic skin tumors according to present study is as follows.

From Table 1, it is evident that according to present study, tumors of epidermal origin are found to be most common followed by tumors of soft tissue, epidermal appendageal, hematolymphoid and metastatic origin. Benign tumors are more common than malignant skin tumors.

According to present study, distribution of various skin tumors according to age is as follows:

In the present study, according to Figure 1 the peak age group was between 5th and 6th decades.

According to present study, sex incidence of non-melanocytic skin tumors was as follows:

The study showed there was male predominance with male to female ratio of 1.6:1 64% male and 36% female.

In the present study non-melanocytic benign skin tumors amounted to (57%) of skin tumors.

In the present study benign tumors of epidermal origin were found to be most common (54.39%) followed by tumors of soft tissue and adnexal origin. Amongst epidermal tumors verruca was found to be most common (36.84%).

Incidence of various malignant skin tumors according to present study is as follows.

In the present study, squamous cell carcinoma (76.74%) was found to be most common malignant skin tumor followed by basal cell carcinoma (9.3%), hematolymphoid malignancies (9.3%), cutaneous leiomyosarcoma (2.33%) and metastatic carcinoma (2.33%).

According to present study, distribution of various non-melanocytic benign and malignant skin tumors according to location as follows:

According to above Table 4, in present study head and neck is the most common region followed by extremities, trunk and external genitalia.

According to the present study, distribution of various malignant skin tumors according to the location is as follow:

In the present study, as shown in Table No.5, most common site for squamous cell carcinoma and basal cell carcinoma were head and neck region, lymphoma showed predilection for extremities.

According to present study, sex incidence of non-melanocytic malignant skin tumors is as follows.

Table no. 6 shows in present study there is male predominance for all tumors with M: F ratio 2.6:1.

According to present study, distribution of malignant skin tumors according to age is:

In the present study, Figure 3 shows the peak age group is between the 5th and 6th decades.

Discussion

Skin tumors constitute a small but significant proportion of patients with cancer.

In the present study it was observed that malignant epidermal tumors were the most common (37%), followed by benign tumors of epidermis (31%), benign soft tissue tumors (16%), benign tumor of epidermal appendages (10%), haematolymphoid malignancy (4%), malignant soft tissue tumor (1%) and metastatic tumor (1%). In India, skin cancers constitute about 1-2 % of all diagnosed cancers. Various cancer registries in India reported cumulative incidence of skin cancer varying from 0.5 to 2 per 100000 population.^[3]

Following table shows comparison of incidence of benign and malignant tumors of skin in the present study with that of different studies in India.

As shown in above table, out of 100 cases studied, the ratio of benign (57) to malignant tumors (43) is 1.3:1 in present study which is comparable with other studies except with study by Gundalli et al.^[8] which shows B:M ratio 1:2.

In present study, commonest benign group was keratinocytic tumors (31%) followed by soft tissue tumors (16%) and appendageal tumors (10%). The commonest encountered benign skin tumor was verruca. In the study of Bari V et al.^[7] commonest group was keratinocytic tumors followed by soft tissue tumors and in the studies of Gundalli S et al.^[8] and Shilpa V et al.^[10] commonest group was appendageal tumors followed by keratinocytic tumors, whereas in the

Table1: Distribution and incidence of Non melanocytic skin tumors.

	No of cases (percentage)		
	Benign	Malignant	Total
Keratinocytic	31 (31%)	37 (37%)	68(68%)
Appendageal	10 (10%)	--	10(10%)
Soft tissue	16 (16%)	01 (01%)	17(17%)
Hematolymphoid	--	04 (04%)	04(04%)
Metastatic	--	01 (01%)	01(01%)
Total	57 (57%)	43(43%)	100(100%)

Table 2: Sex wise distribution of non-melanocytic skin tumors.

Sex	No. Of Cases / Percentage
Male	64(64%)
Female	36(36%)

Table 3: Incidence of various types of non-melanocytic benign skin tumors.

Tumor	No. Of Cases	Percentage	
Epidermal	Verruca	21	36.84%
	Seborrheic keratosis	06	10.53%
	Papilloma	01	1.75%
	Acanthosis nigricans	01	1.75%
	Actinic keratosis	01	1.75%
	Warty dyskeratoma	01	1.75%
	Total	31	54.39%
Adnexal	Hidradenoma	04	7%
	Trichoepithelioma	02	3.5%
	Syringocystadenoma papilliferum	01	1.75%
	Pilomatricoma	01	1.75%
	Pilar tumor	01	1.75%
	Eccrine spiradenoma	01	1.75%
	Total	10	17.54%
Soft tissue	Benign fibrous histiocyto	05	8.77%
	Hemangioma	07	12.27%
	Fibrokeratoma	02	3.5%
	Pleomorphic fibroma	01	1.75%
	Fibrolipoma	01	1.75%
	Total	16	28.07%
Total	57	100%	

Table 4: Location wise distribution of various non-melanocytic benign and malignant skin tumors is as follows:

Site	No of cases (Percentage)		
	Benign	Malignant	Total
Head and neck	17(17%)	20(20%)	37(37%)
Extremities	25(25%)	10(10%)	35(35%)
Trunk	08(08%)	06(06%)	14(14%)

Site	No of cases (Percentage)		
	Benign	Malignant	Total
External genitalia	07(07%)	07(07%)	14(14%)
Total	57(57%)	43(43%)	100(100%)

Table 5: Site wise distribution of various non-melanocytic malignant skin tumors as follows:

Site	No of cases (Percentage)					Total
	Squamous cell carcinoma	Basal cell carcinoma	Lymphoma	Leiomyosarcoma	Metastatic	
Head And Neck	17(39.53%)	03(6.98%)	--	--	--	20(46.52%)
Extremities	07(16.28%)	--	03(6.98%)	--	--	10(23.26%)
Trunk	02(4.65%)	01(2.32%)	01(2.32%)	01(2.33%)	01(2.33%)	06(13.94%)
External Genitalia	07(16.28%)	--	--	--	--	07(16.28%)
Total	33(76.74%)	04(9.3%)	04(9.3%)	01(2.33%)	01(2.33%)	43(100%)

Table 6: Sex incidence of Non melanocytic malignant skin tumors.

Sex	No of cases (Percentage)					Total
	Squamous Cell Carcinoma	Basal Cell Carcinoma	Lymphoma	Leiomyosarcoma	Metastatic	
Male	23 (53.48%)	03 (6.97%)	03(7.14%)	01(2.32%)	01(2.32%)	31(72.09%)
Female	10 (23.25%)	01(2.32%)	01(2.32%)	--	--	12(27.91%)
Total	33(76.73%)	04(9.29%)	04(9.46%)	01(2.32%)	01(2.32%)	43(100%)

Table 7: Comparative incidence of Non melanocytic benign and malignant tumors of skin and adnexal neoplasms in India.

Sr No.	Authors	No of cases	Benign	Malignant	B:M ratio
1.	Bari V et al ^[7]	116	58 (50%)	58 (50%)	1:1
2.	Gundalli et al ^[8]	111	40 (36.06)	71 (63.94%)	1:2
3.	Narhire et al ^[9]	32	21 (65.62%)	11 (34.38%)	1.9:1
4.	Present study	100	57 (57%)	43 (43%)	1.3:1

Note: As the present study is on Non melanocytic skin tumors, melanocytic tumors from studied included in comparison have been deducted and percentages of other tumors are adjusted accordingly.

Table 8: Comparative analysis of distribution of various Non melanocytic benign skin and adnexal neoplasms.

Type of tumors	Authors				
	Bari V (2014) et al ^[7]	Gundalli S (2015) et al ^[8]	Narhire (2016) et al ^[9]	Shilpa V (2017) et al ^[10]	Present study
Keratinocytic	29(50%)	11(27.5%)	05(23.8%)	15(51.72%)	31(54.38%)
Appendageal	10(17.24%)	29(72.5%)	07(33.33%)	14(48.28%)	10(17.54%)
Soft tissue	19(32.75%)	--	09(42.85%)	--	16(28.08%)
Total	58(100%)	40(100%)	21(100%)	29(100%)	57(100%)

Table 9: Comparative analysis of various malignant skin tumors.

Type of tumor	Authors			
	Bari V (2014) et al ^[7]	Gundalli S (2015) et al ^[8]	Narhire V (2016) et al ^[9]	Present study
Squamous cell carcinoma	28 (48.27%)	37 (52.11%)	07 (63.64%)	33(76.74%)
Verrucous carcinoma	--	04 (5.63%)	01 (9.09%)	--

Type of tumor	Authors			
	Bari V (2014) et al ^[7]	Gundalli S (2015) et al ^[8]	Narhire V (2016) et al ^[9]	Present study
Basal cell carcinoma	21 (36.20%)	21 (29.57%)	02 (18.18%)	04 (9.30%)
Hybrid carcinoma	--	--	01 (9.09%)	--
Malignant adnexal tumors	05 (8.62%)	06 (8.45%)	--	--
Lymphoma	--	--	--	04 (9.30%)
Leiomyosarcoma	--	--	--	01 (2.33%)
Dermatofibrosarcoma protuberans	04 (6.9%)	--	--	--
Metastatic	--	03 (4.22%)	--	01 (2.33%)
Total	58 (100%)	71(100%)	11(100%)	43(100%)

Table 10: Comparison of age distribution in non-melanocytic benign and malignant tumors of skin.

Studies	Mean age in years	
	Benign	Malignant
Bari V et al ^[7]	3 rd decade	7 th decade
Gundalli S et al ^[8]	3 rd -5 th decade	6 th -8 th decade
Narhire et al ^[9]	5 th -6 th decade	7 th -8 th decade
Present study	5 th -6 th decade	5 th -6 th decade

Table 11: Comparison of incidence in appendageal skin tumors.

	Narhire et al. ^[9]	Kaur et al. ^[12]	Sharma et al. ^[11]	Present study
Tumors with follicular differentiation	16%	39.09%	20%	04%
Tumors with sebaceous differentiation	40%	23.63%	12%	--
Tumors with apocrine and eccrine differentiation	08%	37.37%	24%	06%

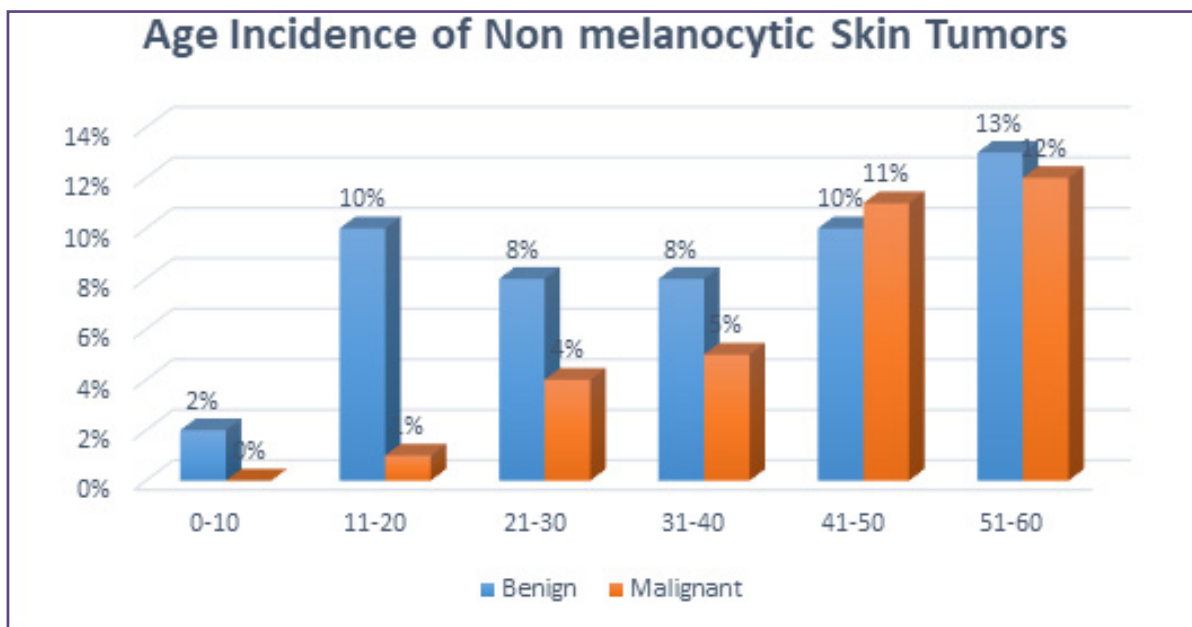


Fig. 1: Age Incidence of Non melanocytic Skin Tumors.

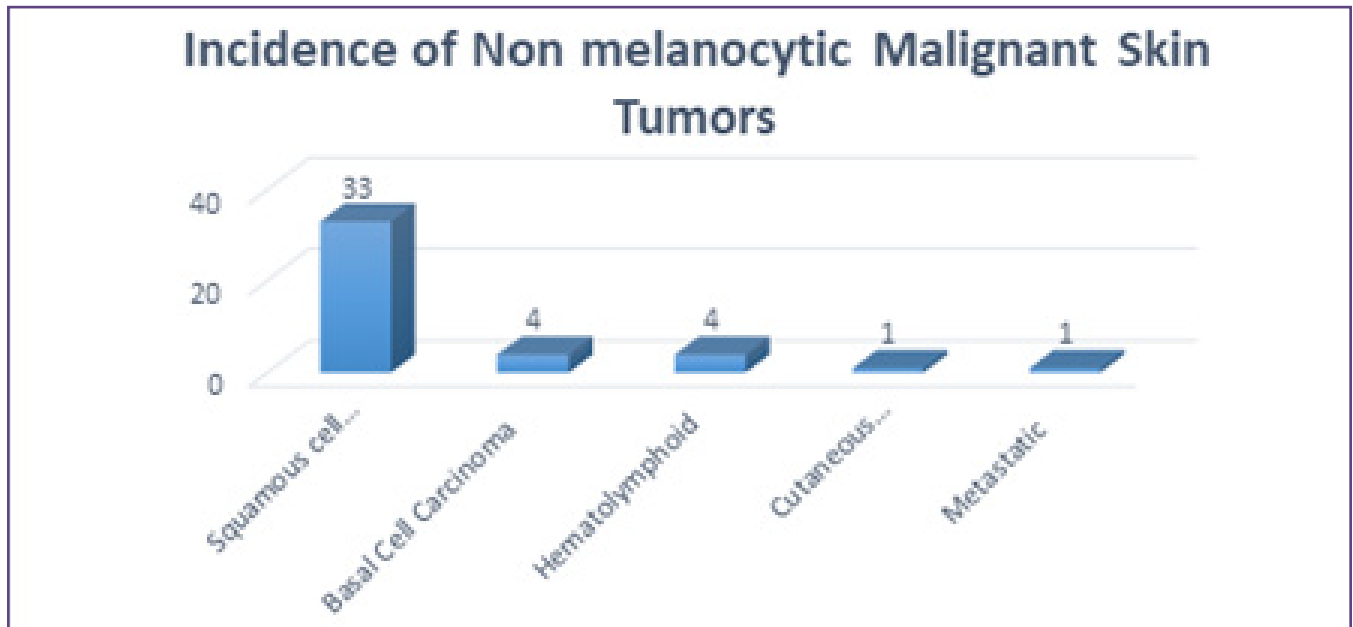


Fig. 2: Incidence of Non melanocytic malignant skin tumors.

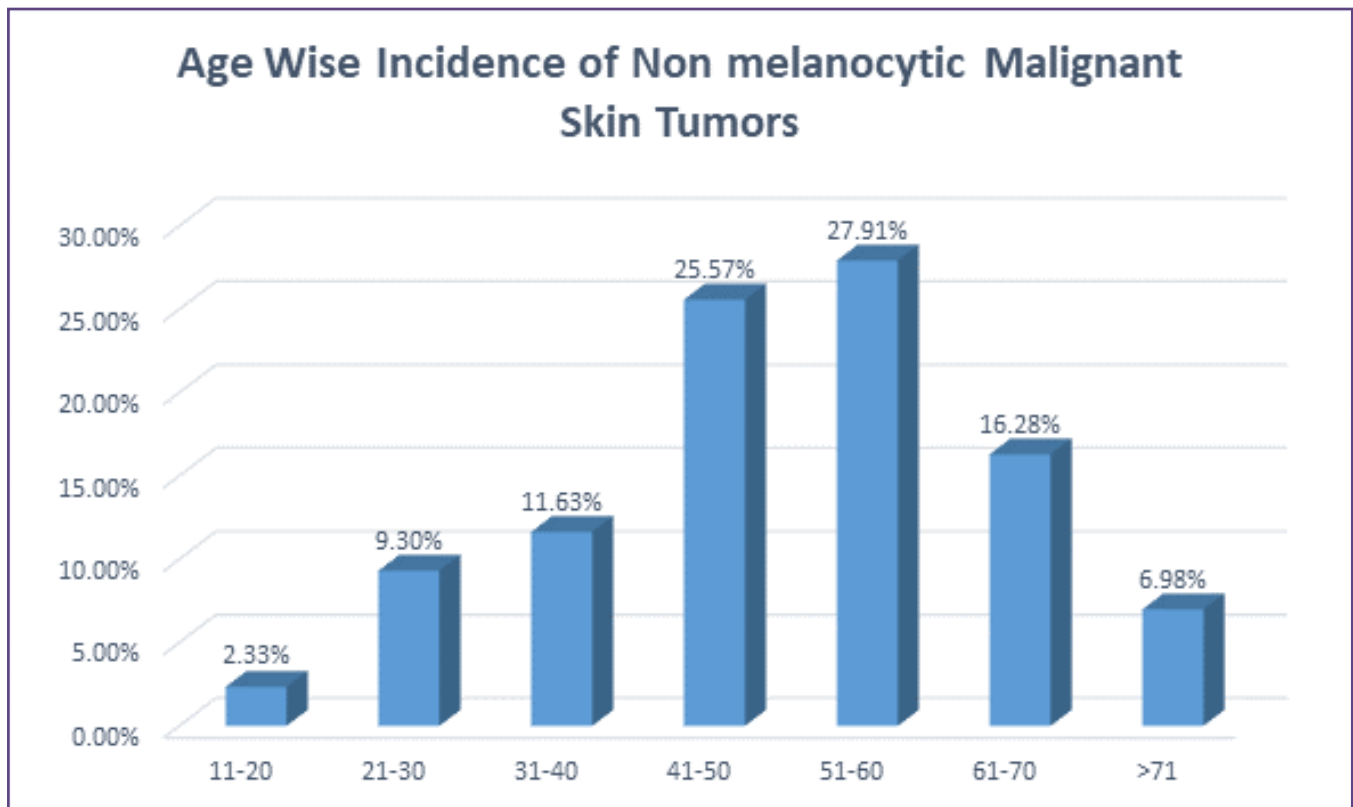


Fig. 3: Age incidence of Non melanocytic malignant skin tumors.

study of Narhire et al.^[9] commonest encountered group was soft tissue tumors followed by appendageal tumors.

As seen in the above table, in the present and the studies conducted by Bari V et al.^[7], Gundalli S et al.^[8] and Narhire et al.^[9] SCC has highest incidence amongst all the malignant skin tumors. However, in the present study incidence of BCC and Lymphoma is equal whereas studies conducted by Bari V et al.^[7], Gundalli S et al.^[8] and Narhire et al.^[9] show higher incidence for BCC.

In the present study, both benign and malignant tumors encountered in 5th to 6th decade (Mean age 52.3 years). Age incidence of present study for benign tumors is comparable with the study of Narhire et al.^[9]. whereas studies of Bari V et al.^[7] and Gundalli et al.^[8] show peak incidence of benign tumors in 3rd and 3rd-5th decades respectively. The age incidence for malignant tumors in present study (5th-6th decade) is earlier compared to other studies. In the present study, non-melanocytic skin tumors showed male predominance with M:F ratio of 1.8:1 which is comparable with the studies of Sharma et al.^[11] and Bari V et al.^[7]

In our study, head and neck region was the commonest involved site for malignant tumors followed by extremities which is comparable with the study of Narhire et al.^[9] However benign tumors, in our study showed predilection for extremities (25%) which is different from other studies.

In the present study, tumors of eccrine and apocrine origin accounted for the most common benign adnexal tumors which is comparable with study of Sharma et al.^[11] whereas study of Narhire et al.^[9] showed tumors with sebaceous differentiation and study of Kaur et al.^[12] showed tumors with follicular differentiation as the most common benign adnexal skin tumors.

Conclusion

Skin is contrary to ubiquitous simplistic concept, a remarkable heterogenous organ. There is wide diversity of lesions found in skin compared to other organs. There is remarkable difference in incidence rate of SCC and BCC in Indian and western population. Unlike in the western countries, in India Squamous cell carcinoma is the commonest histologic variety. Ethnicity plays a major role in etiology of NMSCs. Histopathologic study is one of the most valuable means of diagnosis in dermatology. But correlation of clinical features with macroscopic and histologic appearances helps enormously for diagnosis of skin tumor.

Acknowledgements

I express my heartily and sincere thanks to my post graduate teacher Dr. Sanjay.V.Dhotre, Associate Professor,

Department of Pathology, Civil Hospital, Ahmedabad for his valuable guidance and encouragement. I am indeed privileged to have had an opportunity to work under him. I express my sincere thanks to Dr. Hansa Goswami, Professor and Head, Department of Pathology, Civil Hospital, Ahmedabad for her encouragement and gracious support.

Funding

NA

Competing interests

NA

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Statement of written informed consent

No any descriptive information such as patient names, initials, reference numbers or photographs are used in this article.

Statement of Ethical approval for the study

Any kind of experimental study on human or animal is not carried out for preparation of this article.

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Financial or other Competing Interests: None.

Date of Submission : 05/07/2021

Date of Final Revision : 11/12/2021

Date of Acceptance : 27/12/2021

Date of Publication : 30/01/2022