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HISTOPATHOLOGICAL EVALUATION OF NEOPLASTIC LESIONS OF SKIN: A STUDY OF 71 CASES AT TERTIARY CARE CENTER

Pathology

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ABSTRACT

Introduction: The skin is the largest organ of the body. Skin tumors encompass a wide spectrum and belong to a diverse group of neoplasm rendering the classification difficult. **Aim:** The aim of our study was to study histopathological types of skin tumors and distribution of skin tumors according to WHO classification **Materials and methods:** The present study was a prospective &retrospective study of skin tumours from January 2016 – April2019 at Department of Pathology, Government Medical College,Surat . The study included all histopathologically confirmed cases of skin tumors. **Results:** Out of 71 skin tumours, 34 were benign,5 were borderline and 32were malignant. Thus benign tumours were more common than malignant tumours with benign to malignant ratio of 2.05:1. Keratinocytic tumours were highest 25 cases (62%) followed by Melanocytic tumours 18 cases (18.18%). Benign tumours were common in younger age group whereas malignant tumors showed an ascending trend in age. Both benign and malignant tumours of skin were common in males than females **Conclusion:** Histopathological evaluation of skin biopsy is an important tool in diagnosis of skin neoplasms. Intradermal nevus and basal cell carcinoma was the most common benign and malignant neoplasm respectively. Malignant neoplasms were more common in older patients.

KEYWORDS

Histopathology, keratinocytic tumors, skin tumors

introduction

Skin is the largest organ of the body. It represents a window to the internal well-being or disease.Many internal diseases may manifest themselves in the skin .(AlexanderJ.F.Lazar.George F.Murphy, 2015) A wide range of neoplastic and non-neoplastic disease can develop within skin because of its complexity(McGrath JA, 2010).(Karki et al., 2018) incidence of skin cancer is gradually increasing over last few decades with variation in its trends may be due to differences in skin types, sun exposure, geographic distribution, occupational exposure and skin protection measures.[4](Karki et al., 2018)

Skin tumors are so ubiquitous affecting peoples of all ages, however, the frequency of skin cancer increases with age. Although the non-melanoma and melanoma skin cancers encompass the vast majority of skin cancers, there are a large number of other malignancies of the skin that are less commonly confronted by the clinicians. Neoplasms of skin arise from epidermis, adnexal structures, dermis and neuroendocrine cells. histopathological diagnosis of skin tumor is difficult at times due to complexity of histologic, ultra structural and histochemical study, complex nomenclature, multiple classifications and conflict regarding histogenesis of some of the tumors and relative rarity. (Dowerah et al., 2018)Skin tumors, at times pose a great challenge to surgeons as some of benign tumors can be confused with malignant tumors. Hence, 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, investigations such as computerized tomography and tumor markers may not be useful in skin tumors. In such cases, histopathology alone remains a diagnostic tool, (Elder D, 2015), This indicates that all excised skin lesions must undergo histopathological investigation to ensure that malignancies are not missed. The knowledge of histopathological patterns can help in the prognosis and planning an effective management.(Bhuvan et al., 2017) This study was aims to evaluate the rate of skin neoplasms and its distribution according to WHO classification. It also evaluates the age, gender and anatomical site wise distribution of benign and malignant neoplasms of patients diagnosed with skin neoplasms over 4 year study period.

MATERIALS AND METHODS

This was a four year study (2.5 years prospective and 1.5 years retrospective) from January 2016 and April 2019. The study was cleared by the ethics committee of our institute and informed consent was obtained from all patients. Skin biopsies with a clinical diagnosis of tumors of skin and its appendages were included in the study. Detailed history with reference to mode of onset, characteristics, and distribution of lesion was taken from patient. Also, clinical examination findings with particular reference to age, gender, and site of involvement was taken. For retrospective study, history and clinical findings were obtained from medical records.

All the received skin biopsy specimens were fixed in 10% formalin and subjected for tissue processing, embedded in paraffin and block was made to obtain 5 micron sections. The sections stained with Hematoxylin and Eosin (H and E) were examined.The histopathological examination (HPE) findings of the biopsy slide were recorded and analyzed. The tumors were classified according to the WHO classification

Results

Neoplastic tumors were classified according to who classification of skin tumors (2018) into benign, borderline and malignant tumors in present study. Out of 71 cases of neoplastic lesions 47.88% (34cases) were benign, 45.07% (32cases) were malignant and 7.04% (5 cases)were of borderline category

Age group of the patients ranged from 9 yrs to 82 years. In present study maximum benign lesions were seen in 21-30 years (14%),11-20 yrs age group (11.26%), while malignant cases were seen in 61-70 years (19.71%) and 51-60 years(11.2%). Maximum borderline lesions cases were seen in 21-30 years age group, followed by 31-40. years(table 1)

Maximum males were 61-70 years age group while maximum female were seen in 51-60 years age group in present study

Table 1 : Age wise distribution of neoplastic lesions of skin

Age in years	Benign lesions		Malignant lesions		Borderline lesions	
	No	%	No	%	No	%
0-10	1	1.40	0	0	0	0
11-20	8	11.26	0	0	0	0

21-30	10	14.08	0	0	2	2.8
31-40	2	2.8	2	2.8	1	1.4
41-50	2	2.81	7	9.8	0	0
51-60	6	8.45	8	11.2	1	1.4
61-70	5	7.04	14	19.71	0	0
>70	0	0	1	1.40	0	0
Total	34	47.88	32	45.07	0	7.04

Table 2 :Gender wise distribution of Neoplastic lesions

	Benign			Malignant			Boderline		
Lesion	Male	Female	%	Male	Female	%	Male	Female	%
Keratinocytic	5	2	9.85	12	6	25.35	-	-	-
Melanocytic	4	4	11.2	7	3	14.08	-	-	-
Adnexal	6	4	14.08	2	1	4.2	-	-	-
Soft tissue	6	3	12.67	1	0	1.40	3	2	7.05%
Total	21	13	47.88	22	10	45.07	3	2	7.05%

In present study Males (46cases) were more affected than females (25 cases) with a Male:Female ratio being 1.8:1. The Male:Female ratio of benign and malignant tumors was 1.6:1 and 2.2:1, respectively. Maximum males showed soft tissue and adnexal tumors with 6 cases each. Maximum females were affected by melanocytic tumors and adnexal tumors with 4 cases out of total 10 cases Keratinocytic tumors formed the largest group constituting 25cases (62.0%). Melanocytic tumors were the second commonest comprising 18 cases (18.1%) followed by soft tissue and neural tumor comprising of 15 cases (21.1%) ,followed by appendageal tumors constituting 34 cases (14.7%). Among benign tumors, appendageal tumors (14.08%) were the commonest, followed by, soft tissue tumors with 9 cases (12.67%), melanocytic tumors with 8 cases (11.26%) cases, and keratinocytic tumors with 7 cases (9.85%).

In malignant tumors, maximum tumors were of Keratinocytic tumors with 18 cases (25.35%), followed by melanocytic tumors with 10 cases (14.08%), adnexal tumors with 3 cases (4.2%), and least cases were of soft tissue tumor (1.4%)with one case only.

The commonest site of involvement was head and neck (49.7%) followed by lower extremities (19.7%%) and upper extremities (18). Scalp was the most commonly involved area in the head and neck region in 10 cases(Table3).

Table 3 : site involvement by tumors

Site	Benign	Malignant	Boderline	Total
Head ,neck and face	18	17	-	35
Upper extremity	7	4	2	13
Lower extremity	5	8	1	14
Others	4	3	2	9

Most common benign tumor were the nevi (8cases) followed by seborrhoeic keratosis (4 cases) and lobular capillary hemangioma (4Cases)and pilomatricoma (3 cases). Basal cell carcinoma (18 cases) and malignant melanoma (10 cases) were commonest malignant tumor In borderline tumor DfSP was the commonest tumor in 5 cases.

The histomorphological patterns of benign,Boderline and malignant skin neoplasms are tabulated in table 4.

Table 4 : Spectrum of Benign, borderline and malignant neoplasms of skin

Keratinocytic tumors (total 25 cases)	Benign (total 7 cases)	Actinitic keratosis	1	1.4%
		Seborreheic keratosis	4	5.6%
		Verruca vulgaris	2	4.2%
	Malignant	Squamous cell carcinoma (SCC)	1	1.4%
		Basal cell carcinoma	13	18.3%
		Keratoacanthoma	3	4.2%
		Verrucus carcinoma	1	1.4%
Melanocytic tumors (total 18 cases)	Benign (total 8 cases)	Congenital melnocytic nevus	1	1.4%
		Junctional nevus	2	2.8%
		Compound nevus	1	1.4%
		Intradermal nevus	4	5.6%
	Malignant	Malignant melanoma	10	14.0%
Appendegeal tumors (total 13 cases)	Benign (total 10 cases)	Hidradenoma	1	1.4%
		Spiradenoma	1	1.4%
		Pilomatricoma	2	2.8%
		Proliferationg Trichilemmal cyst	3	4.2%
		Sebaceous adenoma	1	1.4%
		Mixed tumor	1	1.4%
		Poroma	1	1.4%
	Malignant	Sebaceous carcinoma	1	1.4%
		Proliferationg Trichilemmal tumor	2	2.8%
Soft tissue and neural tumors (total 15 cases)	Benign (total 9 cases)	Nevus lipomatous superficialis	1	1.4%
		Dermatofibroma	3	2.8%
		Cutaneous myxoma	1	1.4%
		Lobular capillary hemangioma	4	5.6%
	Malignant	Kaposi Sarcoma(patch stage)	1	1.4%
	Boderline	Dermatofibrosarcoma protuberances(DFSP)	5	7.0%

Figures

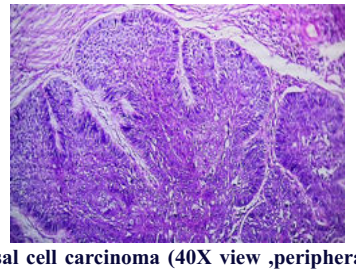

Figure 1 Basal cell carcinoma (40X view ,peripheral palisading and cleafting)

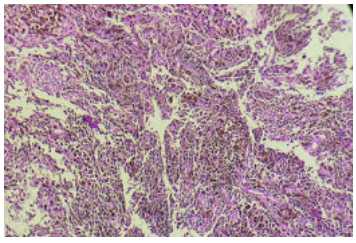

Figure 2 : Malignant melanoma (40X ,H&E stain)

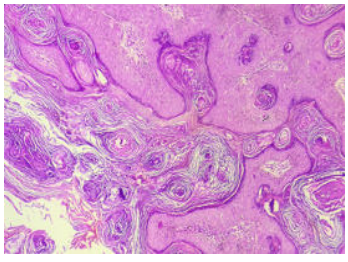

Figure 4 : Seborrehic Keratosis (10X,H&E)

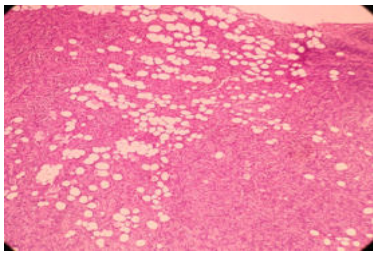

Figure 4 : DFSP- Dermatofibrosarcoma protuberens (10x,H&E stain)

Discussion

Skin tumors are associated with considerable morbidity, disfigurement, and their treatment is costly. Skin can be often affected by neoplasms both benign and malignant. Benign epithelial neoplasms are common and usually biologically inconsequential, although they may represent significant sources of psychologic discomfort for the patient. When they are pigmented or inflamed, they are often confused clinically with malignancy and histological examination of a biopsy specimen is frequently required to establish a definitive diagnosis and to facilitate appropriate intervention and follow up 11(Goel et al., 2021)

In the present study skin tumors, benign,borderline and malignant, from each of the 4 major WHO categories were identified histologically across all age groups. A total of 71 skin tumors were analyzed, out of which 34 cases (53.0%)were benign and 32 cases (47.0%) were malignant and 5 cases were of borderline category which was is in concordance with the studies conducted by Bariet al (Bari et al., 2014)1Palvi et al (Goel et al., 2021)14 and Kaur R (Kaur et al., 2016)showing 51.2% &48.8%, 53.0% &47.0% and 68% & 32.72% cases of benign &malignant lesions respectively.

Benign lesions were most commonly seen in 11-30 yrs age group which is correlate with the study done by Bari et al(Bari et al., 2014) and Karki D et al(Karki et al., 2018) .Malignant lesions were most commonly seen in 61-70 yrs age group which was concordance with study done by Karki D et al(Karki et al., 2018)

Out of 71 neoplastic tumors, 35.21% were of keratinocytic tumors, 25.3% melanocytic, 21,1%, soft tissue tumors , 18.3% appendageal tumors.

A study done by Bari et al , and Shreepa P et al showed 62.4%&62% keratinocytic tumors, 18.4%&28%, soft tissue tumor 12% &7% appendageal tumors and 7.2%&23.4%melanocytic tumors.Study Done by Palvi et al showed 62% of keratinocytic 18.1% of melanocytic tumours ,Thus the keratinocytic tumors both benign and malignant were most common tumors among all the studies

Comparative study of benign lesions

Benign keratinocytic tumors constitutes seborrheic keratosis (11.7%),verruca vulgaris 5.8% and actinic keratosis with 2.94% cases. Study done by Bari et al showed verruca (32.8%) and seborreheic dermatitis with 10.9% cases .while study done by Sherpa P et al and Karki D et al showed squamous papilloma (14.3%,11.9%) and seborrhea keratosis (8.5% 9.9%) as commonest benign keratinocytic tumors.

Intradermal nevus as a the commonest melanocytic benign lesion with 11.76%.which was in concordance with study done by Bari et al(Bari et al., 2014) and Shrepa p et al(Sherpa & Kc, 2018) and palvi et al (Goel et al., 2021) showing 6.2% 20.6% &25.2% cases respectively.

Among the appendageal tumors benign SAT (29.41% cases) were more common than malignant SAT with 8.1% cases which was correlated with o study done by Karki D et (Karki et al., 2018)Nair et al(Nair, n.d.)

lobular capillary hemangioma was he commonest benign soft tissue tumors was the 11.76% cases which was in concordance with similar study done by Bari et al(Bari et al., 2014) and Shrepa P (Sherpa & Kc, 2018)et al showing 21.9% and 10.9% cases (Gundali S, Kolekar R, Pai K, 2015)and respectively.

Comparative study of malignant /borderline tumors

In present study most common malignant keratinocytic tumor were Basal cell carcinoma and squamous cell carcinoma with 35.13% and 10.8% cases which was in concordance with the study done by Bari et al(Bari et al., 2014),Karki D et al (Karki et al., 2018),Gundali et alGundali S, Kolekar R, Pai K, 2015) Singh S (Singh et al., 2016) et al showing Basal cell carcinoma and squamous cell carcinoma with 43.4%and 45.9%,30.2% and 41.8%,16.6% and 50%,26.25% and 46.25%, 19.4% and 50% cases respectively.Head and neck was the most common sites involved by keratinocytic tumor due to increased solar ultraviolet exposure as many people are working outdoors as farmers .

Malignant melanoma was the most common malignant melanocytic tumor which was in concordance with study done by Bari et al, Karki D et al Shrepa P et al and Gundalli et al,Palvi et al showed 4.9%.6.9%.7.8% and 46.25% cases,11% cases respectively. Foot was the most common site to be involved .

In present study Proliferating trichilemmal tumor(PTT) (5.40%) was the common malignant appendageal tumor,followed by sebaceous carcinoma with 2.7% cases. PTT may be considered malignant if it has features such as invasive growth extending beyond the cyst wall along with nuclear pleomorphism and high mitotic activity.WHO classification of skin tumors 2018. Similar study study done by bari et alshowed maximum cases were of PTT with 4.9%,followed by sebaceous carcinoma with 3.3% while study done by Karki D et al and Shrepa P et al showed sebaceous carcinomas was the commonest tumor with 2.3% and 2.8% respectivelyIn present study DFSP was the most common borderline/malignant soft tissue .tumor with 13.51 % cases, which was in concordance with study done by Bari et al, and Shrepa P et al showed 6.6%, and 13.8% cases respectively

The previous studies showed DFSP as malignant tumors while in present study DFSP is under borderline category of skin tumors as per WHO classification of skin tumors 2018

In present study IHC was performed in 14 malignant cases. Out of which 5 cases were of DFSP and 7 cases of melanoma.CD 34 positivity is specific for DFSP while HMB-45 was specific for melanoma.

These variations could be due to difference in sample size, duration of study as well as geographical and ethnic differences in susceptibility of the study populations

The most common site in the present study was head and neck (50%) followed by lower extremities(28%) and upper extremities(16%).In the head and neck region, scalp was the most common site followed by eyelids. Other studies also found head and neck region to be most commonly involved, followed by the extremities.

Conclusion

Among neoplastic lesions keratinocytic tumors show maximum cases comprising of Basal cell and squamous carcinoma which signifies exposure of UV rays as main cause for it. Benign skin adnexal tumors are more common than malignant part, however discrimination between two is essential as malignant adnexal tumors are locally aggressive, have potential for nodal and distant metastasis with poor clinical outcome. Though anatomical location,number, distribution can provide a clue to type of tumor. So histopathology is the gold standard in diagnosis of skin adnexal tumors.

Melanocytic tumors of skin includes mainly the importance to differentiate it into nevus and primary or metastatic malignant melanoma, as metastasis from primary invasive cutaneous melanoma is seen in 1/3 rd of the patients and pattern of spread is unpredictable. Moreover melanoma can occur at any site of body hence early diagnosis and staging of such lesions and awareness of its presentation which helps in management is done possible only by histopathological examination. Soft tissue tumors of skin are rare entity however awareness of it and differentiation into benign, borderline and malignant is necessary. As few lesion like DFSP have uncertain malignant potential. Kaposi sarcoma is a rare entity (0.6% in 1000,00 person) and may mimic lesion of deep fungal infection ,hence pathologist should be cautions with its reporting.

Overall assessment of patient based, both clinical and histopathological examination including case by case judgment of

relative importance, this two components yields more precise diagnosis and differential);627-631

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