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Dermoscopy of Non-Melanocytic Skin Tumors: A Descriptive Study in a Tertiary Care Hospital

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Abstract:

Introduction: Dermoscopy is a non-invasive technique that enhances visualization of morphological lesions invisible to naked eye examination and aids in clinical diagnosis. We study its role in non-melanocytic skin tumors.

Objectives: The purpose of this study was to evaluate and compare the dermoscopic features of non-melanocyte skin tumors of skin.

Materials and Methods: A cross-sectional hospital-based study including patients clinically diagnosed as non-melanocytic epidermal tumors was conducted. All dermoscopic findings were studied using a handheld pocket dermoscope (Dermlite DL1) and recorded in a preset proforma.

Results: A total of 100 patients were enrolled in the study with mean age of 37 (+/-18.34). There were 56 % females. The face was the commonest site of involvement (56%). Seborrheic keratosis was the commonest clinical diagnosis (55%), followed by pyogenic granuloma 8%, cherry angioma 7%, haemangioma 6%, basal cell carcinoma 5%,achrochordons 4%, xanthelasma, and sebaceous hyperplasia in 3% each. Squamous cell carcinoma and actinic keratosis were seen in 2% each; Angiokeratoma, Bowens disease, stetocytoma multiplex, syringoma, and neurofibroma were all found in 1% of the patients.In dermoscopy, vascular changes were seen in 41% patients, which appeared as regular in 56.1% and rest 43.9% as irregular. Non-vascular changes were seen in 68%. Dermoscopic findings of vascular and non-vascular changes were statistically significantly associated with various types of non-melanocytic epidermal tumors (P <0.05).

Conclusion: Our study shows histopathological correlation with the existing dermoscopic characteristics increases the diagnostic accuracy of various non-melanocytic tumors. However, more studies are warranted to statistically prove its utility.

Keywords: Dermoscopy; Tumor; Vascular

Introduction:

Primary care physicians who are trained in dermoscopy tend to reduce their referral rate or decrease their benign-to-malignant excision ratio from 9.5 to 3.5 as well as improve their ability to identify skin lesions suggestive of skin cancer compared with naked eye examination alone (76% to 79% vs. 54%).[3-5]

Non-melanocytic skin cancer includes various group of malignant skin tumors that differ significantly with respect to epidemiology, pathogenesis, morphology, growth, metastatic potential, and therapy. These include very common cancer types such as basal cell carcinoma (BCC), actinic keratoses (AK), and squamous cell carcinoma (SCC).[6]

In literature, reports on dermoscopy of non-melanocytic skin tumor are confined only to case reports therefore studies on larger scales are required to validate the utility of dermoscopy of non-melanocytic epidermal tumors. Moreover, there are no published study from Nepal about Dermoscopy of skin tumors.

The purpose of this study was to evaluate and compare the dermoscopic features of non-melanocyte skin tumors of skin.

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Materials and Method:

This study was a cross sectional hospital-based study, conducted between January 2021 till December 2021. All patients visiting Dermatology outpatient department of Nepal Medical College and Teaching hospital clinically diagnosed as non-melanocytic epidermal tumors were enrolled in the study during the study period. All patients of both genders in all ages with non-melanocytic skin tumors were included in our study. Patients with melanocytic tumor, mucous membrane involvement were excluded from the study. All those willing to participate were explained the procedure and the reason for photography before taking their written informed consent. Demographic and detail clinical data were filled in a preset proforma. All dermoscopic findings were studied using handheld pocket dermoscope(Dermlite DL1) with a high magnification, having both polarizing and non-polarizing lens was used for the dermoscopic examination.It features a 25 mm four-element lens, 28 high-powered LEDs and the all-new PigmentBoost illumination. In the case of patient having multiple lesions, only a single active lesion was selected for dermoscopy. Smart phone was used with the dermoscopeto take photographs and documentationswere recorded.

Variables used for dermoscopic evaluation were divided into vascular and non-vascular features which were further subcategorized into vascular morphology and its arrangement, background color, type of the scales and its pattern, follicular abnormalities and any specific clues. The characteristics were noted as present or absent.

Result:

There was a total of 100 patients enrolled in the study. The age distribution of the patients were found to be 12% in age group of<15years, 20% in between 15years to 30yearsand 68% in >30 year. The mean age of patients was 37+/- 18.34 year with the youngest of 1years-old and oldest of 78 years-old. There were56% females. Occupation wise, 46% were employees followed by 31% homemakers, 18% students and 5% were unemployed.

In 87% the lesions were raised and the rest 13% were flat. The most common colour of the lesion were brownish (seen in 53%), reddish in 31%, violaceous to reddish in 15% and in 1% other colour. The face was the commonest site of involvement (56%), followed by scalp and trunk in 11% each; in 9% more than one site was involved. In 69% the onset of lesion was more than 1 year and less than 1 year in 31%. Itching was seen in 34%, pain in 2%; rest 64% were asymptomatic. Family history was positive in 12% and none in 88%. Scalp involvement was seen in 15%. In cutaneous examination papules were seen in 41%, followed by plaques in 39%, macules in 13% nodules in 7% and scales in 5%. The demographic and clinical profile of the patients has been summarized in Table 1.Seborrheic keratosis is the commonest clinical diagnosis seen in 55%(Figure 1), followed by pyogenic granuloma 8%(Figure 2), cherry angioma 7%, haemangioma in 6%(Figure 3), basal cell carcinoma 5% (Figure 4), achrochordons 4%, in xanthelasma, and sebaceous hyperplasia 3% each. In squamous cell carcinoma (Figure 5) and actinic keratosis was seen in 2% each. Angiokeratoma, Bowens disease, stetocytoma multiplex, syringoma, and neurofibroma was seen in 1% each.

	BCC	SCC	Seborrheic keratosis	Actinic keratosis	Adnexal tumors	others
Sex(%)						
a) Male	2	0	25	2	4	12
b) Female	3	2	30	1	2	17
B) Age(in years)	35-50	62-75	29-48	61-81	21-50	1-45
C) Characteristic of lesions						
a) Site of lesion	Face	Face and extremities	Face and trunk	Scalp and face	Scalp, trunk,face	Face, trunk, extremities
b) Number of lesions	5	3	150	5	28	18
c) Type of lesions	Nodules	Plaques and nodules	Macule, papule, plaques, and nodules	Plaque	Plaque, nodule, and papule	Plaque, nodule, and papule

Table 1: Demographic and clinical profile of the patients

In dermoscopy 23% had regular vascular changes, in 18% irregular and there were none in 59%. The background colour was red in 19%, pink in 6%, brown in 34%, brown grey in 4%, yellow in 9%, and white in 1%. The vascular arrangement was regular in 78% and irregular in 22%. Arborizing type of vessel was seen in 5%(Figure 1), linear in 2%, polymorphous in 2%, dotted in 2%. Lacunae was seen in 19% and globules in 4%. Non-vascular changes were seen in 68%. Pigmentary changes were seen in 27% out of which globules were seen in 5%, dots in 4%, network like 5%, peripheral pigment network in 3%, cloud like areas in 7% and in

3% others. Follicular changes were seen in 2%. Other features like comedo like openings were seen in 48%, cerebriform pattern (sulci and gyri) in 20%, fat finger like10%, rail track lines in 8%, milia like cyst in 5%, fissures in 2%. Blue grey ovoid nest in 3%, ulceration in 1% and whitish structure less area in 3%. The vascular as well as non-vascular dermoscopic features were found to be statistically significant P value <0.05) associated with various types of non-melanocytic epidermal tumors as shown in Table 2.

Dermoscopic findings	BCC	SCC	SK	AK	Adnexal tumors	others	P value
A) Vascular (%)							
a) linear vessels	0	1	0	2	0	1	0.000
b) arborizing vessels	5	0	0	0	0	0	0.000
c) dotted	0	2	0	1	0	1	0.000
d) polymorphous	0	2	0	0	0	0	0.000
e) others (lacunaes and globule)	0	0	0	0	0	21	0.000
B) Non- Vascular (%)							
a) Milia like cyst	0	0	5	0	0	0	0.001
b) Blue grey ovoid nests	5	0	0	0	0	0	0.000
c) comedo like openings	0	0	48	0	0	0	0.000
d) Cerebriform pattern	0	0	20	0	0	0	0.000
e) pigment networks	0	0	24	0	1	2	0.02
f) white structureless area	2	2	0	0	0	0	0.000

Table 2: Dermoscopic findings of non-melanocytic tumor of skin(in percentage)

Discussion:

Dermatoscopy (also known as dermoscopy, incident light microscopy, epiluminescence microscopy and skin-surface microscopy) is an inexpensive in vivo and non-invasive technique that permits the visualization of morphologic features that are not visible to the naked eye.[2]

Dermoscopy aids in diagnosis of many pigmented skin lesions like seborrheic keratosis (SK), pigmented basal cell carcinoma (BCC), hemangioma, blue nevus, atypical nevus, and cutaneous melanoma. Combining the dermoscopic images to clinical evaluation increased the diagnostic accuracy in teledermatologic evaluation of malignant non-melanocytic lesions as per Warshaw et al.[7,8]

In a study the commonest non-melanocytic tumor was found to be basal cell carcinoma in 27% followed by pyogenic granuloma 20% and seborrheic keratosis in 10%[9] in contrast in our study we found seborrheic keratosis in 55% followed by pyogenic granuloma in 8% and basal cell carcinoma in 5%.

In past few decades,value of dermoscopy of basal cell carcinoma (BCC) has been extensively elaborated. reported the sensitivity of diagnostic criteria for pigmented BCC was 97% as reported by Menzies et al.[10] The dermoscopic features characteristic of BCC include the absence of a pigment network and the presence of specific features, e.g., arborizing vessels, large blue-gray ovoid nests, multiple blue-gray globules, leaf-like areas, spoke wheel areas, and ulceration.[9-11] Vascular patterns such as short fine telangiectasias (SFTs) which are small vessels without branches, arborizing microvessels, and milky-pink backgrounds have been reported, and these patterns may be useful particularly for non-pigmented BCCs.[10,11]

In our study we found arborizing vessels in all the cases of basal cell carcinoma, followed by blue grey ovoid nests and white structureless area, we did not find any features like maple leaf like structures, ulceration in our study. These may be due to differences in different dermoscopic pattern of BCC like nodular, superficial, pigmented, etc.

Rosendahl et al.[12] compared dermatoscopic criteria of highly differentiated invasive SCC including keratoacanthomas with BCC, actinic keratosis, and Bowen's disease. In their study they found vascular structure like coiled vessels are a strong clue to SCC when compared with BCC but are not helpful when the differential diagnosis is actinic keratosis and Bowen's disease. Features like white circles, blood spots, and white structure less zones are typical for highly differentiated SCC when compared with actinic keratosis and Bowen's disease. The dermoscopic strongest clue, is the presence of keratin, especially in conjunction with blood spots.[12,13] The dermoscopic features of red or mixed background, polymorphous vascular pattern and ulcerations are features of poorly differentiated invasive SCC.[14]

In our study we found white structureless area with polymorphous vessels and ulcerations in SCC similar to a study quoted in the literature. Differentiating SCC

and keratoacanthoma dermoscopic features overlap therefore histopathology should be considered, our study being cross sectional, we were not able to follow-up the patients.

Actinic keratoses (AKs) is one of the most common types of cancer in humans.Dermoscopicfeatures of AK exhibit a red pseudonetwork as well as mild scaling in grade 1, strawberry pattern is typical for Grade 2 AKs and have an erythematous background studded with white to yellow, keratotic, partially confluent and dilated follicular openings. Grade 3 AKs either shows yellow background interspersed with follicular openings filled with keratotic plugs,pronounced hyperkeratosis, presenting as white to yellow structureless areas.[6] In our study we found vascular patterns as linear vessels and dotted vessels with scales.

Diagnostic accuracy in assessment of vascular lesions is increased by dermoscopy for lesions like as hemangioma, solitary angiokeratoma, and pyogenic granuloma. Dermoscopic features typical of the vascular lesions are red, blue or black lacunae and red-bluish or red-black homogenous areas. Dermoscopic features like reddish homogenous areas, white collarets, ulceration and white rail lines intersecting the lesions are seen in pyogenic granuloma. [7,15-17]

Seborrheic keratosis(SK) is a common benign skin tumor seen mostly amongst the elderly population. SK can be diagnosed clinically though sometimes the differentiation between SK and cutaneous melanoma may be difficult in the clinical aspect. Classical dermatoscopic criteria of SK that include multiple milia-like cysts and comedo-like openings had a high prevalence, moreover structures such as hairpin blood vessels, fissures, sulci and gyri improved the diagnostic accuracy.[7,18] In our study we found milia like cyst, comedo like opening, cerebriform pattern and pigmentary changes which are consistent findings in the literature too. In our study though the clinical diagnosis correlated with the dermoscopic characteristic findings but our findings cannot be generalized as the sample size was small and lacked histopathological confirmation.Further larger sample size studies should be performed to increase the existing knowledge and importance of dermoscopy.

Conclusion:

Dermoscopy is non-invasive technique that improves diagnostic accuracy of clinical evaluation of non-melanocytic skin tumors and able to recognize vascular features and other non-vascular features which are not visible to naked eyes. However, dermoscopy alone cannot substitutehistory, clinical examination, laboratory investigations and histopathological examination which is confirmatory. Dermatologists should be aware of dermoscopic features of both benign and malignant non-melanocytic tumors which will not only help the treating physician in early diagnosis but also prevent complications of suspected tumors of malignant potential with early treatment.

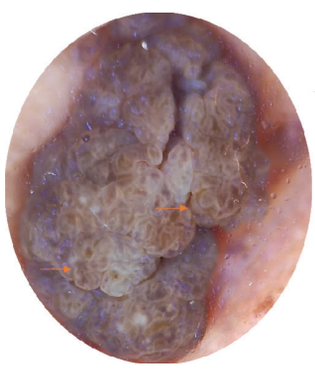

Figure 1: cerebriform pattern in orange arrows in Seborrheic Keratosis

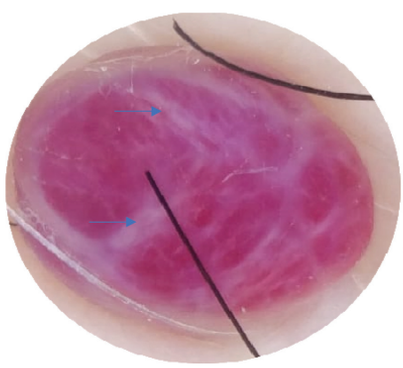

Figure 2: whitish rail track pattern in blue arrows which is characteristic of Pyogenic granuloma.

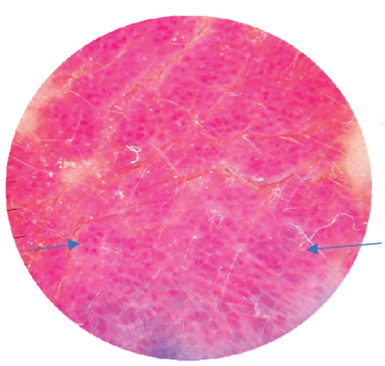

Figure 3: Red lacunaes in blue arrows in Haemangioma

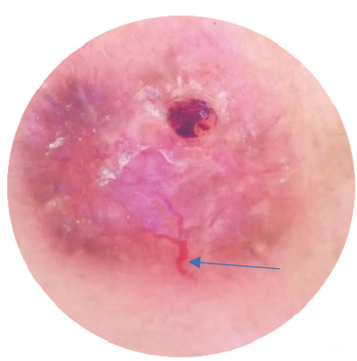

Figure 4: Arborizing vessels in a case of Basal Cell Carcinoma

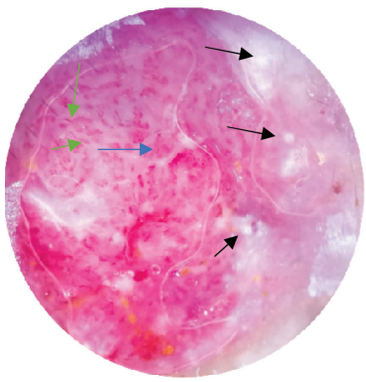

Figure 5: An ulcerated squamous cell carcinoma showing dotted vessels in blue arrows, linear vessels in green arrows, whitish clods in black arrows on a polymorphic background

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