Scientific Research Publishing

Journal of Cancer Therapy, 2026, 17(1), 21-35
https://www.scirp.org/journal/jct
ISSN Online: 2151-1942
ISSN Print: 2151-1934

Basal Cell Carcinoma: A Cross-Sectional Study of Clinical, Dermoscopic and Histopathological Evaluation

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How to cite this paper: Al-Khafaji, A. and Al-Sabak, H. (2026) Basal Cell Carcinoma: A Cross-Sectional Study of Clinical, Dermoscopic and Histopathological Evaluation. *Journal of Cancer Therapy*, **17**, 21-35.
https://doi.org/10.4236/jct.2026.171004

Received: December 8, 2025
Accepted: December 28, 2025
Published: December 31, 2025

Abstract

Background: Basal cell carcinoma (BCC) is the most common form of skin cancer. WHO classifies BCC into subtypes based on histopathological characteristics. Dermoscopy is a valuable tool for diagnosing and characterizing BCC lesions. To ensure the best treatment and minimize relapse risk, comprehensive evaluation through clinical, dermoscopic, and histopathological assessments is essential. **Aim:** The study aims to evaluate basal cell carcinoma (BCC) clinically, dermoscopically, and histopathologically to classify them into high-risk and low-risk groups, aiding in treatment selection based on subtype. **Patients and Method:** The study, conducted at Al Sadar Medical City in Al Najaf, Iraq, from October 2022 to October 2023, was a cross-sectional, clinical observational study focusing on patients suspected of having Basal Cell Carcinoma (BCC). It involved assessing demographic information and clinical characteristics of lesions, including size, location, duration, number, ulceration, and pigmentation. Dermoscopic evaluation utilizing the Dermlite DL100 3GEN dermoscope categorized structures into pigmented, vascular, and nonvascular/nonpigmented groups. Additionally, histopathologic evaluation was conducted to determine the histopathologic subtype of BCC in each case. **Results:** Forty one patients with a total of 51 BCC lesions were included, 63.4% were male and 36.6% were female, with an average age of 66.3 years. The majority of BCC lesions were on the head and neck (90.2%), with the nose being the most common site. Most cases had solitary lesions (90.2%). Blue-grey ovoid nests (66.7%) being the most frequent dermoscopic feature, followed by shiny white-red structureless areas (60.8%), ulceration (56.9%), short fine telangiectasia (51%), and leaf-like areas (51%). Histopathologically, the most common variant was nodular (58.82%), followed by mixed (19.61%) and superficial (13.73%), among others. **Conclusion**: Basal cell carcinomas can be classified

into low-risk and high-risk groups based on clinical, dermoscopic, and histopathological characteristics. BCCs on the face and neck larger than 1 cm or on the trunk larger than 2 cm, displaying dermoscopic features like shine white streaks and keratin masses, and those demonstrating aggressive growth patterns on histopathological examination are classified as high risk.

Keywords

Basal Cell Carcinoma, Dermoscopy, Histopathology, Subtype, Pigmentation

1. Introduction

Basal cell carcinoma (BCC) is a malignancy that is increasing in incidence and is the most common form of skin cancer [1]. This type of cancer arises from the interfollicular epidermis and/or hair follicle and is particularly associated with sun-damaged skin [2]. Multiple factors increase the risk of developing BCC, including age, exposure to ultraviolet (UV) radiation (both occupational and recreational), skin phototype, gender, certain medications, radiation therapy, family history of skin tumors, chronic arsenic exposure, immunosuppression, and some genetic syndromes [3]. The head and neck are the most common sites for BCC due to their high exposure to sunlight, accounting for about 74% of cases [4]. Greater than 50% of dark-skinned individuals present pigmentation in their BCC lesions, in contrast to fewer than 10% of light-skinned individuals [5]. BCC exhibits several distinct clinical subtypes that are distinguished based on their clinical characteristics. These subtypes include nodular/ulcerative variant, morpheaform variant, superficial or multifocal variant, pigmented variant, and fibroepithelioma of Pinkus [6]. Dermatoscopy is a highly effective tool for the diagnosis of basal cell carcinoma (BCC), It allows for the detection of BCC at an early stage, even before the tumor becomes clinically visible, by magnifying the lesion up to 10 - 20 fold in a dermoscope or even 70 fold in videodermoscopes [7] [8]. Dermatoscopy can provide valuable information for pre-operative classification of BCC, as different histopathologic subtypes exhibit different dermatoscopic patterns [9] [10]. Additionally, dermatoscopy can reveal clinically undetectable pigmentation in approximately 30% of macroscopically non-pigmented BCCs, which enhances clinicians' ability to select tumors potentially sensitive to PDT and minimize treatment failures [11] [12]. The histopathologic subtypes of basal cell carcinoma (BCC) are categorized based on the probability of tumor recurrence. BCCs that exhibit a low risk of recurrence include nodular, superficial, infundibulocystic (BCC with adnexal differentiation), and fibroepithelial subtypes. On the other hand, BCCs with a high risk of recurrence are micronodular, infiltrating, sclerosing/morphoeic, basosquamous BCCs, and BCCs with sarcomatoid differentiation [13] [14]. Treatment decisions are influenced by the risk of lesion recurrence, which is determined by the presence or absence of aggressive clinical and

histopathologic features [15]. The high risk features include lesions located on trunk and extremities larger than 2 cm or on head and neck larger than 1 cm, poorly defined borders, recurrent tumour, immunosuppressed patients, site of prior radiotherapy, high risk histopathological subtypes and perineural involvement. Mohs micrographic surgery is reserved for high-risk BCC cases due to its high efficacy in achieving long-term cure rates [16]. This study aims to perform a clinical, dermoscopic, and histopathological evaluation of basal cell carcinoma (BCC) in order to categorize BCCs into high-risk and low-risk groups, facilitating the selection of suitable treatments based on the subtype.

2. Patients and Methods

This study is a cross-sectional, clinical observational study conducted at the dermatology and venereology department at Al Sadar medical city in Al Najaf government/Iraq from October 2022 to October 2023. Ethical approval and permission were obtained from the scientific committee of the Scientific Council of Dermatology and Venereology-Iraqi Board for Medical Specializations, and informed consents were obtained from all participants in the study.

Patients who had a suspected clinical diagnosis of BCC were included in the study. Digital photographs were taken for each individual BCC lesion using the camera of a Samsung Galaxy S23 (snapdragon 8, camera 200 + 10 + 10 + 12 megapixels). The photographs were taken from different angles to ensure that all the visible features of the lesion were captured. The photographs were stored in a secure digital database for later analysis.

2.1. Clinical Evaluation

The clinical evaluation involved assessment of the patients sociodemographic information (age, sex, skin-prototype and occupation) and the clinical characteristics of their lesions (size, site, duration, number of lesions, ulceration and pigmentation).

2.2. Dermoscopic Evaluation

The dermoscopic evaluation was performed using handheld Dermoscopy (Dermlite DL100 3GEN San Juan Capistrano, CA USA) with a magnification power of 10 folds.

The dermoscopic classification of BCC and its subtypes was established based on the criteria outlined by Reiter *et al.* [17]. According to these criteria, structures were divided into three main categories:

1) Pigmented structures: This category encompassed multiple blue-grey dots and globules, large blue-grey ovoid nests, leaf-like areas, spoke-wheel patterns, and concentric structures.

2) Vascular structures: include arborizing vessels, short fine telangiectasias, polymorphous vessels (involving multiple vessel patterns), and various others, such as dotted, coiled (glomerular), looped (hairpin), and helical (corkscrew) vessels.

3) Nonvascular/nonpigmented structures: This included shiny white features, such as shiny white streaks, shiny white blotches and strands, rosettes, surface changes like multiple small erosions and ulcerations, and a shiny white-red structureless background.

2.3. Histopathologic Evaluation

Histopathologic evaluation was conducted to determine the histopathologic subtype of BCC in each case. After obtaining informed consent, excisional biopsies for small lesions and incisional biopsies for larger lesions were performed under local anesthesia. The biopsy specimens were then sent to the pathology laboratory for processing, staining, and subsequent microscopic examination. Pathologists analyzed the stained slides and then reviewed by an expert dermatologist to classify the BCC lesions according to established histopathologic criteria.

The clinical and histopathological classification of BCC into high risk and low risk groups according to National Comprehensive Cancer Network stratification of low- versus high-risk BCC [28].

National Comprehensive Cancer Network stratification of low- versus high-risk BCC.

Parameters	Low risk	High risk
	Clinical	
Location*/size†	Area L < 20 mm Area M‡ < 10 mm	Area L ≥ 20 mm Area M ≥ 10 mm Area H§
Borders	Well defined	Poorly defined
Primary vs recurrent	Primary	Recurrent
Immunosuppression	No	Yes
Site of prior radiation therapy	No	Yes
	Pathologic	
Growth pattern	Nodular, superficial‖	Aggressive¶
Perineural involvement	No	Yes

*: Area L consists of trunk and extremities (excluding hands, feet, nail units, pretibia, and ankles); area M consists of cheeks, forehead, scalp, neck, and pretibia; and area H consists of central face, eyelids, eyebrows, periorbital skin, nose, lips, chin, mandible, preauricular and postauricular skin/sulci, temple, ear, genitalia, hands, and feet. †: Greatest tumor diameter. ‡: Location independent of size may constitute high risk. §: Area H constitutes a high-risk area on the basis of location, independent of size. ‖: Other low-risk growth patterns include keratotic, infundibulocystic, and fibroepithelioma of Pinkus. ¶: Having morpheaform, basosquamous (metatypical), sclerosing, mixed infiltrative, or micronodular features in any portion of the tumor.

The data of the study were gathered and processed using Microsoft Excel version 2016. Descriptive statistics were displayed as (mean ± standard deviation),

while frequencies were expressed as percentages and visualized through tables and figures. The P-value was considered significant as the following: P-value more than 0.05: nonsignificant, P-value less than or equal to 0.05: significant and P-value less than 0.01: highly significant.

3. Results

Fourty one patients with a total of 51 BCC lesions were included in this cross sectional, clinical observational study. Among these, 26 patients (63.4%) were male, and 15 patients (36.6%) were female, resulting in a male-to-female ratio of 1.7:1. The ages of the participants ranged from 33 to 105 years, with a mean and SD (66.3 ± 12.8) years (Table 1).

Regarding the duration of the lesions, it varied between 6 months and 25 years, with mean ± SD = (5.56 ± 5.93 years). The diameter of the lesions ranged from 0.2 to 14 cm, with mean ± SD = (2.19 ± 2.24 cm).

The numbers and percentages of patients according to the Fitzpatrick's classification of skin type were: type I, 1 (2.4%), type II, 2 (4.9%), type III, 16 (39%), type IV, 22 (53.7%). The most common skin prototype in males was type IV (76.9%) while in females was type III (73.3%) (P value = 0.0001) (Table 1 and Table 2).

There was no difference between females and males with BCC in terms of histopathological subtype (P value = 0.6) (Table 2).

Table 1. Sociodemographic data of the patients.

Variable	Subgroup	No.	%
sex	Male	26	63.4
	Female	15	36.6
Skin phototype	I	1	2.4
	II	2	4.9
	III	16	39
	IV	22	53.7
Occupation	Outdoor jobs with chronic sun exposure	20	48.8
	Indoor without excessive sun exposure	21	51.2

Table 2. The difference in skin-photo types, site and histopathological subtypes of BCC among males and females.

		Sex		Total	P
		Male	Female		
Skin type	I	1 (3.8%)	0 (0%)	1 (2.4%)	0.0001
	II	0 (0.0%)	2 (13.3%)	2 (4.9%)	
	III	5 (19.2%)	11 (73.3%)	16 (39%)	
	IV	20 (76.9%)	2 (12.3%)	22 (53.7%)	

Continued

Site	Head and neck	33 (97.1%)	13 (76.5%)	46 (90.2%)	0.02
	Others	1 (2.9%)	4 (23.5%)	5 (9.8%)	
Histopathological subytpe	Nodular	21 (61.8%)	9 (52.9%)	30 (58.8%)	0.6
	Superficial	4 (11.8%)	3 (17.6%)	7 (13.7%)	
	Micro-nodular	0 (0%)	1 (5.9%)	1 (2%)	
	Infiltrative	1 (2.9%)	0 (0%)	1 (2%)	
	Baso-squamous	2 (5.9%)	0 (0%)	2 (3.9%)	
	Mixed	6 (17.6%)	4 (23.5%)	10 (19.6%)	

Lesions were predominantly localized on the head and neck in 46 patients (90.2%), whereas 5 patients (9.8%) had lesions on covered body areas, primarily on the trunk. The most frequent site of occurrence was the nose, with tumors observed in 11 cases (21.6%). This was followed by the forehead and scalp, which were affected in 7 cases (13.7%) and 6 cases (11.8%) respectively.

Clinical pigmentation was noted in 38 lesions (74.5%), dermoscopical pigmentation was detected in 40 lesions (78.4%) and histopathological pigmentation was identified in 44 lesions, accounting for 86.3% of the total cases.

Dermoscopic Characteristics of BCC Histopathologic Subtypes (Table 3):

Considering all BCCs (n = 51), the most frequent dermoscopic features were blue grey ovoid nests (n = 34, 66.7%), shiny white red structureless area (n = 31, 60.8%), ulceration (n = 29, 56.9%), short fine telangectasia (n = 26, 51%), and leaf like areas (n = 26, 51%).

Nodular BCC (n = 30) presented most commonly with blue grey ovoid nests (n = 21, 70%), ulceration (n = 20, 66.7%), shiny white red structureless area (n = 18, 60%), and arborizing vessels (n = 14, 46.7%).

Superficial BCC (n = 7) most commonly presented with blue grey dots (n = 7, 100%), leaf like areas (n = 7, 100%), scale (n = 7, 100%), short fine telangectasia (n = 5, 71.4%), shiny white red structureless area (n = 5, 71.4%), erosion (n = 5, 71.4%) and spoke wheel areas (n = 4, 57.1%).

Mixed BCC (n = 10) presented most commonly with blue grey ovoid nests (n = 9, 90%), leaf like areas (n = 7, 70%), short fine telangectasia (n = 6, 60%), blue grey dots and ulceration both of them were (n = 5, 50%).

Basosquamous BCC (n = 2) presented with shiny white streaks, shiny white red structureless area, ulceration and keratin masses all of them were (n = 2, 100%), while arborizing vessels, blue grey dots, blue grey globules, blue grey ovoid nests and shiny white blotches all of them were (n = 1, 50%).

Micronodular BCC (n = 1) presented with short fine telangectasia, shiny white blotches, shiny white red structureless area and ulceration all of them were (n = 1, 100%).

Infiltrative BCC (n = 1) presented with short fine telangectasia, shiny white red structureless area, ulceration and scale all of them were (n = 1, 100%).

Table 3. Dermoscopic characteristics of BCC histopathologic subtypes.

Dermoscopic features	Histopathological subtype						Total (n = 51)	P
	Nodular (n = 30)	**Superficial (n = 7)**	**micro nodular (n = 1)**	**Infiltrative (n = 1)**	**Basesquamous (n = 2)**	**Mixed (n = 10)**		
arborizing vessels	14 (46.7%)	1 (14.3%)	0 (0%)	0 (0%)	1 (50%)	2 (20%)	18 (35.3%)	0.4
short fine talengactesia	13 (43.3%)	5 (71.4%)	1 (100%)	1 (100%)	0 (0%)	6 (60%)	26 (51%)	0.3
Blue grey dots	7 (23.3%)	7 (100%)	0 (0%)	0 (0%)	1 (50%)	5 (50%)	20 (39.2%)	0.007
Blue grey globules	8 (26.7%)	3 (42.9%	0 (0%)	0 (0%)	1 (50%)	4 (40%)	16 (31.4%)	0.8
Blue grey ovoid nests	21 (70%)	3 (42.9%)	0 (0%)	0 (0%)	1 (50%)	9 (90%)	34 (66.7%)	0.1
Brown globules	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (10%)	1 (2%)	0.5
Brown nests	1 (3.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (20%)	3 (5.9%)	0.5
Leaf like areas	12 (40%)	7 (100%)	0 (0%)	0 (0%)	0 (0%)	7 (70%)	26 (51%)	0.02
Spoke wheel areas	2 (6.7%)	4 (57.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (11.8%)	0.006
Shiny white streaks	3 (10%)	3 (42.9%)	0 (0%)	0 (0%)	2 (100%)	3 (30%)	11 (21.6%)	0.03
Shiny white blotches	10 (33.3%)	3 (42.9%)	1 (100%)	0 (0%)	1 (50%)	3 (30%)	18 (35.3%)	0.7
Shiny white red structure less area	18 (60%)	5 (71.4%)	1 (100%)	1 (100%)	2 (100%)	4 (40%)	31 (60.8%)	0.4
Rosettes	2 (6.7%)	2 (28.6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (7.8%)	0.4
Erosion	4 (13.3%)	5 (71.4%)	0 (0%)	0 (0%)	0 (0%)	1 (10%)	10 (19.6%)	0.01
Ulceration	20 (66.7%)	0 (0%)	1 (100%)	1 (100%)	2 (100%)	5 (50%)	29 (56.9%)	0.02
Blue white veil	7 (23.3%)	1 (14.3%)	0 (0%)	0 (0%)	0 (0%)	3 (30%)	11 (21.6%)	0.9
Keratin masses	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)	0 (0%)	2 (3.9%)	0.0001
Scale	9 (30%)	7 (100%)	0 (0%)	1 (100%)	0 (0%)	4 (40%)	21 (41.2%)	0.01

The following BCC histopathologic variants were observed: nodular 30 (58.82%), mixed 10 (19.61%), superficial 7 (13.73%), basosquamous 2 (3.92%), micronodular 1 (1.96%), and infiltrative 1 (1.96%). The most common variant of mixed basal cell carcinoma was superficial-micronodular variant (Figures 1-7).

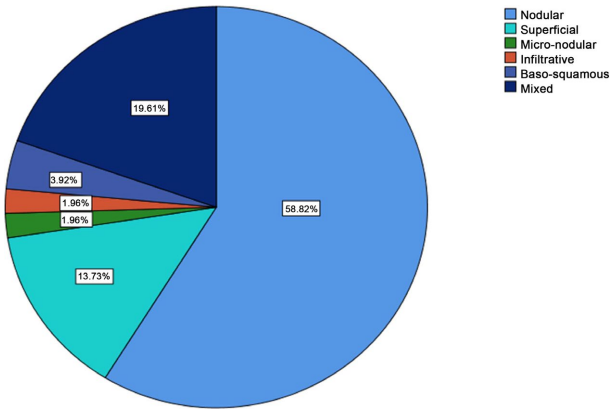

Figure 1. Frequency of BCC histopathological subtypes.

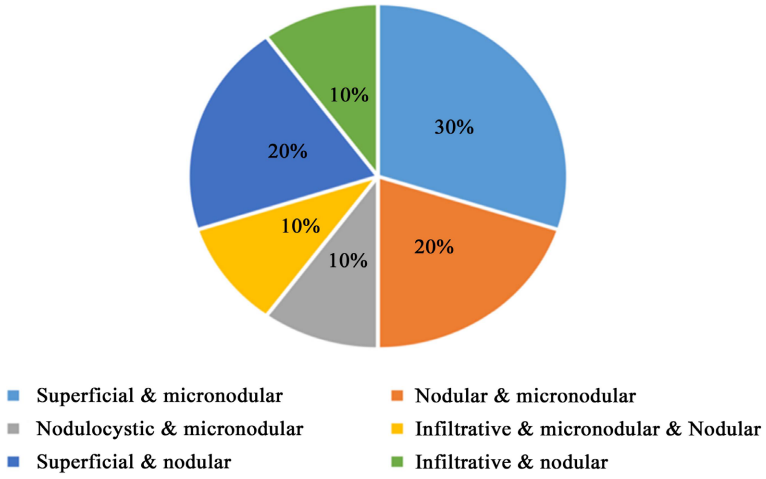

Figure 2. Variants of mixed BCC.

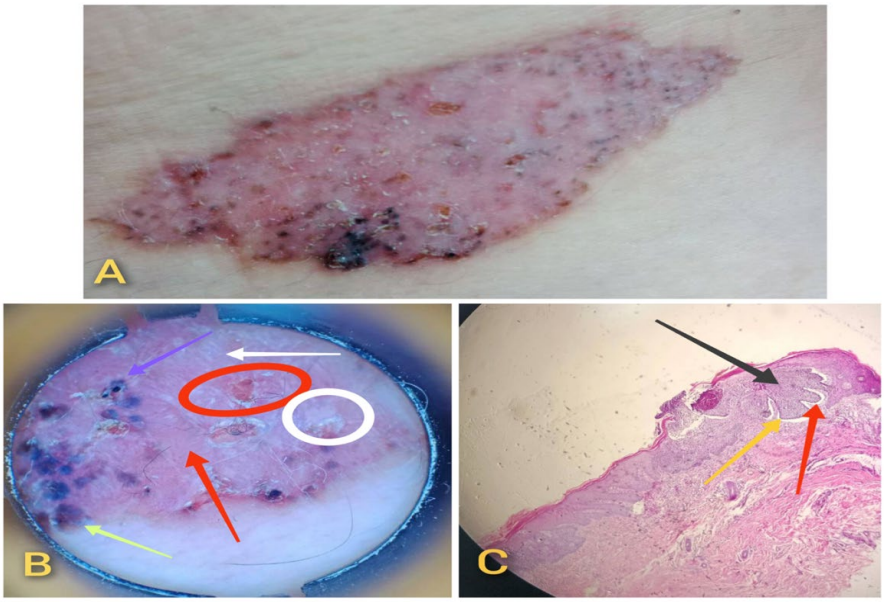

Figure 3. (A) A 70 years old female with superficial basal cell carcinoma on the left inguinal area. (B) Dermoscopy shows blue grey globules (blue arrow), leaf like area (green arrow), erosion (red circle), shiny white streaks (white arrow), shiny white blotches (white circle), shiny white red background (red arrow). (C) Micrograph shows budding of basaloid nests from epidermis (black arrow) with peripheral balisading (red arrow) and stromal retraction (yellow arrow).

4. Discussion

The present study reveals that the mean age is 66.3 ± 12.8 years which is closed to that reported in previous studies [4] [12] [18], and BCC was more frequently observed in men because they tend to have greater sun exposure, and more common with skin phototypes III and IV which consistent with the previous reports [4] [12] [19] [20].

The majority of the lesions were located on the head and neck areas and the nose was the most common site and this is consistent with the previous studies

[18]-[23]. The nose is the most prominent part of the face and is subjected to greater exposure to ultraviolet radiation (UVR).

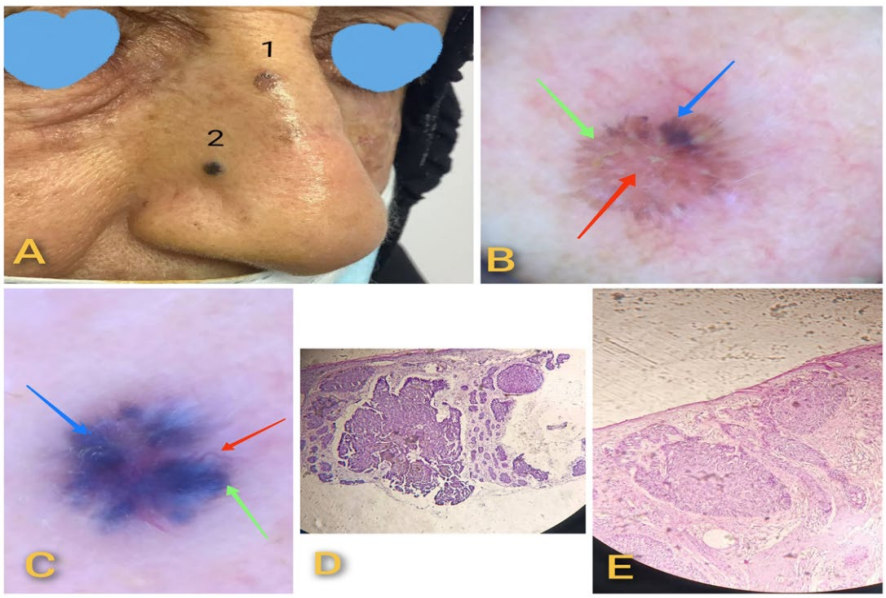

Figure 4. (A) 70 years old female with two pigmented basal cell carcinomas on the nose. (B) Dermoscopy of (lesion 1) shows blue grey ovoid nest (blue arrow), leaf like areas (green arrow), shiny white red background (red arrow). (C) Dermoscopy of (lesion 2) shows blue grey ovoid nests (blue arrow), leaf like areas (green arrow)and short fine telangectasia (red arrow). (D) Micrograph of (lesion 2) shows mixed type basal cell carcinoma (nodular-micronodular variant). (E) Micrograph of (lesion 1) shows nodular BCC.

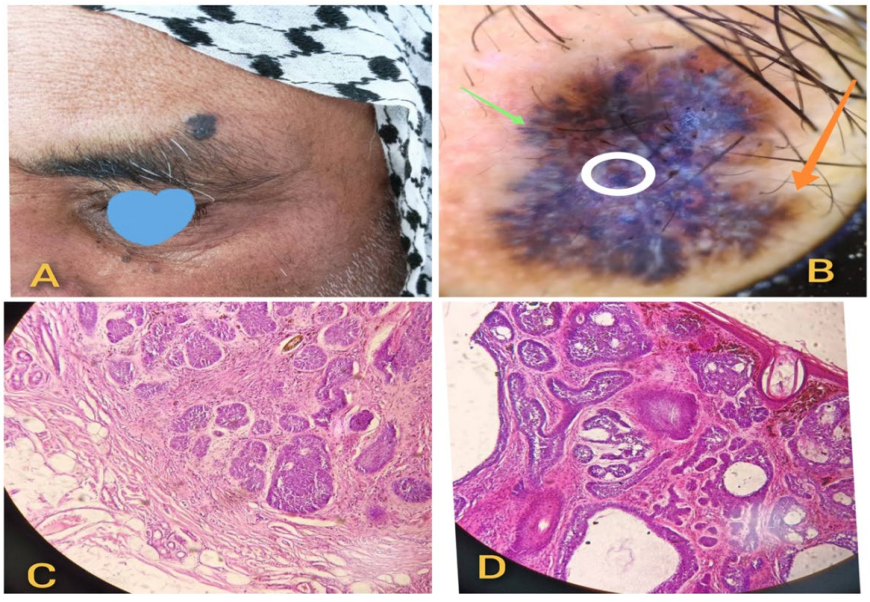

Figure 5. (A) 70 years old male with pigmented basal cell carcinoma above the left eyebrow. (B) Dermoscopy shows blue grey ovoid nests (white circle), leaf like areas (green arrow), brown blotches (red arrow). (C) & (D) Micrographs show mixed type basal cell carcinoma (nodulocystic-micronodular variant).

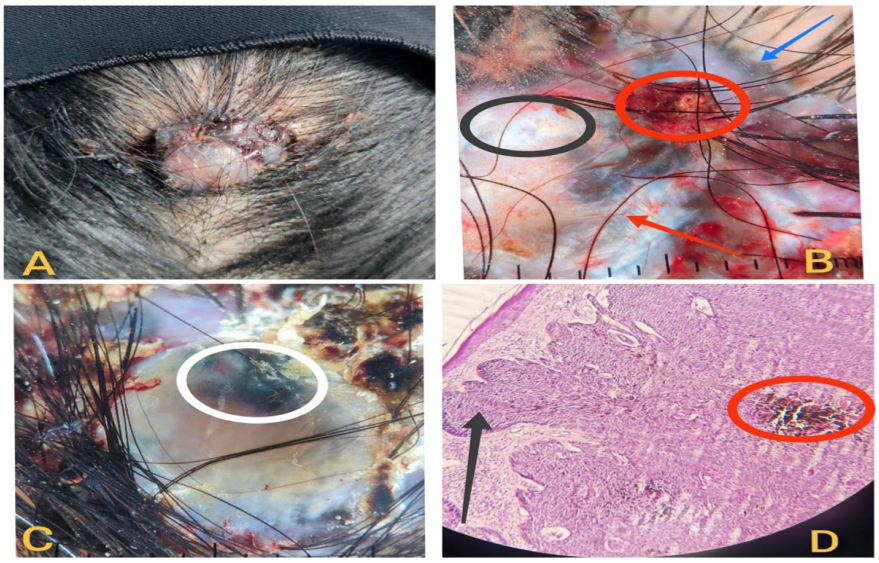

Figure 6. (A) 65 years old female with pigmented nodular basal cell carcinoma on the scalp. (B) & (C) Dermoscopy shows blue grey ovoid nests (white circle), leaf like areas (blue arrow), erosion (red circle), shiny red white background (black circle) and short fine telangectasia (red arrow). (D) Micrograph shows large basaloid nests (black arrow) with melanophages (red circle).

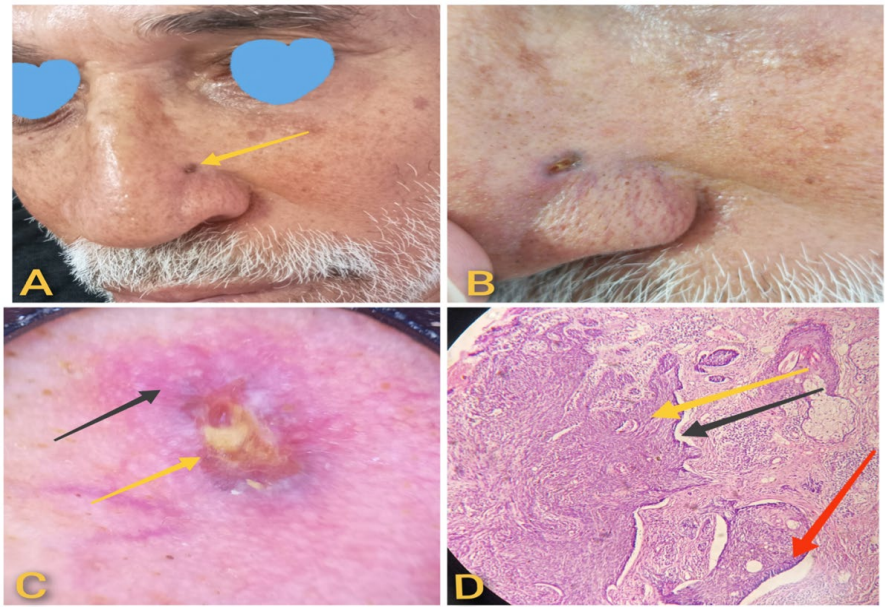

Figure 7. (A) & (B) 65 years old male with 0.3 cm ulcerated basal cell carcinoma on left ala nasi. (C) Dermoscopy shows ulceration (yellow arrow) and shiny white red background (black arrow). (D) Micrograph shows nodular BCC with large basaloid nests (yellow arrow), peripheral palisading (red arrow) and stromal retraction (black arrow).

In the present study, pigmentation was evident clinically in 74.5% of the basal cell carcinomas, while the dermoscopical and histopathological pigmentation was detected in 78.4% and 86.3% of lesions respectively. In line with the present results, a study by El-Sayed *et al.* Showed pigmentation was clinically detected in

76.7% of lesions, while dermoscopical and histopathological pigmentation was evident in 83.3% of lesions [12]. This highlights the importance of dermoscopical and histopathological evaluation in improving clinicians' capacity to prevent the misdiagnosis of pigmented basal cell carcinoma (BCC), leading to more effective therapy selection and enhanced identification of tumors suitable for photodynamic therapy [8] [24].

On the dermoscopic evaluation, the present study revealed that the most frequent dermoscopic features in all BCC lesions were blue grey ovoid nests (66.7%), shiny white red structureless area (60.8%), ulceration (56.9%), short fine telangectasia (51%), leaf like areas (51%) and arborizing blood vessels (35.3%). In a study by El-Sayed *et al.* That involved 30 patients with BCC, the most common dermoscopic feature in all BCCs was ulceration (70%) followed by arborizing blood vessels and blue-gray ovoid nests, each found in 19 (63.3%) lesions [12]. While in a study conducted by Pampena *et al.*, which included 481 cases of BCCs, the most commonly observed features across all cases were as follows: shiny red-white structureless areas were present in 70.5% of cases, while multiple blue-gray globules and short white streaks were both found in 56.8% of lesions. Other features were as follow arborizing telangiectasia (54.9%), superficial fine telangiectasias (29.9%), blue-gray ovoid nests (25.2%), maple leaf-like areas (23.3%), ulceration (21.6%), and multiple small erosions (6.9%) [25].

Regarding dermoscopical features of histopathological types

Dermatoscopy provides important information for the preoperative classification of basal cell carcinoma, as histopathologic subtypes are associated with distinct dermatoscopic patterns [9] [10] [17].

In the present study, Nodular BCC presented most commonly with blue grey ovoid nests (70%), ulceration (66.7%), shiny white red structureless area (60%), and arborizing vessels (46.7%). In a study conducted by Gürsel Ürün Y *et al.* that included 96 BCC patients, the most common dermoscopical features of nodular BCC (n = 48) were shiny white-red structureless background (85.4%), white structureless areas (75%), arborizing vessels (70.7%), ulceration (58.3%) and large blue-grey ovoid nests (27.1%) [5]. While in a study done by Wang *et al.* that involved 119 BCC patients, The most common dermoscopic features of nodular BCC (n = 92) were blue-gray ovoid nests (93.48%), followed by shiny white streaks (89.13%), arborizing vessels (69.57%), multiple blue globules (66.30%), and ulceration (40.22%) [10].

Regarding superficial BCC, the most common dermoscopical features in present study were blue grey dots (100%), leaf like areas (100%), scale (100%), short fine telangectasia (71.4%), shiny white red structureless area (71.4%), erosion (71.4%), and spoke wheel areas (57.1%). In Gürsel Ürün Y *et al.* Study, the predominant dermoscopic observations in cases of superficial BCC (n = 10) included a shiny white-red structureless background (100%), short fine telangiectasias (70%), shiny white blotches and strands (60%), and multiple small erosions (60%) [5]. According to research conducted by Wang *et al.*, the dermoscopic features

most frequently observed in superficial BCC (n = 8) included shiny white streaks (100%), leaf-like areas (100%), spoke wheel areas (87.5%), short-fine telangiectasia (75%), shiny white-red structureless background (50%), multiple blue-grey dots and globules (37.5%) and multiple small erosions (37%)[10].

The present dermoscopic features for mixed BCC were blue grey ovoid nests (90%), leaf like areas (70%), short fine telangectasia (60%), blue grey dots and ulceration both of them were (50%). While in a study done by Emiroglu N *et al.*, the dermoscopic features of mixed BCC (n = 24) were leaf-like areas (66.7%), blue grey ovoid nests and spoke wheel areas both of them were (50%), short fine telangectasia (40%), white streaks/ structures (39.5%) and erosion (31%) [9].

In the current research, basosquamous BCC exhibited features such as shiny white streaks, shiny white-red structureless areas, ulceration, and keratin masses, all of which were observed in 100% of cases. However, characteristics like arborizing vessels, blue-grey dots, blue-grey globules, blue-grey ovoid nests, and shiny white blotches were present in only 50% of cases. In the study conducted by J. Giacomel *et al.*, the most commonly observed features of basosquamous BCC were: peripheral arborizing vessels (73%), keratin masses (73%), white structureless areas (73%), superficial scale (68%), ulceration or blood crusts (68%), white structures (64%), blue-grey blotches (59%), and blood spots within keratin masses (55%) [26].

The variations in dermoscopical features between present study and other studies may be explained by the following:

1) In pigmented BCC, there were fewer non-pigmented structures like blood vessels, possibly because the pigment obscured them [12] [23].

2) The histopathological classification of BCC depends on factors like biopsy techniques, specimen sectioning and dermatopathologists, for example the same lesion may be classified as superficial, nodular or mixed BCC [17].

A study done by Emiroglu N *et al.* that involved 98 patients with BCC, the most common histopathological subtype was nodular BCC (37.8%), followed by mixed BCC (24.5%) and superficial BCC (19.4%) [9], similar to the present study in which the most common histopathological type was nodular BCC (58.8%), followed by mixed BCC (19.6%), and superficial BCC (13.7%). Ghanadan *et al.* study that involved 825 patients with BCC, the most common BCC subtype was nodular BCC (43%), followed by mixed BCC (32.4%), infiltrative BCC (5.69%), and superficial Bcc (3%) [27]. In Sharquie *et al.* Study that included 140 patients showed superficial BCC was the most common type, followed by nodular type [19]. The variations in the percentages of different BCC subtypes among these studies can be attributed to the requirement for a complete excisional biopsy of the entire tumor to ensure accurate histopathological classification, punch or incisional biopsies of larger lesions may not provide representative results because they only examine a portion of the tumor.

Study limitations:

1) Although all histopathological and dermoscopic assessments were inde-

pendently reviewed by experienced observers and discrepancies were resolved by consensus, formal statistical measures of inter-rater reliability were not performed, which represents a potential limitation of the study.

2) The small sample size for less common variants is a limitation of the study.

5. Conclusion

Basal cell carcinoma (BCC) primarily affects elderly males, with the nose being the most common location, and over 9% of patients have multiple BCCs. Dermoscopic features of BCCs include blue-grey ovoid nests, shiny white-red structureless areas, ulceration, short fine telangiectasia, and leaf-like areas. Nodular BCC is the most common histopathological subtype, followed by the mixed subtype, with superficial-micronodular being the most common variant of mixed BCC. Dermoscopy aids classification of basal cell carcinoma by revealing subtype-specific patterns. Dermoscopy also detects pigmentation not evident on clinical examination, thereby improving selection of tumors suitable for photodynamic therapy and reducing treatment failure. BCCs can be categorized into low-risk and high-risk groups based on clinical, dermoscopic, and histopathological characteristics. BCCs on the face and neck larger than 1 cm or on the trunk larger than 2 cm, displaying certain dermoscopic features like shine white streaks and keratin masses, and those demonstrating aggressive growth patterns on histopathological examination are classified as high risk.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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