Dermoscopy findings in basal cell carcinoma: a case series in III-IV Fitzpatrick skin-type population

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Background: Basal cell carcinoma (BCC) represents nearly 80% of cutaneous malignancies. Dermoscopy is a useful tool to increase the precision of diagnosis, but its findings for BCC are mainly described in patients from Europe, the US, and Australia. BCC dermoscopy patterns are not fully known in patients with skin photo-types III and IV in Latin America, especially in Colombia. We aimed to describe dermoscopy findings in patients with BCC and III-IV Fitzpatrick skin types in a Colombian population.

Methods: A descriptive, retrospective and prospective observational study was carried out on patients with BCC. Clinical and dermoscopy photos were taken, with the diagnosis confirmed via histopathology.

Results: Thirty-six tumors were evaluated. Women were more affected. The main BCC feature was a nodular clinical and histological subtype. The more frequent dermoscopy findings were arboriform microvessels, thin telangiectasias, and multiple gray-blue globules. Tumors greater than 6 mm predominantly showed ulceration and polymorphic vessels. The presence of ovoid nests, structures in maple leaves, and polymorphic vessels were related to the superficial clinical subtype.

Conclusions: Different features related to size, clinical pattern, and the presence of vascular and pigmentary changes in dermoscopy were present in this population. A new dermoscopy finding of a yellowish type "amber background" in BCC was described.

Keywords: basal cell carcinoma, dermoscopy, arboriform microvessels, gray-blue globules

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INTRODUCTION

Basal cell carcinoma (BCC) is the most frequent malignant cutaneous neoplasm [1]. Early diagnosis is key for reducing morbidity despite the low mortality risk [2].

Dermoscopy is a useful tool for investigating a suspected skin cancer lesion at an early stage. Many studies have attempted to recognize different structures for diagnosing BCC, predominantly performed in countries with Caucasian or fair-skinned populations [3–5]. A different case is seen in Colombia and Latin America, as there is a mixture of races in the population, so BCC can be found in both fair and darker skin types [6,7]. Additionally, the location near the equator leads to continuous exposure to a high dose of UV light year-round, which could also increase the risk [8].

In a population where BCC is still frequent, it is necessary to recognize the dermoscopy patterns associated with BCC in people with III-IV Fitzpatrick skin types, but these findings have not been fully

described [9]. This study aims to describe these patterns in a group of BCC patients with darker skin types.

PARTICIPANTS AND METHODS

The patients were recruited from a university hospital's dermatology department and a private practice dermatology office. Patients with III-IV Fitzpatrick skin types for whom there was a clinical suspicion of BCC were evaluated. Informed consent was obtained from the patients. Clinical and dermoscopy photos of the suspected lesions were taken using a Sony Alfa-6000 camera attached to a DermLite DL3N, and a biopsy was performed in all cases. All cases where the histopathology confirmed BCC were included.

All photos were evaluated by two dermatologists, and a checklist of all structures observed was made. Data were analyzed using proportions and absolute numbers for qualitative variables and using means and standard deviations for quantitative variables. For bivariable categorical variables, the analysis was done using chi-squared and Fisher's exact tests, and for continuous variables, the student's t-test or the Wilcoxon signed-rank test was used. The study was approved by the Ethics Committee of the Universidad Nacional de Colombia.

RESULTS

A total of 33 patients were included, and 36 tumors were evaluated (three patients had two tumors). Twenty patients (61%) were females, and 13 patients (39%) were males ($P = 0.775$). The mean age was 72 years (44–98 years). Past or current jobs involved high exposure to UV light for 11 patients (33%). Fitzpatrick skin type III was present in 17 patients (53%) and skin type IV in 16 patients (47%).

The average time between lesion formation and the diagnosis was 20.8 months (0–180 months). In nine cases, the lesion was not identified by the patient and was detected at the time of the visit. The mean tumor size was 8.2 mm (2–38 mm) and was not associated with age, sex, or time since diagnosis. Tumors were located on the face in 33 cases (92%, forehead: 11 tumors, nose: 10, cheeks: 4, eyelid: 3, lips: 2, ears: 2, and chin: 1), on the trunk in two cases, and on the limbs in one case.

Histological findings showed that different subtypes of BCC could be assessed in 31 cases. In 26 cases, one type of histological pattern was identified (nodular in 17 cases, trabecular in 5, micronodular in 3, and superficial in 1 case). In five cases, a mixed pattern was seen (nodular/superficial, nodular/micronodular and nodular/trabecular), and in three cases, the predominant feature was chosen for the subgroup analysis (four nodular cases and one trabecular). In two cases, perineural invasion was present.

Vascular structures represented the most frequent finding with arborizing micro-vessels (88.9%) and short fine telangiectasias (88.9%) Figure 1 and Figure 2. Pigmentary structures were also frequent, including multiple blue-gray globules (72.2%), large blue-gray ovoid nests (61.1%), and

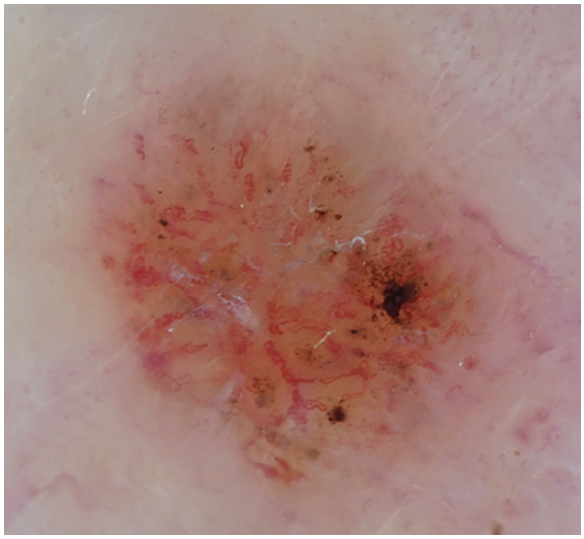

Figure 1. Superficial clinical type with polymorphic vessels in 11 cases (92%, $P = 0.002$).

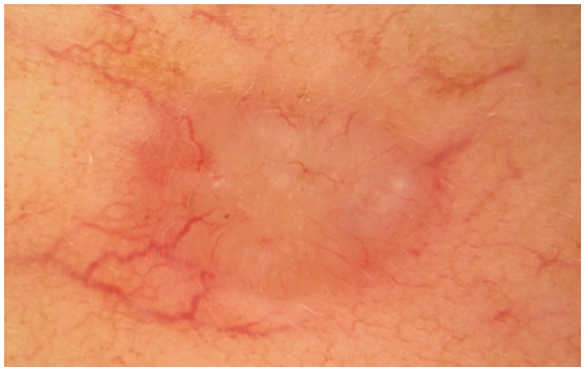

Figure 2. Nodular type. Annular distribution of vessels in 4 cases (19%, $P < 0.001$).

multiple dots (61.1%) Figure 3. Other visual findings such as translucency (58.3%) and structureless hyperpigmented areas (52.8%) were seen in many of the lesions. Infrequent findings were leaf-like areas (36.1%), amber background (30.5%) and spoke-wheel areas (8.3%) Figure 4. Other dermoscopy findings are shown in Table 1 in relation to clinical and histopathological assessments and tumor size.

DISCUSSION

Descriptions of findings from dermoscopy of BCC in a population with Fitzpatrick III-IV skin type are rare in the literature, as most studies have been carried out in countries with a predominantly Caucasian population [10,11]. Because of the racial mixing in the last two centuries in Latin America and other regions around the world, it is common to find people with a darker skin type but with a white Hispanic or Nordic ethnic background, which could be related to genetic variants associated with the development of skin cancer [12–15]. Patients with darker skin types are known to have some natural protection against UV light, but patients who are susceptible to DNA damage may develop skin cancer nonetheless [16,17]. In this study, we found a higher average age (72.2 years) of presentation than in other studies of BCC [7,18]. This may be explained by the protection of melanin in darker skin types, with these phenotypes potentially needing a higher level of UV exposure to generate malignant cell transformation [19].

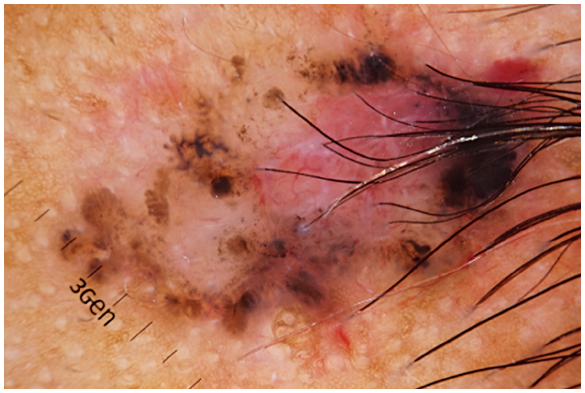

Figure 3. In men, the presence of ulceration ($P = 0.043$), white shiny lines ($P = 0.02$), and white shiny rosettes ($P = 0.005$) was higher than in women. Ulceration was more present in tumors > 6 mm relative to tumors < 6 mm ($P < 0.001$).

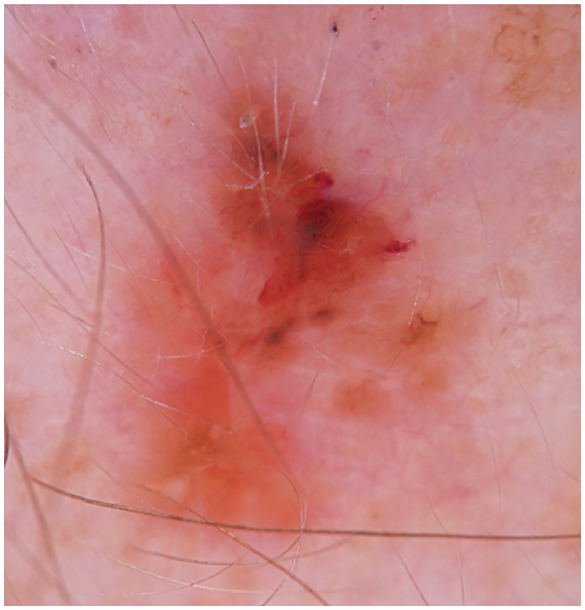

Figure 4. An amber background was found in 11 cases, more commonly in women ($P = 0.015$).

This group had more female than male patients, differing from larger epidemiological studies, which have shown a slight difference in favor of men, although other studies sometimes showed a predominance of women [10,11,20]. In Colombia, women have a longer life expectancy, which may partially explain why women are more affected, given that in BCC, darker skin types usually appear in older patients [6]. No association with UV light exposure was found, except in BCC's trabecular subtype. Still, this study did not measure the time of sun exposure precisely, so more information is needed to assess this variable [21]. As in other studies, the head and neck were predominantly affected, and a lesser proportion of cases affected the trunk and limbs [22].

The clinical descriptions in this study showed nodular BCC to be the most common subtype, followed by superficial and cicatricial. Most samples had a unique histological pattern. The nodular pattern was most common, followed in frequency by the trabecular pattern, micronodular pattern, and one case of the superficial type. The superficial clinical subtype can have a different histological pattern, related to a different diagnosis and treatment [23–26].

Dermoscopy as a diagnostic tool for BCC can have high sensitivity (95–97%) and specificity (87–96%) when performed by an expert, trained dermatologist [3–5,23,27–30]. The main finding of this

Table 1. Main findings in dermoscopy cases of basal cell carcinoma (BCC) in III-IV Fitzpatrick skin-type patients

Dermoscopy findings	No. of tumors	%	Clinical subtype						Histology								Size			
			Superficial N=12		Nodular N=21		Plano cicatricial N=3		Superficial N=1		Nodular N=21		Micro-nodular N=3		Trabecular N=6		<6 mm N= 18		>6 mm N=18	
Arborizing micro-vessels	32	88.9	12	100%	17	81%	3	100%	1	100%	19	90%	3	100%	5	83%	15	83%	17	94%
Short fine telangiectasias	32	88.9	9	75%	20	95%	3	100%	1	100%	20	95%	3	100%	3	50%	17	94%	15	83%
Multiple blue-gray globules	26	72.2	10	83%	16	76%	0	0%	0	0%	17	81%	2	67%	4	67%	14	78%	12	67%
Large blue-gray ovoid nests	22	61.1	11	92%	10	48%	1	33%	1	100%	13	62%	0	0%	6	100%	11	61%	11	61%
Multiple dots	22	61.1	9	75%	10	48%	3	100%	0	0%	12	57%	3	100%	3	50%	11	61%	11	61%
Translucency	21	58.3	8	67%	11	52%	2	67%	0	0%	13	62%	2	67%	3	50%	9	50%	12	67%
Polymorphous vessels	19	52.8	11	92%	6	29%	2	67%	1	100%	11	52%	1	33%	5	83%	6	33%	13	72%
Structureless hyperpigmented areas	19	52.8	5	42%	12	57%	2	67%	0	0%	8	38%	2	67%	4	67%	11	61%	8	44%
White shiny areas	18	50.0	6	50%	10	48%	2	67%	0	0%	11	52%	2	67%	3	50%	6	33%	12	67%
Arborizing vessels	17	47.2	4	33%	10	48%	3	100%	0	0%	11	52%	2	67%	1	17%	6	33%	11	61%
White shiny lines	17	47.2	6	50%	8	38%	3	100%	0	0%	9	43%	1	33%	4	67%	6	33%	11	61%
Leaf-like areas	13	36.1	8	67%	5	24%	0	0%	0	0%	8	38%	0	0%	3	50%	5	28%	8	44%
Milium pseudocysts	13	36.1	5	42%	7	33%	1	33%	1	100%	5	24%	2	67%	2	33%	6	33%	7	39%
White shiny rosettes	13	36.1	5	42%	7	33%	1	33%	1	100%	7	33%	0	0%	4	67%	3	17%	10	56%
Concentric structures	12	33.3	6	50%	5	24%	1	33%	1	100%	7	33%	0	0%	1	17%	6	33%	6	33%
Multiple small erosions	12	33.3	6	50%	6	29%	0	0%	1	100%	9	43%	0	0%	2	33%	3	17%	9	50%
Amber background	11	30.5	3	25%	7	33%	1	33%	0	0%	8	38%	2	67%	1	17%	5	28%	6	33%
Milky-red background	11	30.5	6	50%	3	14%	2	67%	0	0%	6	29%	1	33%	3	50%	2	11%	9	50%
Ulceration	11	30.5	5	42%	6	29%	0	0%	1	100%	7	33%	1	33%	2	33%	2	11%	9	50%
Pigment network	7	19.4	3	25%	4	19%	0	0%	0	0%	5	24%	1	33%	1	17%	2	11%	5	28%
Annular distribution of vessels	6	16.7	0	0%	3	14%	3	100%	0	0%	4	19%	0	0%	1	17%	1	6%	5	28%
Annular hyperpigmentation	4	11.1	2	17%	2	10%	0	0%	0	0%	3	14%	0	0%	0	0%	2	11%	2	11%
Spoke wheel areas	3	8.3	1	8%	2	10%	0	0%	0	0%	1	5%	0	0%	1	17%	2	11%	1	6%

Abbreviations: No, number; N, number

study was the presence of vascular structures (arborizing micro-vessels, shot fine telangiectasias, and polymorphous vessels) and pigmented structures (multiple blue-gray globules, large blue-gray ovoid nests, and multiple dots). Although they were similar in the nodular subtype and polymorphous vessels, large blue-gray ovoid nests and multiple small erosions were common in the superficial clinical subtype [4].

Other studies in populations with predominantly fair skin showed similar findings regarding the vascular structures but most frequently found leaf-like areas, which were not common in this study [4,31]. Another study in a population with a similar skin type had a smaller proportion of leaf-like areas but a similar finding regarding the presence of large blue-gray ovoid nests [32]. This presentation is described in pigmented BCC, and darker skin types are likely to have a higher production of melanin, suggesting that these pigmented, round structures could be a characteristic presentation of BCC in these patients [5,33]. However, leaf-like areas are apparently preceded by round pigmented structures (dots, globules, and nests). The relatively small size and early time of presentation of the tumors may explain this finding [32].

The different sizes of BCC tumors also showed diverse results in this study. While skin tumors smaller than 6 mm had more polymorphous vessels, tumors bigger than 6 mm had more ulcerations [34]. Also, a larger tumor size was associated with a longer time since the appearance of the tumor [32]. Other studies have shown an association between an aggressive pattern and a higher recurrence rate in tumors with polymorphous and arborizing vessels, large blue-gray ovoid nests, and ulceration, but this study was unable to assess this relationship due to the small size of the group and the absence of long-term follow-up [35].

CONCLUSION

This study reports clinical and dermoscopy findings in BCC patients with the Fitzpatrick III-IV skin types, a population found in Latin America and other regions around the world. Vascular and pigmented structures are common in these tumors, and a new pattern of results was described. Further studies will help to assess the diagnostic and prognostic relationships with dermoscopy results in darker skin types.

Conflict of interest: None declared.

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