

MedPeer Publisher

Abbreviated Key Title: MedPeer

ISSN : 3066-2737

homepage: <https://www.medpeerpublishers.com>

Clinical and Dermoscopic Features of Pilomatricoma in Darker Skin Phototypes: A Case Series from Morocco

DOI: 10.70780/medpeer.000QGWC

AUTHOR AND AFFILIATION

Maha Habibi ¹, H. Taounza ¹, Nadia Ismaili ¹, Benzekri Laila ¹, Mariame Meziane¹ Department of Dermatology-Venereology, Avicenne University Hospital, Rabat, Morocco

Corresponding author: Maha Habibi .

ABSTRACT

Background: Pilomatricoma is a benign adnexal tumor derived from hair follicle matrix cells. Although its clinical and dermoscopic features have been described mainly in fair-skinned populations, data in darker phototypes remain scarce.

Objective: To describe the clinical and dermoscopic characteristics of histologically confirmed pilomatricomas in patients with darker skin phototypes (Fitzpatrick III–V) at a tertiary dermatology center in Morocco.

Methods: Descriptive single-center study including all patients with histologically confirmed pilomatricoma, examined with polarized-light dermoscopy between 2022 and 2024.

Results: Fifteen patients were included. The mean age was 43.03 years (range 9–65 years), with a female predominance (male-to-female ratio 0.6:1). The cervicofacial region was the most frequent site (86.7%). Most patients had Fitzpatrick phototype IV (73.3%). The skin fold sign was present in 80% of cases. The most frequent dermoscopic features were reddish homogeneous areas (77.8%), yellow-whitish structures (76.9%), structureless gray-blue areas (73.3%), and the rainbow pattern (80%). Dotted and hairpin vessels were absent.

Conclusion: In this series of predominantly dark phototypes, structureless gray-blue areas (73.3%) and the rainbow pattern (80%) were prominent dermoscopic features, with a relative absence of classic vascular patterns. These findings suggest potential phototype-related differences in the dermoscopic appearance of pilomatricoma.

KEYWORDS

pilomatricoma; pilomatrixoma; dermoscopy; skin of color; dark phototype; adnexal tumor; Morocco

MAIN ARTICLE

INTRODUCTION

Pilomatricoma, historically known as calcifying epithelioma of Malherbe, is a benign adnexal neoplasm derived from hair follicle matrix cells. It most commonly presents as a firm, slowly growing subcutaneous nodule, often on the head, neck, or upper limbs, and occurs predominantly in children and young adults, with a second peak in older patients [1,2,3]. The skin fold sign — a characteristic tent-like deformation of the overlying skin — is a useful clinical clue [3].

Despite these relatively characteristic features, the preoperative diagnosis is often difficult. In large clinical series, the rate of correct preoperative diagnosis has been reported to be as low as 30–40% [1,2]. Pilomatricoma is frequently misdiagnosed as an epidermal cyst, lipoma, or other subcutaneous tumor.

The best-described dermoscopic features include irregular white or yellow-white structures, white streaks, structureless gray-blue or gray-white areas, reddish homogeneous areas, and atypical or linear irregular vessels [4,8]. However, most published series have focused on patients with Fitzpatrick phototypes I–III, and data on dermoscopic features in darker skin phototypes (Fitzpatrick IV–VI) remain limited [5,6].

The objective of this study was to describe the clinical and dermoscopic characteristics of pilomatricoma in a Moroccan population composed predominantly of darker phototypes (Fitzpatrick III–V), and to compare our findings with those reported in the existing literature.

MATERIALS AND METHODS

We conducted a descriptive, single-center observational study in the Dermatology Department of Avicenne University Hospital, Rabat, Morocco. All consecutive patients who presented with a subcutaneous nodule and underwent excision between January 2022 and December 2024 were reviewed. Cases with histopathologically confirmed pilomatricoma were included.

The diagnosis was confirmed in all cases by histopathological examination of the surgically excised specimen. For each patient, the following data were recorded: age, sex, Fitzpatrick phototype, anatomical location, lesion size, duration of symptoms, and clinical features including the skin fold sign.

Dermoscopic assessment was performed using a polarized-light hand-held dermatoscope and focused on pigmentary and structural features, including yellow-whitish structures, white

streaks, structureless gray-blue areas, reddish homogeneous areas, vascular morphology (linear irregular, atypical, dotted, and hairpin vessels), and the rainbow pattern.

Categorical variables are reported as frequencies and percentages, and continuous variables as means and ranges. Because of the small sample size, no inferential statistics were performed. Ethics approval and patient consent were obtained in accordance with institutional requirements.

RESULTS

Fifteen patients with histologically confirmed pilomatricoma were included. The mean age was 43.03 years, ranging from 9 to 65 years. There was a female predominance, with a male-to-female ratio of 0.6:1.

The cervicofacial region was the most frequent anatomical site, accounting for 86.7% of cases. The upper limbs were involved in 13.3% of cases. Most patients had darker skin phototypes: 11 patients (73.3%) had Fitzpatrick phototype IV, three (20%) had phototype V, and one (6.7%) had phototype III.

Clinically, the typical lesion was a firm, painless subcutaneous nodule covered by normal-appearing skin. The skin fold sign was present in 80% of cases. Mean lesion size was 10.2 mm (range 2 mm–4 cm).

On dermoscopy, yellow-whitish structures were present in 76.9% of cases, white streaks in 66.7%, and structureless gray-blue areas in 73.3%. Reddish homogeneous areas were observed in 77.8%, linear irregular vessels in 55.6%, and atypical vessels in 55.6%. Notably, dotted vessels and hairpin vessels were absent in all cases. The rainbow pattern was identified in 80% of cases.

Histopathological examination confirmed the diagnosis of pilomatricoma in all cases, showing characteristic basaloid and shadow cells with variable calcification and foreign body giant cell reaction.

DISCUSSION

This study describes the clinical and dermoscopic spectrum of pilomatricoma in a North African population composed predominantly of darker phototypes (Fitzpatrick III–V). To our knowledge, it represents one of the few series specifically documenting dermoscopic findings of pilomatricoma in skin of color.

The demographic and clinical profile of our patients was broadly consistent with the established literature, although the mean age in our series (43.03 years) was higher than in most pediatric-dominant series [1,2,9]. A female predominance was also observed, consistent with published data. The cervicofacial region was the most commonly affected site (86.7%), in agreement with prior reports [1,3,9].

The classical clinical presentation of a firm, slowly growing subcutaneous nodule was reproduced in our series. The skin fold sign, present in 80% of cases, remains a valuable diagnostic tool in this setting, consistent with prior literature [3,10].

Dermoscopy may help narrow the differential diagnosis. In the seminal dermoscopic series by Zaballos et al., the most common features were irregular white or yellowish-white areas, white streaks, and reddish-homogeneous areas [4]. Our findings are broadly consistent with these observations, with yellow-whitish structures in 76.9%, white streaks in 66.7%, and reddish homogeneous areas in 77.8% of cases.

The prominence of the rainbow pattern in our series is noteworthy, identified in 80% of patients. The rainbow pattern is a polychromatic dermoscopic phenomenon, attributed to optical interference from thin-film structures such as calcification lamellae or fibrous networks [7]. While it has been described in pilomatricoma, its frequency in our series (80%) appears higher than in most published studies, which may reflect the higher proportion of calcified lesions in our cohort or a phototype-related optical effect.

Our findings also differ from the original dermoscopic literature regarding vascular morphology. Zaballos et al. reported dotted and hairpin vessels as relatively common in pilomatricoma [4]. In our series, these vascular patterns were entirely absent, while linear irregular and atypical vessels were present in 55.6%. This discrepancy may reflect phototype-related differences in visualization of vascular structures, as skin pigmentation can reduce the contrast between vessels and background dermis.

Published data on dermoscopy in skin of color remain comparatively sparse. The relative prominence of structureless gray-blue areas (73.3%) in our series may reflect increased melanin

content in the epidermis and dermis of darker phototypes, modifying the dermoscopic appearance of deeper structures. A similar phenomenon has been described for other cutaneous neoplasms in skin of color [5,6].

This study has several limitations, including the small sample size, single-center design, and lack of a control group of fair-skinned patients for direct comparison. Despite these limitations, this series highlights potentially useful dermoscopic clues in skin of color. The combination of the rainbow pattern, structureless gray-blue areas, and the absence of dotted or hairpin vessels may constitute a distinctive dermoscopic profile of pilomatricoma in darker phototypes.

CONCLUSION

Pilomatricoma may display a distinctive dermoscopic profile in patients with darker skin phototypes. In our series, structureless gray-blue areas and the rainbow pattern were prominent features, while classic vascular patterns (dotted and hairpin vessels) were absent. These findings, if confirmed in larger studies, may improve preoperative diagnostic accuracy in this population. Awareness of phototype-related dermoscopic variability is essential for accurate interpretation in skin-of-color patients.

TABLES:

Table 1. *Main clinical and dermoscopic findings (N = 15)*

Characteristic	Finding
Number of patients	15
Mean age	43.03 years (range 9–65)
Sex ratio	0.6 male : 1 female
Cervicofacial location	86.7%
Upper-limb location	13.3%
Phototype III	6.7%
Phototype IV	73.3%
Phototype V	20%
Mean lesion size	10.2 mm (range 2 mm – 4 cm)
Skin fold sign	80%
Yellow-whitish structures	76.9%*
White streaks	66.7%
Structureless gray-blue areas	73.3%
Reddish homogeneous areas	77.8%*
Linear irregular vessels	55.6%*
Atypical vessels	55.6%*
Dotted vessels	0%
Hairpin vessels	0%
Rainbow pattern	80%

* Percentage calculated on evaluable cases where dermoscopy was of sufficient quality.

FIGURES:



Figure 1: *Dermoscopy showing yellow-whitish structures, white streaks, and a structureless gray-blue area.*

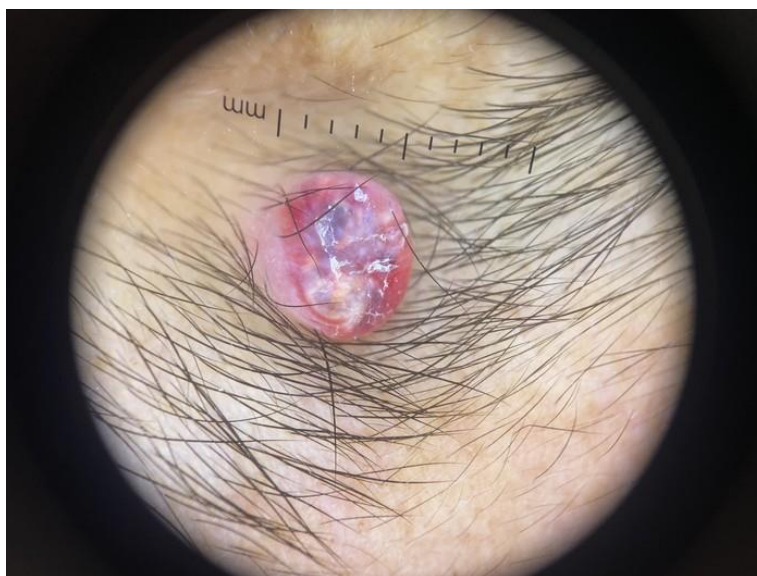


Figure 2: *Dermoscopy showing the rainbow pattern.*

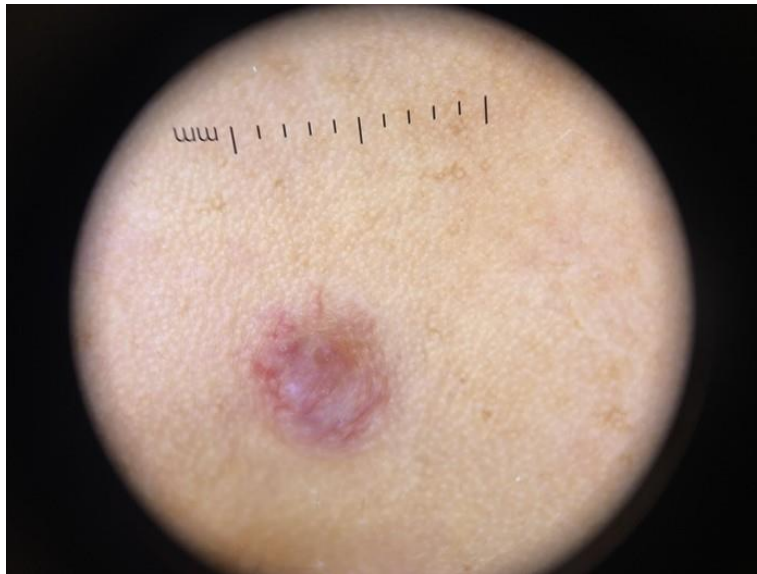


Figure 3: *Dermoscopy showing reddish homogeneous areas.*

ACKNOWLEDGEMENTS

Conflicts of interest: The authors declare no conflicts of interest.

Funding: No specific funding was received for this study.

Ethics approval: Ethics approval was obtained in accordance with institutional requirements.

Consent for publication: Written informed consent was obtained from all patients for publication of clinical and dermoscopic photographs.

Data availability: The data supporting the findings of this study are available from the corresponding author on reasonable request.

REFERENCES

1. Pirouzmanesh A, Reinisch JF, Gonzalez-Gomez I, Smith EM, Meara JG. Pilomatrixoma: a review of 346 cases. *Plast Reconstr Surg.* 2003;112(7):1784-1789. doi:10.1097/01.PRS.0000091168.10468.24 <https://doi.org/10.1097/01.PRS.0000091160.54278.64>
2. Julian CG, Bowers PW. A clinical review of 209 pilomatricomas. *J Am Acad Dermatol.* 1998;39(2 Pt 1):191-195. doi:10.1016/S0190-9622(98)70078-X [https://doi.org/10.1016/S0190-9622\(98\)70073-8](https://doi.org/10.1016/S0190-9622(98)70073-8)
3. Jones CD, Ho W, Robertson BF, Gunn E, Morley S. Pilomatrixoma: a comprehensive review of the literature. *Am J Dermatopathol.* 2018;40(9):631-641. doi:10.1097/DAD.0000000000001137 <https://doi.org/10.1097/DAD.0000000000001137>

4. Zaballos P, Llambrich A, Puig S, Malvehy J. Dermoscopic findings of pilomatricomas. *Dermatology*. 2008;217(3):225-230. doi:10.1159/000148249
<https://doi.org/10.1159/000148249>
5. Ezenwa E, Stein JA, Krueger L. Dermoscopic features of neoplasms in skin of color: a review. *Int J Womens Dermatol*. 2021;7(5):551-557. doi:10.1016/j.ijwd.2021.09.003
<https://doi.org/10.1016/j.ijwd.2021.09.003>
6. Ankad BS, et al. International Dermoscopy Society criteria for skin tumors: validation for skin of color through a Delphi consensus. *J Am Acad Dermatol*. 2023. doi:10.1016/j.jaad.2022.12.006
<https://doi.org/10.1016/j.jaad.2022.12.006>
7. Draghici C, Vajaitu C, Solomon I, Voiculescu VM, Popa MI, Lupu M. The dermoscopic rainbow pattern: a review of the literature. *Diagnostics (Basel)*. 2022;12(3):592. doi:10.3390/diagnostics12030592
<https://doi.org/10.3390/diagnostics12030592>
8. Chessa MA, Baracca MF, Rossi AN, Piraccini BM, De Pietro V, Picciola VM, et al. Pilomatricoma: clinical, dermoscopic and histopathological features. *J Eur Acad Dermatol Venereol*. 2022;36(5):e379-e381. doi:10.1111/jdv.17897
<https://doi.org/10.1111/jdv.17897>
9. Lan MY, Lan MC, Ho CY, Li WY, Lin CZ. Pilomatricoma of the head and neck: a retrospective review of 179 cases. *Arch Otolaryngol Head Neck Surg*. 2003;129(12):1327-1330. doi:10.1001/archotol.129.12.1327
<https://doi.org/10.1001/archotol.129.12.1327>
10. Wan R, Adam EA, Pazelli AM, Mardini S, Davis D, Lehman JS, et al. Pilomatrixoma: a comprehensive 32-year analysis of 363 cases. *J Cutan Pathol*. 2022;49(10):895-902. doi:10.1111/cup.14286
<https://doi.org/10.1111/cup.14286>