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REVIEW ARTICLE

DERMOSCOPIC FEATURES OF BASAL CELL CARCINOMA: SYSTEMATIC REVIEW

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Abstract

Background: Basal cell carcinoma is one of the most common cancers in worldwide, is a locally destructive and slowly spreading tumor arising from the epidermis or hair follicles, in which the peripheral cells are similar to the cells of the basal layer of the epidermis and which rarely metastasizes. Despite its slow growth and low potential for metastasis, basal cell carcinoma (BCC) is one of the most pressing problems in dermato-oncology due to its high incidence rates, variety of clinical forms and frequent relapses after any treatment methods. Currently, the most accessible non-invasive method for examining skin tumors is dermatoscopy.

Aim: The purpose of this review is to highlight the dermoscopic features encountered in basal cell carcinoma and to outline the role of dermoscopy for diagnosis this cancer.

Methodology: The systematic review included articles from Google Scholar, Medline, Scopus, Web Of Sciences, PubMed was conducted. For Search the following keywords: were included dermoscopy of pigmented form of basal cell carcinoma; dermoscopy of nonpigmented form of basal cell carcinoma.

Results: Conducted a preliminary search and reviewed 62 titles and abstracts in this review and 27 full-text articles were selected of high methodological quality.

Dermoscopy, a non-invasive technique, allows early diagnosis based on the presence of typical vascular structures, pigmented structures, and ulceration and the absence of specific melanocytic structures. However, the use of dermoscopic technique is limited by the lack of prognostically significant dermatoscopic criteria confirming the different morphological nature of tumor growth.

Conclusion: The current systematic review demonstrated, based on the observed features, this method allows for differential diagnosis of malignant and benign, as well as melanocytic and non-melanocytic skin neoplasms, as well as diagnosis of tumors at the earliest stage of their development.

Key-words: *dermoscopy of pigmented form of basal cell carcinoma; dermoscopy of nonpigmented form of basal cell carcinoma*

Introduction

Basal cell carcinoma (BCC) is one of the most common types of non-melanoma skin cancers (BCC and squamous cell skin cancer) with high morbidity, low mortality and low probability of metastasis.[1,2]

BCC was first described by A. Jacob in 1824.[3]

Currently, there is an increase in the incidence of basal cell carcinoma, throughout the world: the annual increase is 3–10%.[4-6]

BCC originates from the stem pluripotent keratinocytes of the interfollicular epidermis and hair follicles.[7,8]

A decisive role in the etiopathogenesis of BCC is played by excessive exposure to UV radiation, skin phenotype - sensitivity to UV radiation.[9]

Most often, BCC is localized in the head and neck area (areas exposed to direct sunlight), less often - on the trunk and limbs (areas not exposed to direct sunlight).[10,11]

Various non-invasive methods of optical diagnostics of the skin are currently used for the diagnosis of BCC, such as dermastoscopy, optical coherence tomography and confocal microscopy, etc., of which dermatoscopy is the most influential in dermatological practice.

Certain skin tumors have specific vessel morphologies and distribution that help aid in diagnosis and help in distinguishing between benign and malignant lesions.

Often, tree-like vessels are detected with this tumor, as well as polymorphic vessels (in the form of a point, glomeruli, hairpin, comma, linear and tortuous form) (Figure 1).

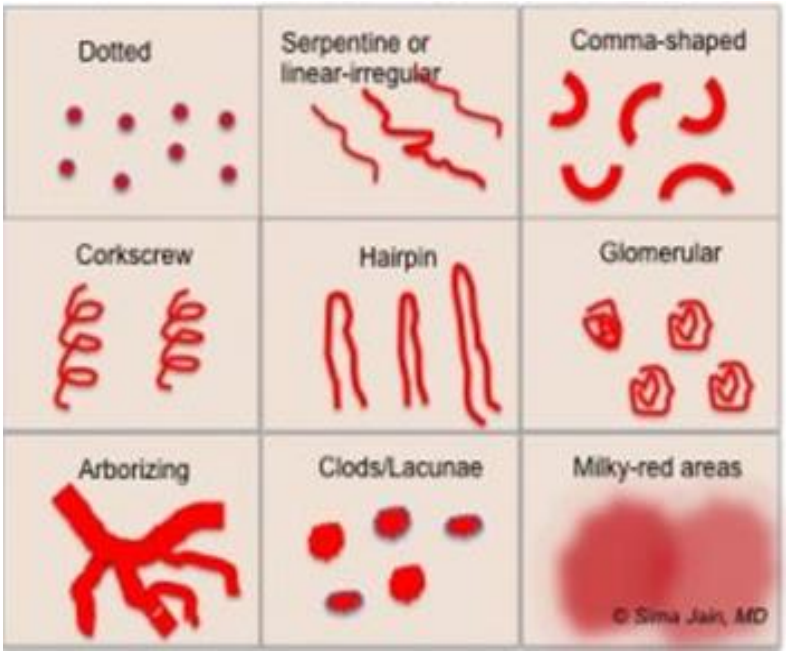


Figure 1. *Schematic representation of dermatoscopic signs of basal cell skin cancer different vessel morphology*

This review article presents the main and additional dermatoscopic characteristics of the main forms of BCC, the significance of which is reviewed and clarified year after year.

Dermatoscopic features of non-pigmented forms of basal cell carcinoma[12-19]

Figures 2 to 8 shows the main dermatoscopic features of non-pigmented BCC.

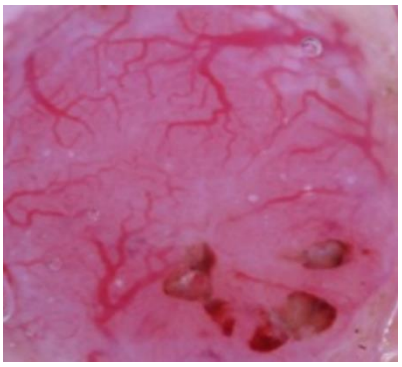
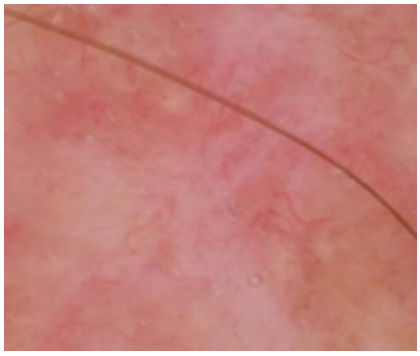
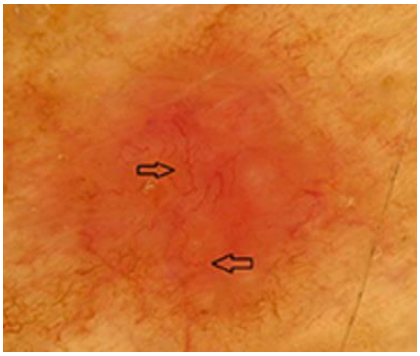
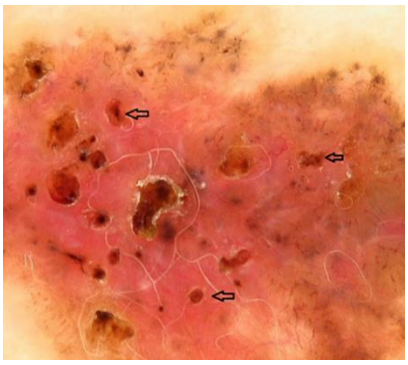


Figure 2. *Arborizing vessels: large in diameter, prominent, scattered, extensive, branched trunk vessels of a bright red color, which are transformed into small capillaries superficial thin telangiectasias*





Figures 3, 4. *Superficial thin telangiectasia: They are indicated by black arrows, short thin linear vessels with a small number of branches*



Figures 5. *Erosions: multiple small erosions marked with black arrows, brown-red or brown-yellow in color*

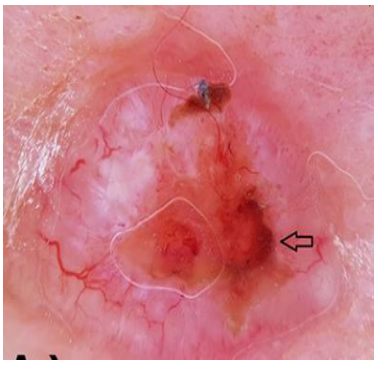


Figure 6. *Ulcers: The ulcer is marked with a black arrow, an extensive structureless black zone)*

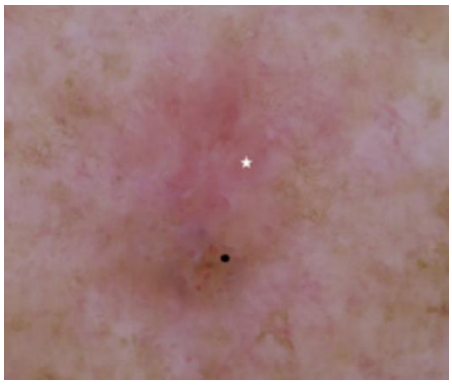


Figure 7. *Shiny red-white structureless, translucent, sometimes opaque areas (marked with white asterisks)*

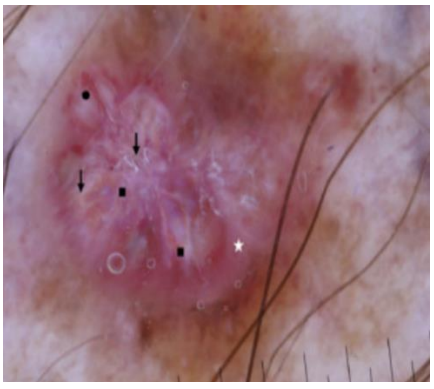


Figure 8. *Short whitish stripes visible only with polarized dermatoscopy and; in these orthogonal short and thick intersecting lines are marked with black arrows)*

The presented signs are signs associated with BCC, the last 3 of are BCC associated with malignant melanoma (occur in both BCC and malignant melanoma and require verification).

Dermatoscopic signs of pigmented forms of basal cell cancer.[10,14-20]

Figures 9-13 shows the main dermatoscopic signs of pigmented forms of BCC. These are mainly pigment structures.

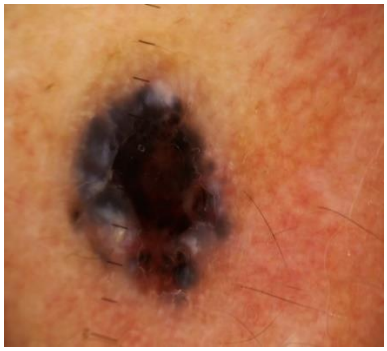


Figure 9. *Large blue-gray ovoid nests pigment structures of ovoid or oval shape, clearly defined, prone to merging, but not merging, which are larger in size and located deeper than blue-gray dots (in the upper part of the reticular layer of the dermis), not closely associated with the tumor formation, the color is due to the localization and amount of melanin, multiple gray-blue dots*

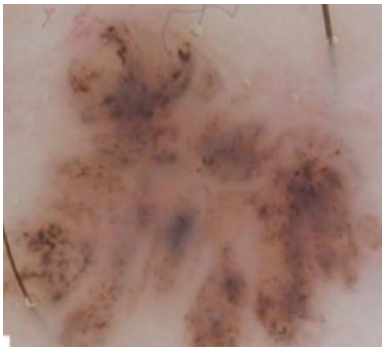


Figure 10. *Round-ovoid, clearly defined, freely located structures that are not aggregated (unlike melanocytic structures), are small in size, localized more superficially (the lower part of the papillary layer of the dermis) than ovoid nests (the color is due to the localization and amount of melanin) maple leaf-type structures*

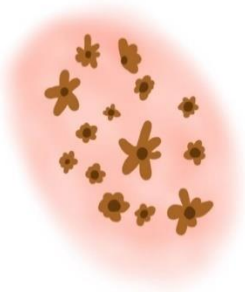


Figure 11. *Trabecular discrete processes from brownish to blue-gray color - rhizome expansions that unite with other processes, forming a kind of network, where many melanophages are revealed,spoke-in-a-wheel-type structures*

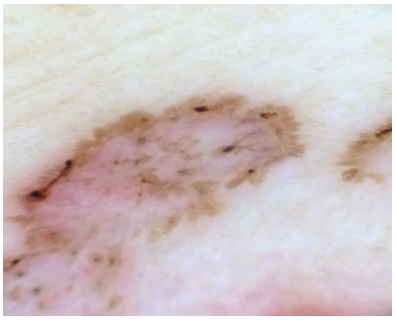


Figure 12. *From brown to bluish-gray color, with a darker central area, lighter shades on the periphery, protrusions diverging from the central axis, anastomosing with each other, forming snowflake-shaped polygons, reminiscent of rockets exploding from the center to the periphery during fireworks, concentric focused dots or concentric structures*

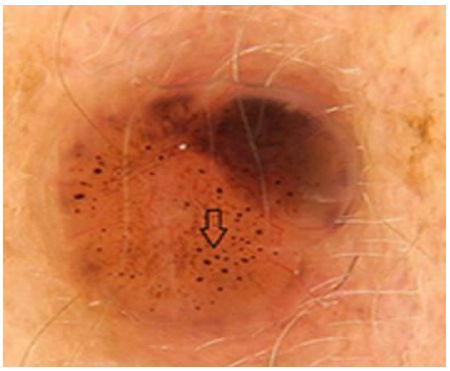


Figure 13. *Indicated by a black arrow, irregularly shaped globules of different colors (blue, gray, brown, black) with darker central area, are an example of structures of the "spokes in a wheel" type, when the spokes of the wheels are poorly visualized, only the concentric centers are clearly visible)*

Thus, this review presents the main dermatoscopic signs of non-pigmented and pigmented BCC.

Dermatoscopy is the most accessible and informative method in everyday clinical practice, allowing examination of skin neoplasms with 10-fold magnification.[21-23] It has been proven that, based on the observed signs, this method allows differential diagnostics of malignant and benign, as well as melanocytic and non-melanocytic skin neoplasms, and diagnosis of tumors at the earliest stage of their development.[24]

Dermoscopy allows to increase the accuracy of diagnostics of various forms of BCC. Since dermatoscopic and histopathological signs of BCC correspond, the analysis of dermatoscopic structures can be used to assess the degree of risk of BCRC recurrence.[25,26]

In practical work, this correspondence can be used to determine adequate therapeutic tactics for various forms of BCC with a typical dermatoscopic picture and is of particular importance when deciding on the possibility of using minimally invasive and more attractive approaches in terms of cosmetic results (cryotherapy, PDT, LEC).

The current systematic review demonstrated, based on the observed features, this method allows for differential diagnosis of malignant and benign, as well as melanocytic and non-melanocytic skin neoplasms, as well as diagnosis of tumors at the earliest stage of their development.

Declarations

Conflicts of interest and financial disclosures

The author declares that he has no conflict percent and there was no external source of funding for the research in question.

Ethical approval

The study was approved by the University ethics committee and was conducted in accordance with the Declaration of the World Medical Association.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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REFERENCES

1. Wong CS, Strange RC, Lear JT. Basal cell carcinoma. *BMJ*. 2003;327(7418):794-8. doi:10.1136/bmj.327.7418.794

2. Leiter U, Eigentler T, Garbe C. Epidemiology of skin cancer. *Adv Exp Med Biol.* 2014;810:120-40. doi:10.1007/978-1-4939-0437-2_7

3. Jacob A. Observations respecting an ulcer of peculiar character, which attacks the eyelids and other parts of the face. *Dublin Hospital Rep*. 1824;4:232–9

4. Mattiuzzi C, Lippi G. Current Cancer Epidemiology. *J Epidemiol Glob Health.* 2019;9(4):217-222. doi:10.2991/jegh.k.191008.001

5. Fijałkowska M, Bonczar M, Jastrzębski I, Ostrowski P, Antoszewski B, Koziej M. Growth rate of basal cell carcinoma: a meta-analysis and systematic review. *Postepy Dermatol Alergol*. 2023;40(2):220-224. doi:10.5114/ada.2023.124795

6. Basset-Seguin N, Herms F. Update in the Management of Basal Cell Carcinoma. *Acta Derm Venereol.* 2020;100(11):adv00140. doi:10.2340/00015555-3495

7. Gangan R. Basal cell carcinoma: Epidemiology. *Journal of skin and sexually transmitted diseases*. 2022;4(2):157-163. doi:10.25259/JSSTD_7_2022

8. Peterson SC, Eberl M, Vagnozzi AN. et al. Basal cell carcinoma preferentially arises from stem cells within hair follicle and mechanosensory niches. *Cell Stem Cell.* 2015;16:400–12. doi:10.1016/j.stem.2015.02.006

9. Seebode C., Lehmann J., Emmert S. Photocarcinogenesis and Skin Cancer Prevention Strategies. *Anticancer Res*. 2016;36:1371-8

10. Scrivener Y, Grosshans E, Cribier B. Variations of basal cell carcinomas according to gender, age, location and histopathological subtype. *Br J Dermatol*. 2002;147:41–7

11. Ouyang YH. Skin cancer of the head and neck. *Semin Plast Surg.* 2010;24(2):117-26. doi:10.1055/s-0030-1255329

12. Giacomel J, Zalaudek I. Dermoscopy of superficial basal cell carcinoma. *Dermatol Surg*. 2005;31(12):1710-3. doi:10.2310/6350.2005.31314

13. Micantonio T, Gulia A, Altobelli E, et al. Vascular patterns in basal cell carcinoma. *J Eur Acad Dermatol Venereol.* 2011;25(3):358-61. doi:10.1111/j.1468-3083.2010.03734.x

14. Lallas A, Apalla Z, Ioannides D, et al. Dermoscopy in the diagnosis and management of basal cell carcinoma. *Future Oncol.* 2015;11(22):2975-84. doi:10.2217/fon.15.193

15. Wozniak-Rito A, Zalaudek I, Rudnicka L. Dermoscopy of basal cell carcinoma. *Clin Exp Dermatol.* 2018;43(3):241-247. doi:10.1111/ced.13387

16. Lallas A, Argenziano G, Zendri E, et al. Update on non-melanoma skin cancer and the value of dermoscopy in its diagnosis and treatment monitoring. *Expert Rev Anticancer Ther.* 2013;13:541–58. doi:10.1016/j.adengl.2021.01.023

17. Argenziano G, Soyer HP, Chimenti S. et al. Dermoscopy of pigmented skin lesions: results of a consensus meeting via the Internet. *J Am Acad Dermatol.* 2003;48(5):679–93. doi:10.1067/mjd.2003.281. PMID: 12734496

18. Dai J, Lin K, Huang Y, et al. Identification of critically carcinogenesis-related genes in basal cell carcinoma. *Onco Targets Ther.* 2018;11:6957-6967. doi:10.2147/OTT.S170504

19. Zalaudek I, Kreusch J, Giacomel J. et al. How to diagnose nonpigmented skin tumors: a review of vascular structures seen with dermoscopy: part II. Nonmelanocytic skin tumors. *J Am Acad Dermatol*. 2010;63:377–86. doi:10.1016/j.jaad.2009.11.698

20. Trigoni A, Lazaridou E, Apalla Z, et al. Dermoscopic features in the diagnosis of different types of basal cell carcinoma: a prospective analysis. *Hippokratia.* 2012;16(1):29-34

21. Wu X, Marchetti MA, Marghoob AA. Dermoscopy: not just for dermatologists. *Melanoma Manag.* 2015;2(1):63-73. doi:10.2217/mmt.14.32

22. Ungureanu L, Cosgarea I, Şenilă S, Vasilovici A. Role of Dermoscopy in the Assessment of Basal Cell Carcinoma. *Front Med (Lausanne).* 2021;8:718855. doi:10.3389/fmed.2021.718855

23. Solomon I, Lupu M, Draghici CC, Voiculescu VM, Giurcaneanu C. Dermatoscopic pattern variability in basal cell carcinoma-implications in diagnosis, preoperative assessment, and tumor management. *Rom J Clin Exp Dermatol.* 2018;5:36–42. doi:10.26574/rojced.2018.5.1.36

24. Halip IA, Vâţă D, Statescu L, et al. Assessment of Basal Cell Carcinoma Using Dermoscopy and High Frequency Ultrasound Examination. Diagnostics (Basel). 2022;12(3):735. doi:10.3390/diagnostics12030735

25. Wu X, Marchetti MA, Marghoob AA. Dermoscopy: not just for dermatologists. *Melanoma Manag.* 2015;2(1):63-73. doi:10.2217/mmt.14.32

26. Ungureanu L, Cosgarea I, Şenilă S, Vasilovici A. Role of Dermoscopy in the Assessment of Basal Cell Carcinoma. *Front Med (Lausanne).* 2021;8:718855. doi:10.3389/fmed.2021.718855