Dendritic Cells in Pigmented Basal Cell Carcinoma

A Relevant Finding by Reflectance-Mode Confocal Microscopy

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**Background:** Reflectance-mode confocal microscopy (RCM) is a new approach for the in vivo diagnosis of skin tumors. A few studies of RCM on basal cell carcinoma (BCC) have provided specific diagnostic criteria, but large studies on pigmented basal cell carcinoma are lacking. Proliferation of large dendritic-shaped cells within a melanocytic tumor has been associated with the diagnosis of melanoma by RCM. Benign melanocytes and Langerhans cells may populate BCC according to previous histological studies. We studied 3 consecutive pigmented BCC by means of RCM and performed a histological and immunohistochemical correlation focusing on the presence of dendritic structures.

**Observations:** Reflectance-mode confocal microscopy revealed highly refractive dendritic structures within tumor nests that correlated with the presence of melanocytes within the tumor by immunochemical analysis. In 1 case, dendritic structures on the overlying epidermis corresponding to Langerhans cells were also noted. Leaf-like areas observed on dermoscopy correlated with low-refractive cordlike structures and nodules by RCM and corresponded to nests of basaloïd cells, whereas blue-gray globules presented as bright oval structures with ill-defined borders corresponding to melanophages.

**Conclusions:** Reflectance-mode confocal microscopy allows the study of pigmented BCC and the identification of specific criteria described previously. In these tumors, dendritic melanocytes can be easily identified with this technique.

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**DIFFERENTIAL DIAGNOSIS BETWEEN** pigmented basal cell carcinoma (BCC) and melanoma can be difficult. Reflectance-mode confocal microscopy (RCM) is useful in the recognition of BCC and melanocytic lesions. Three pigmented BCC were studied using RCM, dermoscopy, and histopathologic analysis. Emphasis was placed on the analyses of dendritic cells detected by RCM. Reflectance-mode confocal microscopy was performed with a commercially available, near-infrared reflectance confocal laser scanning microscope (Vivascpe 1500; Lucid Inc, Henrietta, New York). Histological slides were stained with hematoxylin-eosin, and immunohistochemical studies were performed.

**REPORT OF CASES**

Patient 1 was a 78-year-old woman with a gray-brown papule on the back. Findings from dermoscopy showed leaflike structures and blue-gray globules suggestive of BCC (Figure 1A). Reflectance-mode confocal microscopy revealed locally elongated and polarized nuclei, multiple solid units of tumor cells forming cordlike structures and nodules surrounded by a dark area, and bright oval structures with ill-defined borders within tumor nests and surrounding them. Long, thin dendritic structures were observed all over the lesion and were located within tumor nests and on the overlying epidermis (Figure 1B). Dilated vessels with rolling phenomena were also noted. Histopathologic analysis confirmed the diagnosis of nodular BCC (Figure 1C). Immunohistochemical studies demonstrated S100 and CD1a+ dendritic cells on the epidermis and S100, MelanA, and HMB45+ within tumoral nests (Figure 1D), indicating the presence of melanocytes within tumoral nests and activated Langerhans cells on the epidermis.

Patients 2 and 3 exhibited similar dermoscopic, confocal, histological, and immunohistochemical findings (Figure 2).

**COMMENT**

Reflectance-mode confocal microscopy and dermoscopy are imaging techniques that allow the study of skin tumors in the...
horizontal plane. Reflectance-mode confocal microscopy allows a quasihistological resolution and an architectural view of the tumor that is better evaluated in combination with dermoscopy. As already been reported, in patient 1, low-refractive cordlike structures and nodules correlated with dermoscopic leaflike areas. In all 3 cases, blue-gray granules correlated with confocal bright oval structures and corresponded to melanophages. Typical arborizing vessels correlated with enlarged horizontal vessels.

González et al first described 5 criteria for the diagnosis of BCC by RCM, which was later validated in a larger study. Another study with 12 lesions found additional criteria for the diagnosis of BCC by RCM and described bright structures within tumor parenchyma that resembled dendritic cells. The same finding was recently reported by Agero et al and correlated with intratumoral melanocytes or Langerhans cells.

Melanocytes can be assessed in melanocytic lesions by RCM as bright roundish or dendritic cells within the epidermis, at dermoepidermal junction or in dermal papilla. Langerhans cells can be identified by RCM as dendritic cells within epidermal layers in inflamed nevi or scars of lesions recently removed.

Figure 1. Nodular pigmented basal cell carcinoma on the back (patient 1). A, Dermoscopic image showing leaflike structures and blue-gray globules. B, Reflectance-mode confocal microscopy image showing solid units of tumor cells forming nodules surrounded by a dark area (yellow arrows). Note the hyperrefractile thin dendrites (black arrows) and bright oval structures within and around tumor islands (red asterisk). C, Tumor nests with basaloid palisading cells in the upper dermis (hematoxylin-eosin, original magnification ×200). D, Positive dendritic melanocytes within the tumor nests (MelanA, original magnification ×400). E, Langerhans cells on the overlying epidermis (CD1a, original magnification ×400).
In our study, dendritic cells in BCC nests correlated with melanocytes, whereas dendritic cells in the epidermis corresponded to Langerhans cells. Our findings are supported by previous studies that demonstrated the presence of melanocytes and Langerhans cells in BCC. The importance has to be stressed of being aware of the presence of dendritic cells in pigmented skin tumors. Larger studies are needed to elucidate the frequency, characteristics, and meaning of dendritic cells in pigmented skin tumors.

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REFERENCES

Correction
Errors in Author Contributions. In the Study titled “Store-and-Forward Teledermatology in Skin Cancer Triage: Experience and Evaluation of 2009 Teleconsultations” by Moreno-Ramirez et al. published in the April issue of the Archives (2007;143[4]:479-484), several errors occurred in the “Author Contributions” section. The corrected author contributions are reproduced here.

Author Contributions: Drs Moreno-Ramirez, Ferrandiz, and Nieto-Garcia had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Moreno-Ramirez, Ferrandiz, Nieto-Garcia, Carrasco, Moreno-Alvarez, Galdeano, and Camacho. Acquisition of data: Moreno-Ramirez, Ferrandiz, Bidegain, Moreno-Alvarez, Galdeano, and Rios-Martin. Analysis and interpretation of data: Moreno-Ramirez, Ferrandiz, Nieto-Garcia, Galdeano, and Camacho. Drafting of the manuscript: Moreno-Ramirez and Ferrandiz. Critical revision of the manuscript for important intellectual content: Moreno-Ramirez, Ferrandiz, Carrasco, Moreno-Alvarez, Galdeano, Rios-Martin, and Camacho. Statistical analysis: Moreno-Ramirez, Ferrandiz, and Nieto-Garcia. Obtained funding: Moreno-Ramirez, Carrasco, Bidegain, and Camacho. Administrative, technical, and material support: Moreno-Ramirez, Carrasco, Moreno-Alvarez, Galdeano, and Camacho. Study supervision: Moreno-Ramirez, Rios-Martin, and Camacho.