

Epidermal streaming seen in a seborrheic keratosis using reflectance confocal microscopy and histopathology correlation



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Key words: basal cell carcinoma; confocal; seborrheic keratosis; streaming.

INTRODUCTION

Reflectance confocal microscopy (RCM) allows for visualization of subsurface cellular detail in human skin and improves diagnostic accuracy. As the use of the technology expands, more features are being characterized. Here we show a confocal feature commonly associated with basal cell carcinoma appearing in a seborrheic keratosis.

CLINICAL PRESENTATION

A 40-year-old woman presented to the cutaneous oncology department with a lightly pigmented lesion on her dorsal arm. The patient reported recent changes prompting a closer evaluation to rule out melanoma. Upon physical examination of the lesion, a 1-cm, tan-colored irregular thin papule was seen.



Fig 1. Dermoscopic appearance.

Abbreviations used:

BCC: basal cell carcinoma
RCM: reflectance confocal microscopy

DERMOSCOPIC APPEARANCE

The dermoscopic appearance was a nonuniform lesion with different shades of light brown pigmentation. Network structures were not prominent, milia-like cysts and open comedonal structures were also not appreciated (Fig 1). The dermoscopic differential diagnosis included seborrheic keratosis, pigmented basal cell carcinoma, and melanoma.

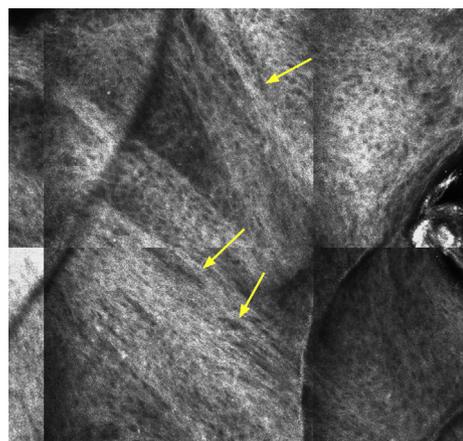


Fig 2. Streaming in the epidermis seen with RCM (yellow arrows).

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Funding sources: Supported by the Theodora B. Betz Foundation in support of melanoma research.

Conflicts of interest: Dr Grichnik serves as a consultant to Galileo Group and Canfield Scientific and has received equipment and meeting support from Caliber ID. The other authors have no conflicts of interest to disclose.

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JAAD Case Reports 2019;5:1065-7.

2352-5126

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<https://doi.org/10.1016/j.jdc.2019.10.001>

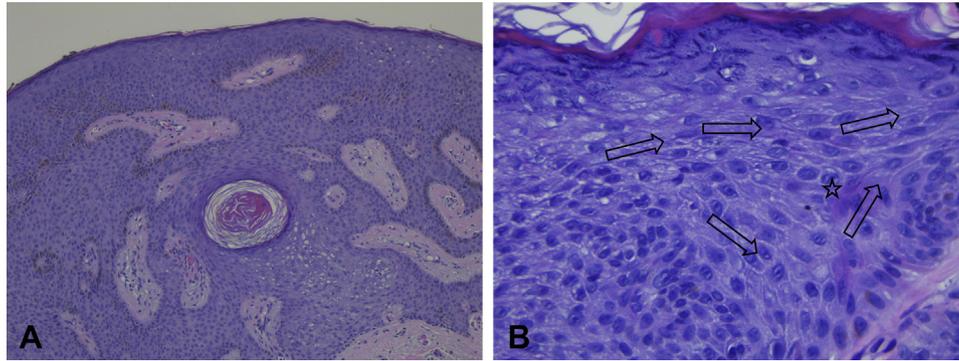


Fig 3. **A**, Histology shows seborrheic keratosis. **B**, Cells schooling together (*black arrows*). Differences in eosin staining suggesting differences in keratinization (*black star*). (**A**, Hematoxylin-eosin stain; original magnification: $\times 4$.)

CONFOCAL MICROSCOPY APPEARANCE

With RCM, the epidermis showed striking polarization of nuclei and honeycomb network in a streaming pattern. Interestingly, the cells in the streaming pattern were more reflective (brighter) than the other keratinocytes (Fig 2). The dermoepidermal junction showed some shadowing, edged polymorphous papilla, and a few microvessels running parallel to the plane of the lesion. Given the streaming pattern and the other findings, we remained uncertain of the diagnosis and chose to proceed with biopsy.

HISTOLOGIC DIAGNOSIS

The histologic diagnosis was consistent with seborrheic keratosis (Fig 3, A). The streaming pattern likely correlates with the fusiform keratinocytes that appear to have their long axis aligned in a schooling pattern (Fig 3, B). We hypothesize that the striking contrast of the elongated streaming pattern seen in this seborrheic keratosis in confocal microscopy may be caused by differences in keratinization highlighted by differences in eosin staining in histopathology (Fig 3, B). Some investigators hypothesize that streaming may correlate to the upper regions of a tumor nest; in this seborrheic keratosis, it is clear that this pattern can also occur within the epidermis in the absence of tumor nesting.

DISCUSSION

Streaming of epidermal keratinocytes is not described in the literature for seborrheic keratoses nor is a pathologic correlation to the pattern. Many features seen with RCM of seborrheic keratoses can be correlated to dermoscopic features. Epidermal bulbous projections seen with RCM correspond to gyri and sulci with dermoscopy. A regular honeycomb pattern seen with RCM may correspond to the

normal stratum spinosum layer in these lesions. Keratin filled invaginations seen with RCM correlate to comedo-like openings with dermoscopy. The dermoepidermal junction with edged papillae seen using RCM seems to correspond to the regular acanthotic dermal papillae seen on histology. Melanophages seen with RCM have been correlated to dark brown and/or gray areas on dermoscopy. Mixed vascular patterns can be seen with RCM and correlate to vessel patterns seen with dermoscopy.¹

The presence of elongated monomorphic nuclei that are polarized along the same axis of orientation in the epidermal layers of the skin is a feature first described by González and Tannous² for the diagnosis of basal cell carcinoma (BCC). Although multiple terms have been used, the feature was recently described as “streaming of the epidermis” in the consensus literature.³ Streaming is a confocal feature typically associated with BCC but has been reported in other dermatologic processes, suggesting low specificity to BCC.⁴ Here we report, to our knowledge, the first case of this condition seen in a seborrheic keratosis.

Seborrheic keratosis has a number of varying clinical and histopathologic features and can be challenging to diagnose with RCM.⁵ Although streaming of epidermal keratinocytes has been a recognized feature of BCCs, it is important to keep in mind that this process can be seen in several other lesions including seborrheic keratoses.

REFERENCES

- Ahlgimm-Siess V, Cao T, Oliviero M, et al. Seborrheic keratosis: reflectance confocal microscopy features and correlation with dermoscopy. *J Am Acad Dermatol*. 2013;69(1):120-126.
- González S, Tannous Z. Real-time, in vivo confocal reflectance microscopy of basal cell carcinoma. *J Am Acad Dermatol*. 2002; 47(6):869-874.

3. Navarrete-Dechent C, DeRosa AP, Longo C, et al. Reflectance confocal microscopy terminology glossary for nonmelanocytic skin lesions: a systematic review. *J Am Acad Dermatol*. 2019;80(5):1414-1427.e3.
4. Longo C, Lallas A, Kyrgidis A, et al. Classifying distinct basal cell carcinoma subtype by means of dermatoscopy and reflectance confocal microscopy. *J Am Acad Dermatol*. 2014;71(4):716-724.e1.
5. Guo A, Chen J, Yang C, Ding Y, Zeng Q, Tan L. The challenge of diagnosing seborrheic keratosis by reflectance confocal microscopy. *Skin Res Technol*. 2018;24(4):663-666.