DERMATOLOGY PRACTICAL & CONCEPTUAL
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Lichenoid keratosis: non-invasive imaging in the setting of diagnostic uncertainty

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Key words: lichenoid keratosis, dermatoscopy, reflectance confocal microscopy, non-invasive imaging

Citation: Ramirez-Fort MK, Al Jalbout S, Kittler H, Pellacani G. Lichenoid keratosis: non-invasive imaging in the setting of diagnostic uncertainty. Dermatol Pract Conc. 2013;3(2):10. http://dx.doi.org/10.5826/dpc.0302a10.

Received: July 1, 2012; **Accepted:** March 1, 2013; **Published:** April 30, 2013

Funding: None.

Competing interests: The authors have no conflicts of interest to disclose.

All authors have contributed significantly to this publication.

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Report of a case

A 60-year-old male presented with a solitary, asymptomatic, erythematous annular plaque on the medial portion of his right distal leg. Clinically, the lesion had central atrophy with peripheral hyperpigmentation, elevation and scaling (Figure 1). The differential diagnosis at clinical examination included: granuloma annulare, angular lichen planus, hypertrophic tinea corporis, and pigmented Bowen's disease.

Dermatoscopic imaging with polarized light demonstrates a non-chaotic lesion. There were two basic patterns; a central structureless and peripheral brown, thick, curved lines. Scattered red dots were found in the periphery, these correspond to pin point or coiled blood vessels. (Figure 2). Clues for a dermatofibroma include the central hypopigmentation and structureless pattern. There is a single clue for Bowen's disease; a structureless pattern. There are three clues suggestive of a lichenoid keratosis; brown thick curved lines; central structureless, and peripheral red dots. The differential diagnosis of a lichenoid keratosis supersedes that of a seborrheic keratosis because the peripheral red dots and structureless pattern indicate that there is an inflammatory process suggestive of central regression. Although lichenoid keratosis is a likely diagnosis, dermatoscopic examination is diagnostically inconclusive. Further visualization is needed to rule out pigmented Bowen's disease.

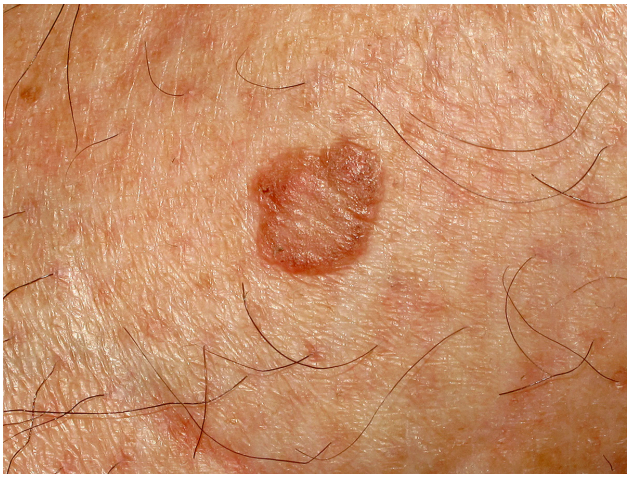

Figure 1. Gross features at presentation. There is central atrophy, with peripheral hyperpigmentation, elevation and scaling. [Copyright: ©2013 Ramirez-Fort et al.]

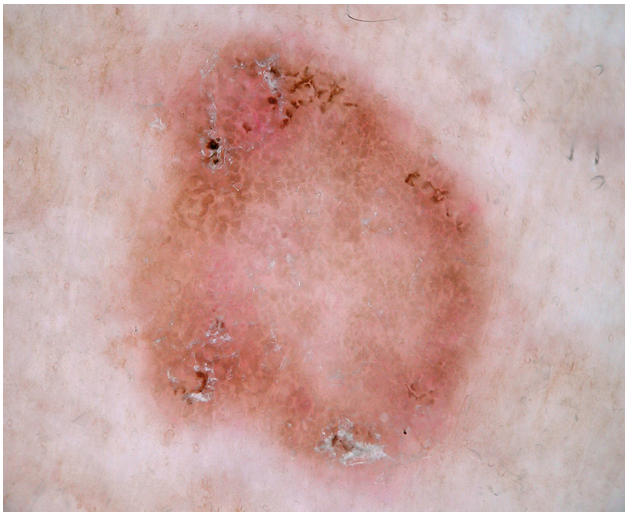

Figure 2. Dermatoscopic features (DermLite Foto) visualized with polarized light at 10x magnification. Two patterns are seen: central structureless (arrow) and peripheral brown thick, curved lines (arrowhead). Scattered red dots are found in the periphery (asterisk). [Copyright: ©2013 Ramirez-Fort et al.]

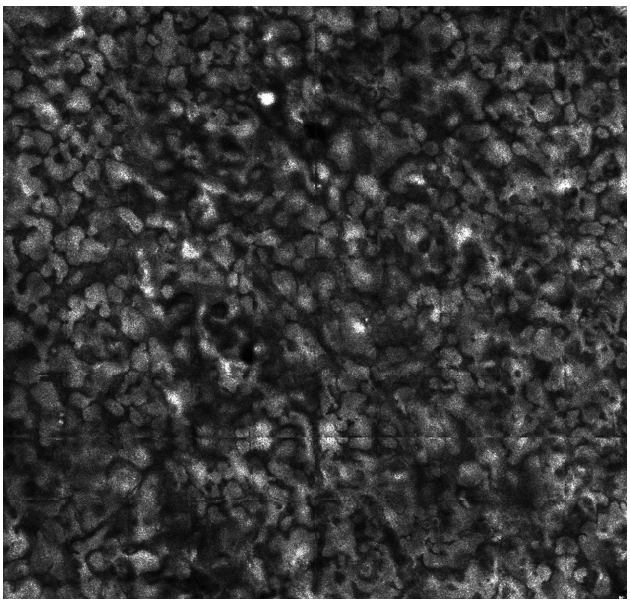

Figure 3. Confocal microscopic features demonstrated with Vivascope 1500: bright, cord-like rete ridges and edged dermal papillae. [Copyright: ©2013 Ramirez-Fort et al.]

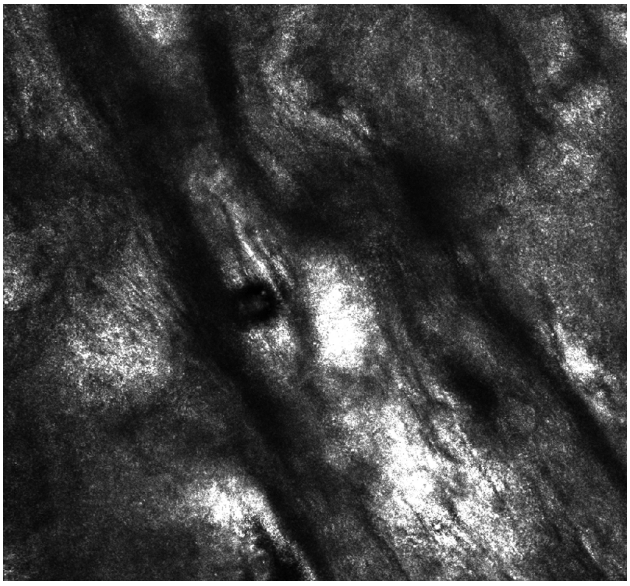

Figure 4. Confocal microscopic features demonstrated with Vivascope 1500: area displaying epidermal bulbous projections and keratin-filled invaginations. [Copyright: ©2013 Ramirez-Fort et al.]

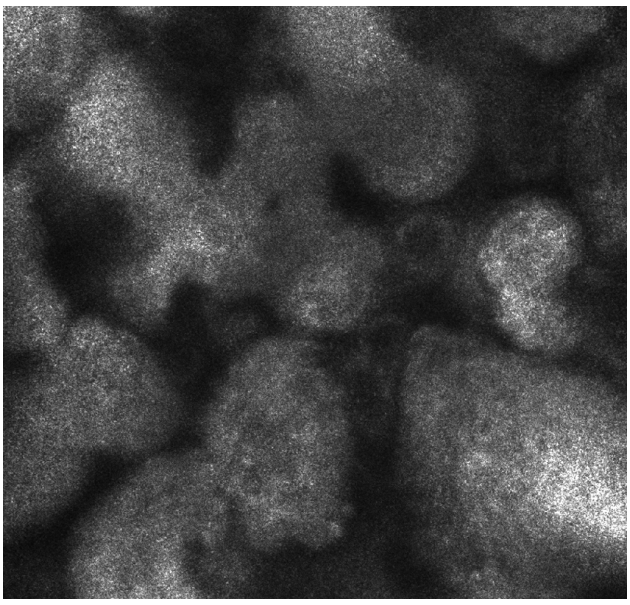

Figure 5. Confocal microscopic features demonstrated with Vivascope 1500: inflammatory infiltrate in the papillary dermis. Plump-bright cells correspond to melanophages. [Copyright: ©2013 Ramirez-Fort et al.]

Imaging by confocal microscopy reveals a regular epidermal architecture as well as islands of acanthosis; these islands correspond to densely packed round to polymorphous papillae and/or cord-like rete ridges at the dermoepidermal junction (Figure 3). There is a well-contoured regular honeycomb pattern, indicating pigmented keratinocytes. These pigmented keratinocytes within the acanthotic islands correspond to the thick brown curved lines visualized with dermatoscopy. No papilla were discernable, also consistent with an epidermal neoplasm (i.e., seborrheic keratosis) blunting the regular contour of the dermal-epidermal junction (Figure 4). One can also appreciate numerous hyperreflective dots, called "plump-bright cells" within the islands; these cells correspond to melanophages and are associated with inflammation (Figure 5). Other small bright particles are seen in the papillary dermis and correspond to leukocytes. These mentioned findings are seen in lichenoid keratoses, i.e., seborrheic keratoses under regression. There is minimal concern for pigmented Bowen's disease, where one would expect to see architectural disruption of the epidermis and cellular pleomorphism.

Histopathology of the lesion revealed a seborrheic keratosis-clonal type. Figures 6A and 6B demonstrate classic findings of a seborrheic keratosis, including focal areas of

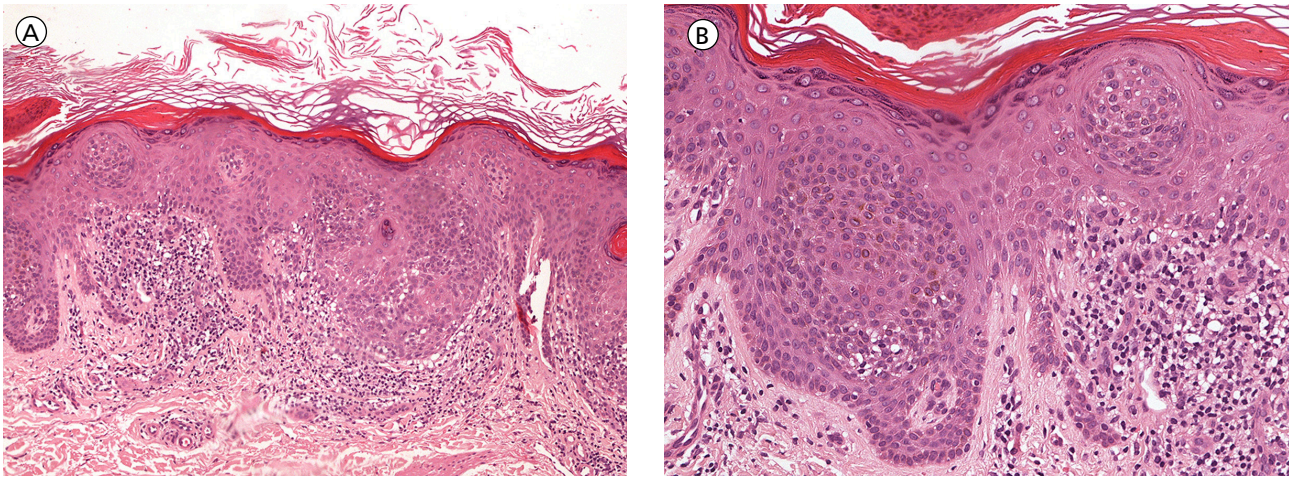

Figure 6. Histopathological features: (A) Epidermal basket-weave orthohyperkeratosis, keratotic plugs composed of parakeratotic cells, and focal vacuolar changes within the basal layer is seen (hematoxylin & eosin, 30x). (B) Close-up view of another area at the periphery of the lesion reveals clusters of melanophages in papillary dermis, directly beneath the dermoepidermal junction (hematoxylin & eosin, 200x). [Copyright: ©2013 Ramirez-Fort et al.]

acanthosis, invaginations and elongation of the rete ridges in addition to hyperkeratosis and parakeratosis in the stratum corneum. Additionally, a few proliferations of sharply demarcated intraepithelial nests of basaloid cells are seen, which sub-categorize the lesion into clonal type. In the dermis, there is a lichenoid inflammatory infiltrate, marking the regression of a seborrheic keratosis. The diagnosis is that of a lichenoid keratosis (LK).

Discussion

Here we present the step-wise approach of diagnosing a lichenoid keratosis in the setting of clinical uncertainty. The diagnosis of a seborrheic keratosis is typically made clinically. However, states of irritation or regression (in which the seborrheic keratosis is termed a lichenoid keratosis) may mask a clear clinical diagnosis. In these situations, seborrheic keratoses may be mistaken for melanocytic lesions, making the differentiation from melanoma, Bowen's disease or superficial basal cell carcinoma challenging on both clinical and dermatoscopic levels [1,2]. Zaballos et al has clearly established dermatoscopy as a useful tool to assists in the correct clinical recognition of LK and track the pathogenesis of these tumors by demonstrating the intermediate stages of epidermal regression. Much of clinical diagnosis is dependent on characteristic changes in pigment and texture. However, not all neoplastic processes are pigmented, which minimizes the clinical specificity in atypical presentations. Reflectance confocal microscopy (RCM) is particularly useful in these situations. By measuring reflectance, RCM highlights metabolically active cells, i.e., pigmented, immune and neoplastic cells (independent of pigmentation), with inherently high interface refraction.

Clinical uncertainty is typically an indication for a biopsy. By improving the clinical utility of non-invasive imaging modalities, dermatologists are now able to curtail biopsy-associated morbidity by achieving diagnostic certainty with non-invasive modalities. Dermatoscopy and RCM allow for a stepwise diagnostic approach—to progressively increase resolution of a lesion until diagnostic confidence is achieved. In this case presentation, we clearly demonstrate the utility of dermatoscopy and RCM in making the diagnosis of a lichenoid keratosis, which was further confirmed with histology.

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