Characterization of Knuckle (Garrod) Pads Using Optical Coherence Tomography In Vivo

Adam J. Luber, MD; Amanda R. Bienenfeld, BA; Charlotte M. Clark, MD; Orit Markowitz, MD

To the Editor:

Optical coherence tomography (OCT) is a noninvasive imaging technique that uses a low-power infrared laser light for cutaneous architecture visualization up to 2 mm in depth. Both malignant and nonmalignant lesions on OCT imaging have been correlated with histopathologic analysis.[1] We describe the diagnostic features of knuckle pads on OCT.

A 43-year-old-man presented with warts on the right thumb and bilateral feet of several months' duration with noncontributory medical and social history. Physical examination revealed nontender, well-demarcated, flesh-colored, verrucous papules on the dorsal interphalangeal joints of the right thumb and several toes (Figure 1). Pinpoint vessels were absent on dermoscopy (Figure 2). Histopathologic analysis of a shave biopsy of the lesion on the left second toe revealed dense orthokeratosis with compact keratin, suggestive of reactive hyperkeratosis or a knuckle pad (Figure 3). In situ hybridization failed to demonstrate staining for human papillomavirus types 6, 11, and 16.

Optical coherence tomography demonstrated discrete thickening of the stratum corneum with distinctive granular and coarse textural appearance of the hyperkeratotic stratum corneum compared to normal adjacent skin. This textural difference was attributed to the alteration in collagen deposition of the knuckle pads, consistent with fibrous proliferation. Finally, OCT imaging provided further characterization of the lesion demonstrating the absence of any hair follicles and acrosyringium in areas resembling glabrous skin (Figure 4).

Figure 1. Verrucous papules on the left foot.

Figure 2. Corresponding dermoscopy of the left second toe revealed an absence of pinpoint vessels.

Dr. Luber was from and Ms. Bienenfeld and Drs. Clark and Markowitz are from the Department of Dermatology, Icahn School of Medicine at Mount Sinai, New York, New York. Dr. Luber currently is from the Department of Dermatology, Brown University, Providence, Rhode Island.

The authors report no conflict of interest.

Correspondence: Adam J. Luber, MD, Department of Dermatology, Brown University, 593 Eddy St, APC-10, Providence, RI 02903 (ajluber@gmail.com).

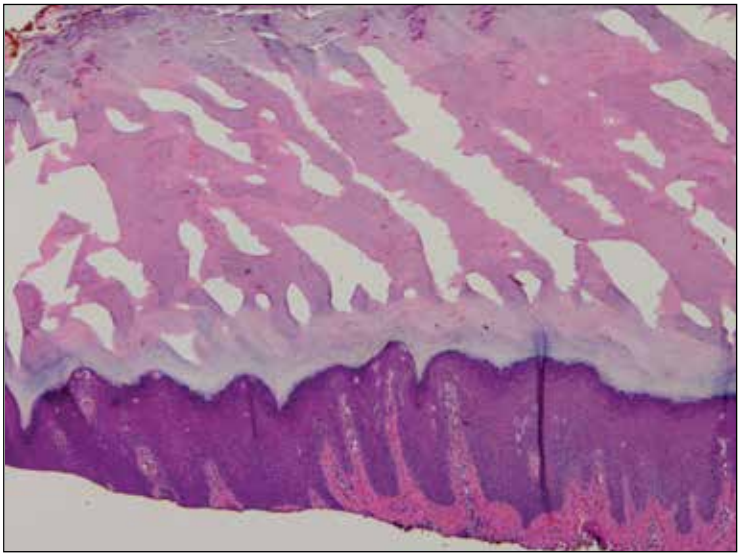

Figure 3. Dense orthokeratosis with compact keratin on histopathology (H&E, original magnification ×40), corresponding to white hyperreflective areas on optical coherence tomography.

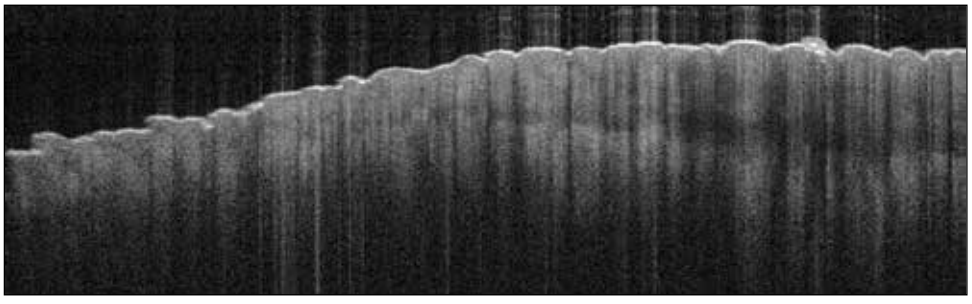

Figure 4. Optical coherence tomography revealed the absence of hair follicles and acrosyringium as well as the white hyperreflective areas consistent with orthokeratosis.

Knuckle pads, also known as Garrod pads, were first described by Garrod[2] in 1893. They are benign, asymptomatic, fibrotic thickenings of the skin. Lesions are smooth, firm, flesh colored, and located on the dorsal aspect of the hands and feet along the metacarpophalangeal and interphalangeal joints. Knuckle pads are common, can develop at any age, and are observed more frequently in men than in women.[3]

Primary knuckle pads can be sporadic or associated with other conditions such as palmoplantar keratoderma, acrokeratoelastoidosis costa, fibrosing disorders, or Bart-Pumphrey syndrome.[4] Secondary knuckle pads, which are more common, occur in sites of repetitive trauma or pressure. Certain occupations (eg, mechanics) or hobbies (eg, boxing) increase the risk for developing knuckle pads.[3,4]

The diagnosis of knuckle pads is usually made clinically, though several other conditions mimic knuckle pads, including scars, keloids, calluses, verruca vulgaris, fibromas, and rheumatoid nodules.[3,5] We report a description of knuckle pads that was diagnosed with OCT imaging. Further characterization of both malignant and nonmalignant lesions on OCT imaging will contribute new insights to the role of OCT in the noninvasive diagnosis of skin diseases, pending future studies.

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