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123 Precise Longitudinal Tracking of Microscopic Structures in Melanocytic Nevi Using Reflectance Confocal Microscopy: A Feasibility Study.

Scope A, Selinger L, Oliviero M, Farnetani F, Moscarella E, Longo C, Rabinovitz HS, Pellacani G, JAMA Dermatol. 2016 Jan 6:1-6. doi: 10.1001/jamadermatol.2015.4993.

ABSTRACT

Importance: Reflectance confocal microscopy (RCM), a cellular-level, in vivo imaging technique, may be potentially used for monitoring melanocytic neoplasms for microscopic stability vs changes over time. Objective: To test feasibility of using RCM to track specific microscopic structures within nevi over 1 year. Design, Setting, and Participants: This was an observational study, a review of prospectively acquired RCM images, performed at a tertiary academic medical center. Seventeen patients were enrolled from adult patients presenting to pigmented lesion clinic; from each participant, 3 confirmed benign nevi were randomly selected from the upper and lower back and from the lower extremity. Exposures: Nevi underwent standardized RCM imaging at baseline and after 1 year. Main Outcomes and Measures: We tested interobserver reproducibility in recognition of tissue anchors, RCM structures that can be identified at 2 time points. We used 2 tests to measure concordance between independent readers: (1) In the multiple choice matching test (n?=?43 nevi), readers were shown a tissue anchor in a baseline RCM image (?1?×? 1-mm field-of-view) and asked to identify the same structure in 1 of 4 equally sized RCM images obtained from the same nevus at follow-up. (2) In the annotation test (n?=?29 nevi), readers were shown a tissue anchor in a follow-up RCM image (?1× 1-mm field-of-view) and asked to annotate the corresponding location of this structure in the baseline RCM mosaic image (?5?×?5-mm field-of-view) from the same nevus; good agreement was defined as annotations deviant by less than 10% of the mosaic's width. Results: In total, 17 patients (mean age, 45 years [range, 28-70 years]; 10 [59%] were women) contributed a total of 51 nevi, of which 44 nevi (86%) were used for the study. Images from 7 nevi (14%) were suboptimal in quality. Tissue anchors were identified at both time points in all 44 nevi. Selected tissue anchors were located at a mean depth of 54.3 μm; the most commonly selected anchors (37 of 44 images [84.1%]) were dermal papillae. In the multiple choice matching test, compared with a reference reader, 2 readers correctly matched baseline to follow-up tissue anchors in 40 of 43 nevi (93%; P?<?.01) and 42 of 43 nevi (98%; P?<?.01), respectively. In the annotation test, there was good agreement between 2 readers in all 29 cases (100%); the mean deviation was 2% (range, 0%-7.5%). Conclusions and Relevance: Precise longitudinal tracking of microscopic structures in melanocytic nevi using RCM is feasible.