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27 In-vivo reflectance confocal microscopy of Meissner's corpuscles in diabetic distal symmetric polyneuropathy.

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ABSTRACT

To evaluate in-vivo reflectance confocal microscopy (RCM) of Meissner's corpuscles (MC) in diabetic distal symmetric polyneuropathy (DSP). METHODS: Forty-three adults with diabetes and 21 control subjects underwent RCM of MC density at the fingertip of digit V, thenar eminence (TE), and arch of the foot, ankle skin biopsy for epidermal nerve fiber density (ENFD), electrophysiological studies, monofilament threshold testing, and timed vibration at the toe. Subjects with diabetes were subdivided into groups with and without clinical DSP using the American Academy of Neurology (AAN) case definition and neuropathy outcomes were compared across groups. RESULTS: Both diabetic groups (with and without AAN clinical DSP criteria) had objective evidence of peripheral sensory involvement using conventional sensory measures, although those with clinical DSP criteria had greater abnormalities. MC densities were lower in the entire diabetic group at the TE and digit V relative to controls. MC densities at all imaging sites were associated with corresponding conventional sensory measures. MC densities were reduced in subjects without AAN clinical DSP criteria at the TE and digit V compared to controls whereas conventional upper limb sensory measures did not differ between these groups. CONCLUSIONS: In-vivo RCM of MC density at digit V is a non-invasive, painless, objective marker in diabetes that offers a window into early large fiber sensory nerve terminal loss. Further studies are needed to determine whether RCM of MCs can identify quantitative changes in DSP associated with disease progression or treatment. KEYWORDS: Diabetes; Epidermal nerve fiber density; Meissner's corpuscle; Peripheral neuropathy; Reflectance confocal microscopy PMID:28566167 DOI:10.1016/j.jns.2017.05.025