COMMENTS AND RESPONSES

Comment on: Riazi et al. Can Ultrasound of the Tibial Nerve Detect Diabetic Peripheral Neuropathy? A Cross-Sectional Study. Diabetes Care 2012; 35:2575–2579

Riazi et al. (1) report that ultrasound demonstrates a consistent enlargement of the posterior tibial nerve in the distal leg in diabetes sensorimotor polyneuropathy (DSP). They also describe an inverse relation between calculated cross-sectional area and objectively measured nerve conduction studies and a direct relationship with subjective DSP severity. Their discussion suggests ultrasound use as a point-of-care screening device for DSP and speculates as to whether a demonstrated nerve enlargement in DSP should be of concern for anesthesiologists considering the use of local or regional nerve block injections, which might hypothetically put the compromised nerve at additional risk.

A more interesting conjecture is what import the demonstrated nerve enlargement has in another significant DSP controversy, namely the question of whether nerve decompression (ND) has any place in the treatment of symptoms, signs, and complications of DSP in the foot. Dellon (2) has hypothesized that enlarged nerves are present in DSP, at risk for entrapment in rigid and unyielding fibro-osseous tunnels, and can be surgically decompressed to benefit nerve functioning. He (2) and others have published extensively on the use of ND to relieve pain and restore sensibility in cases where entrapment is superimposed on lower-extremity DSP as demonstrated by a positive Tinel percussion sign. Critics have taken the position that the placebo effect or surgeon, observer, and patient bias can explain the consistently positive results of ND on subjective pain and sensation, and that ND benefit must be confirmed with randomized control, sham surgery trials.

Objective measures contravene the placebo/bias critique. The Riazi et al. confirmation of the nerve enlargements, which Dellon demonstrated in animal studies and postulated in human DSP, provides independent evidence that the size change factor of Dellon's compression hypothesis does indeed exist. A number of studies report therapeutic benefit after ND using objective outcome measures like balance, ulcer appearance, perineural tissue pressure, diabetic foot ulceration recurrence risk, operative infection risk, nerve conduction studies, and amputation (3–5). These objective demonstrations of the benefits of ND join 2 decades of reports of subjective recovery of light touch and vibration sensibility, 2-point discrimination, cold/warm sensory testing, muscle strength, pain resolution, and improvements in neuropathy symptom scores (2–4). We may consider whether the current length-dependent axonopathy hypothesis of DSP, pathways unknown, needs to be revised to incorporate the possibility that nerve size matters, enlargement is frequent, and this may justify using ND in DSP. Whether DSP can exist without producing secondary nerve enlargement and entrapment remains yet to be examined. But the impression that ND can generate frequent recovery in DSP symptoms and signs, or protection from severe complications, now seems rather strong. Several prospective, randomized controlled trials now underway will soon produce the level 1 evidence necessary to bring this controversy to a scientific conclusion.

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