Letter: Decompressive Surgery for Diabetic Neuropathy: Waiting for Incontrovertible Proof

To the Editor:

In a review published in the recent issue of Neurosurgery, the authors claimed that the available evidence from current clinical reports is not enough to support the use of decompressive surgery in the treatment of diabetic peripheral neuropathy (DPN) and thus called for incontrovertible proof. Indeed, as the highest level of evidence, the result of a randomized, double-blind, sham-controlled trial is eagerly anticipated by most DPN practitioners and neuroscientists. Nevertheless, the anticipation of forthcoming unknown results of the randomized controlled trial is not a reason to preclude the evidence of previous literature. The practice advisory published in 2006 by the American Academy of Neurology suggested that surgical treatment is unproved (Level U), which means “the data are insufficient to support or refute its benefits.” Furthermore, not only results of clinical studies, incontrovertible proof should also be derived from progression in basic researches, and the common medical principle should be taken into consideration. Accounting for the prejudice against the preceding clinical reports, this letter is intended to present some concerns on a few misconceptions that may be included in this review.

1. Theoretical Basis

Surgical decompression for DPN is based on “double crush,” which is supported by studies suggesting that the diabetic nerve is more susceptible to compression. Although there is 1 study claiming that nerves are resistant to axonal degeneration after nerve compression, the objective existence of the high frequency of entrapment neuropathy in the diabetic population should not be thus ignored. The biochemical basis including aldose reductase pathway, oxidative stress, and metabolism of advanced glycation end products should be appreciated to understand how diabetes-induced nerve damage could contribute to focal entrapment neuropathy.

2. Inconsistent Outcome from Different Reports

Diabetic neuropathy is a heterogeneous disease, including the most common chronic sensorimotor distal symmetric polyneuropathy, focal and multifocal neuropathies, and so forth. Different parts and levels of the nervous system would be involved in DPN. Take neuropathic pain as an example, the question of whether painful and painless DPN might be the same disease and the reason why some patients develop the insensate variety of DPN but others endure harrowing pain remain elusive. This is due to the fact that the specific mechanisms involved in neuropathic pain are unidentified. The fluctuation of neuropathic pain mentioned in the review may be the result of involvement of various sensory profiles at different stage. Therefore, the management of DPN should encompass a series of mechanism-targeted and individual treatment modalities.

3. Indications of Surgical Decompression for DPN

In contrast to the description in the review, surgical decompression of peripheral nerve for DPN was proposed as an alternative rather than a commonplace treatment. In truth, every surgery has indications. In the scenario of DPN, for example, differential diagnosis should be carefully made between mononeuropathy and focal nerve entrapment. In our institute, entrapment neuropathies in DPN should be diagnosed with the employment of both electrophysiological tests and high-frequency ultrasound to identify the functional impairment and the morphological changes, respectively. Physical examination including the Tinel sign is not the only criteria to confirm potential entrapment in DPN. Nevertheless, the management of entrapment neuropathies in DPN should start with medicine treatment including glycemic control and other symptomatic treatments. Surgical decompression of peripheral nerve was not undertaken only after the failure of conservative treatment. Although the approach to decompressive treatment is not confined to surgery and may be also drug therapy, the notion that “when there is compression, there should be decompression” should be the common basic principle.

Disclosure

The author has no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

Chenlong Liao, PhD, MD
Department of Neurosurgery
XinHua Hospital, School of Medicine
Shanghai Jiao Tong University
Shanghai, P.R. China

REFERENCES


10.1093/neuros/nyx192