

Large Fiber Peripheral Neuropathy, Aging and Fall Risk

Large fiber peripheral neuropathy (PN) impairing somatosensory feedback and normal motor responses can occur in a variety of diseases. Perhaps one of the most widespread causes of PN in the general population is diabetes, afflicting at least 50% of those with the condition. Another less recognized but potentially more widespread cause of PN is the aging process itself. It is generally acknowledged that most elderly patients will have some loss of peripheral neurological function though it is seldom formally diagnosed. This age-related or “senescent” form of neuropathy can result in the same loss of large fiber nerve function as its better known correlate diabetic PN (DPN).

Regardless of the cause, large fiber PN can result in loss of proprioception, touch, vibratory sensation and muscle strength. These impairments can result in balance and postural control deficits predisposing patients to falls. Falls are a long acknowledged major healthcare issue affecting elderly and diabetic patients at higher rates than the general population. Large fiber PN has been determined to be a significant contributor to these falls.

One recent study in particular highlights this issue. Mettelinge et al. studying elderly diabetic and elderly non-diabetic patients concluded that PN “irrespective of its cause, interferes with postural control and fall incidence.” (1). Another finding of the study was that Vibration Perception Threshold (VPT), equivalent to the 25v setting on the standard Biothesiometer, was an effective PN screening method for a Fall Risk Assessment protocol among elderly patients. They went on to state that integration of this simple screening technique was highly recommended especially given the drawbacks associated with nerve conduction velocities (NCVs) and tissue biopsies. These recommendations were echoed in a more recent article by Callaghan et al. where they cited the need for earlier detection of PN in order to prevent falls in older persons (2).

In light of these recommendations, the ETF can be seen as an appropriate choice when considering methods of performing the recommended screening tests as part of a Fall Risk Assessment. Although the ETF was not available to Mettelinge and his team, it can provide the same vibration as the Biothesiometer at the 25v level. This is available when in Constant Mode. Using the ETF in Constant Mode, the patient can simply give a “yes” or “no” answer as to whether or not they feel the vibration. Superior portability and ease of use make the ETF ideally suited to point-of-care VPT screening in clinics and hospitals when evaluating patients for fall risk.

References

1. [de Mettelinge TR1, Calders P, Palmans T, Vanden Bossche L, Van Den Noortgate N, Cambier D. Vibration perception threshold in relation to postural control and fall risk assessment in elderly. *Disabil Rehabil.* 2013 Sep;35\(20\):1712-7. doi: 10.3109/09638288.2012.751136. Epub 2013 Apr 19.](#)

2. [Callaghan B, Kerber K, Langa KM, Banerjee M, Rodgers A, McCammon R, Burke J, Feldman E. Longitudinal patient-oriented outcomes in neuropathy: Importance of early detection and falls. Neurology. 2015 Jul 7;85\(1\):71-9. doi: 10.1212/WNL.0000000000001714. Epub 2015 May 27.](#)

Additional References

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