Sural sensory nerve action potential

Both diabetic distal symmetrical polyneuropathy (DSPN) and cardiac autonomic neuropathy (CAN) indicate the length-dependent pattern of disease. Decreased parasympathetic activity has been found in the early phase of CAN and sural sensory nerve action potential (SNAP) imply axonal loss in DSPN.

All patients with type 2 diabetes underwent cardiovascular autonomic function and nerve conduction studies (NCS). Lai et al., constructed modified composite autonomic scoring scale (CASS) and composite score of NCS to measure the severity of CAN and DSPN, respectively.

Patients with a longer duration of diabetes had a lower heart rate response to deep breathing (HR_DB), Valsalva ratio (VR), and baroreflex sensitivity (BRS), higher CASS, a higher percentage of CAN, lower sural SNAP, higher composite score of NCS, and a higher percentage of DSPN. Multiple linear regression analysis showed that only sural SNAPs were independently associated with mean HR_DB.

Sural SNAP was closely correlated with parameters of cardiovagal functions in patients with different durations of diabetes. The percentage and severity of CAN and DSPN increase with longer duration of diabetes.

The independent association of sural sensory nerve action potential amplitude and heart rate response to deep breathing with type 2 diabetes is important because combined testing increases diagnostic sensitivity and specificity [1)].

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Lai YR, Huang CC, Chiu WC, Liu RT, Tsai NW, Wang HC, Lin WC, Cheng BC, Su YJ, Su CM, Hsiao SY, Wang PW, Chen JF, Ko JY, Lu CH. Close relationship between cardiovagal function and sural sensory nerve action potential in type 2 diabetes. Clin Neurophysiol. 2019 May 8;130(7):1160-1165. doi: 10.1016/j.clinph.2019.03.036. [Epub ahead of print] PubMed PMID: 31102989.