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[P05.033] Automated Autonomic Nervous System (ANS) Testing (ANSAR) Has Superior Sensitivity Compared to Nerve Conduction Studies (NCS) in the Evaluation of Small Fiber Peripheral Neuropathy (PN)

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OBJECTIVE: To compare sensitivity of ANSAR and sensory NCS in patients with clinical evidence of small fiber PN. **BACKGROUND:** Patients with numbness, tingling or pain in their feet frequently have PN. The neurological examination may confirm this diagnosis. However, for various reasons an objective or quantitative tool is frequently desirable. For many neuropathies, (demyelinating or severe), NCS are frequently abnormal. However, small fiber neuropathies may have normal NCS. The ANS, especially the parasympathetic component, contains long non-myelinated fibers. ANS assessment is a potential method of evaluating these fibers (Krarup, 2003, Al-Shehlee et al, 2002). The ANSAR ANX 3.0 autonomic nervous system monitor examines the parasympathetic and sympathetic systems using real-time heart rate variability and spectral methodologies and may provide an objective, quantitative tool in the assessment of small fiber PN. This 15 minute test monitors a three lead EKG and blood pressure measurement during deep breathing, valsalva and standing. The ANSAR pattern consistent with parasympathetic dysfunction is a decreased response to deep breathing, usually with a decreased baseline.

DESIGN/METHODS: We reviewed 51 consecutive patients with reproducible distal decreased pin with or without decreased temperature in the lower extremities. All subjects had ANSAR plus NCS of the sural and superficial peroneal nerves. ANSAR was considered consistent with small fiber PN if it had a decreased baseline with / without sympathetic dominance or decreased

response to deep breathing with / without abnormal response to valsalva. NCS was considered abnormal if the amplitudes of 50% or more of the sensory nerves studied were abnormal (in our laboratory <5 uv) or unobtainable. Subjects were grouped into those with both tests abnormal, both tests normal and those with one or the other abnormal. Chi-square was used for statistical comparison. Also, the etiology of the PN was noted. **RESULTS:** Both tests abnormal: 16. Both tests normal: 13. NCS normal + ANSAR abnormal: 18. NCS abnormal + ANSAR normal: 4. Analysis: 4 of 35 (number of subjects in whom both tests were not positive) compared to 18 of 35: chi-square equals 6.939 ($p < .01$). 29 subjects: idiopathic neuropathy. 17: diabetic. 4: alcoholic. 1: hypothyroid. Etiologies were similar among groups. **CONCLUSIONS:** Among 51 patients with polyneuropathy based on clinical criteria, nerve conduction studies were abnormal in 20. Automated ANS testing was abnormal in an additional 18. There is no gold standard for electrodiagnosis of PN (Dyck, 1993). The ability to examine long non-myelinated fibers of the parasympathetic system using ANSAR allows an additional quantitative, noninvasive, inexpensive, brief method of assessing small fiber PN. In a clinical setting where morphometric studies or quantitative sensory examinations are impractical or unavailable, ANSAR appears to be a useful addition to clinical practice

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