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Amplitude of A delta fibers action potentials objectively discriminate severe chronic spine pain patients from controls

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Introduction: Objective validation of the pain complaint is a major problem in the assessment and treatment of chronic spine pain. Patient symptom description is purely subjective as is the VAS score. The sensitivity and specificity of the physical examination and imaging studies is low. Clinical assessment comes down to clinical judgment which may be biased both philosophically and economically. There is a great need for a completely objective test of pain severity. Materials and Methods: With IRB approval we looked at 20 chronic severe pain patients and 20 controls. In our study we stimulated the A delta pain fibers in the peripheral dermatomes (using Neural Scan device) from 0 – 10 mA and 0 - 50 volts at 250 Hz. An objective response to this peripheral stimulus was measured by a potentiometer (Myovision dynamic surface electromyographic electrode) placed at spine. Results do not depend on patient cooperation. Results: The mean A delta fiber action potential amplitude of the spine pain patients was 20 microvolts and the mean amplitude for the controls was 200 microvolts. T test assessment of the results indicated that the amplitude of the A delta action potentials correlated with pain severity at a p level < 0.00005.

Conclusions: We found that sensory nerve conduction testing of A delta is a useful objective parameter in the evaluation of chronic spinal pain. This test is inexpensive for patients, non-invasive, and is suggested in the routine evaluation of chronic paraspinal pain.