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Changes in EEG Brain Activity during Physical and Social Pain Assessment in Chronic Pain Patients Undergoing Spinal Cord Stimulation (SCS) Therapy

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Poster Presentation P22

**CHANGES IN EEG BRAIN ACTIVITY DURING PHYSICAL AND
SOCIAL PAIN ASSESSMENT IN CHRONIC PAIN PATIENTS
UNDERGOING SPINAL CORD STIMULATION (SCS) THERAPY**

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Spinal Cord Stimulation (SCS) therapy is an effective method of using electricity to treat chronic pain when other therapies, including invasive surgical interventions, have failed. In SCS, stimulating electrode arrays (called leads) are implanted epidurally inside the spinal canal above the dorsal aspect of the spinal cord through a minimally invasive, reversible surgical procedure. The application of safe levels of electrical current to the dorsal portion of the spinal cord is known to provide an analgesic effect, reducing pain in patients by 68% compared to their initial pain levels. SCS improves patients' functional and psychological status, enables patients to return to work, and reduces patients' reliance on opioid pain medication. While SCS has a clear therapeutic effect, the exact neural mechanism behind the analgesic effects of SCS remains poorly understood. Other studies have shown consistent changes in frontal and parietal cortex brain activity during both physical and social pain. The present study recorded electroencephalogram (EEG) brain activity to examine the neural mechanisms associated with both social and chronic physical pain in subjects currently undergoing SCS therapy. EEG is a common technique used in psychological and medical research to record the firing of brain cells (through an electrode cap placed over the scalp) during various behavioral states. This is the first study to examine changes in EEG brain patterns in SCS patients for both physical and social pain. Understanding the neural mechanism behind SCS therapy can lead to refinements in SCS procedures and potentially increase the efficacy of the treatment and, in turn, the quality of life of patients who suffer from chronic pain conditions.

