

MEMBER ARTICLE

CRANIAL ELECTROTHERAPY STIMULATION: A CASE STUDY

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In 46 AD, a Roman physician, Scribonius Largus used an electric eel in the treatment of medical disorders like headaches and gout, by having the patient stand on a beach in proximity to the eel (Kirsch, 2002). In Europe, the use of electricity in medical treatments goes back to the 18th Century. For example, the forerunner of the defibrillator was developed in Europe near the end of the 1700s. In the mid-1850s, precursors to transcutaneous electric nerve stimulators (TENS) were being marketed to control pain (Kirsch, 2002). Over the years, the importance of electrotherapy in the treatment of medical diseases has not diminished, although it has been overshadowed today by pharmacological approaches. Medicine's high costs and frequent serious side-effects, however, have prompted an increased focus on alternative approaches to medical treatments that are based solely on a chemical approach to healing.

Cranial Electrotherapy Stimulation (CES) has been used successfully to treat numerous disorders, including depression (Marshall & Izard, 1974; Cox & Heath, 1975), alcoholism (Krupitsky, Burakov, & Karandashova, 1991), cocaine detoxification (Brovar, 1894), marijuana withdrawal (Overcash & Sieventhall, 1989), acute anxiety (Overcash, 1999), and stress, related to cognitive dysfunctions (Smith, 1999). Of particular relevance to the present study, were demonstrations of CES's utility with incarcerated, violent, and mentally retarded inmates (Childs, 2005) and the treatment of pedophiles and

parolees with impulse control issues (Voris, 1995).

The type of CES unit described in this article is an Alpha-Stim SCS (Stress Control System). The system is FDA cleared for the therapeutic treatment of anxiety, depression, and insomnia. It is cost-effective, with only mild side-effects, which occur infrequently and are generally easily remedied. Several studies (with an accumulation of over 5,000 subjects) have been published examining the effectiveness of the Alpha-Stim SCS as a treatment for mental disorders and pain management. For example, a post-marketing analysis of 349 patients using the Alpha-Stim SCS to reduce anxiety found 91% of patients reported reductions in symptoms where symptom relief was equal to or greater than 25% (Kirsch, 2002).

The minimally effective treatment appears to be 100 micro-amps (uA), although the unit is adjustable up to 500 uA. The uA dosage is determined by the patient, using a control dial on the side of the Alpha-Stim SCS unit. The waveform is bipolar asymmetrical rectangular, with a duty cycle of 50% and a zero net current delivered by a nine volt battery. The unit is portable, 10cm by 7.5 cm, and weighs in at only 106 gm, nine volt battery included.

The unit uses ear clips to deliver the amperage. Felt pads are attached to each ear clip prior to using the unit, to avoid subject discomfort. Alcohol wipes are used to clean the ear lobes prior to treatment and, in post-treatment, to cleanse the ear clips of adhesive residue from the felt pads.

Side-effects are minimal and easily

corrected. These include dizziness, mild headaches, nausea, and rashes on ear lobes. Neutralization of these side-effects is generally managed by reducing the uA.

The Alpha-Stim SCS seems to change the electrical and chemical activity of certain nerve cells in the brainstem (and) amplify activity in some neurological systems, and diminish activity in others. This neurological fine tuning is called modulation (Electromedical Products International, 2006). The end result of amplifying activity is an increase in the production of the neurotransmitter serotonin.

Kennerly's research also provided important insights into changes in cortical functioning secondary to an Alpha-Stim SCS treatment. Using qEEG brainmaps, he studied variations in five bandwidths, Gamma, Beta, Alpha, Theta, and Delta during and after treatment. The treatment was one 20-minute Alpha-Stim SCS session. The brainmaps of his 30 subjects uniformly showed elevations in Delta and Gamma bandwidths across the entire cortex. Post-treatment changes included noticeable reductions in the Delta and Theta bandwidths and a significant increase in Alpha activity (Kennerly, 2004). Elevated Alpha is associated with a relaxed, yet focused state of mind, an important therapeutic effect of the Alpha-Stim SCS.

The 19-year-old Caucasian subject was of average weight and height with no physical disabilities. He was asked to volunteer due to his history of aggression and violence, including a physical

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