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Electronic Cell Signaling: A Paradigm Shift in the Treatment of Chronic Disease

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For years, allopathic physicians have emphasized the pharmacologic approach to treating illness. This approach works well for acute disease but not so much for chronic disease. In Western countries, our approaches to acute disease have been highly effective: the excellent algorithmic care given to victims of trauma, acute myocardial events, cerebral vascular accidents, most infections, acute cholecystitis and appendicitis. In these pharmacological and/or surgical solutions can restore the patient to their pre-pathological state.

Western medicine does not do as well with chronic disease, however, which gobbles up a majority of our health care costs. Patients with chronic disease will cost the healthcare system much of its limited resources with year after of symptom management only. Most of this is pharmacological in nature. In the case of pain management, the opioid approach not only merely 'papers over" symptoms, but is associated with a serious epidemic of abuse itself.

We must seek solutions which serve to heal our patients' pathology, not merely mask symptoms. One of the most significant scientific developments in understanding human physiology occurred when Becker and Seldon [1] electrically induced limb and nerve tissue regeneration in frogs and rats. They effectively showed that specific frequency-range electromagnetic fields exist that control all aspects of bioprocesses. As they stated, "These studies of extra-neuronal analog electrical morphogenetic fields have secured the importance of bioelectricity for all basic bioprocesses."

These principles have been utilized in the development of both transcutaneous and implantable devices. Common implantable devices include spinal cord and peripheral nerve stimulators. Transcutaneous devices include the well-known TENS devices, which have been marketed in many forms. Over the past 20 years, more sophisticated cell signaling has emerged on the market. The leader in this field is the device invented and manufactured by RST-Sanexas, the only device which can deliver true Electronic cell Signaling Treatment (EST) [2-4].

EST is defined as a digitally produced alternating current sinusoidal electronic signal with associated harmonics which produce physiological effects when applied to the human body [2]. These signals are produced by advanced electronics not possible even 10 to 15 years ago. EST can be enhanced by utilizing local anesthetic in a technique termed Combined Electrochemical Technique (CET), an approach popularized in my clinic in Las Vegas in the treatment of peripheral neuropathy, both the pain and numbness.

Malik has observed that "current drugs have no benefit for the underlying nerve damage [5]. We have witnessed failure after failure of clinical trials of disease-modifying drugs." His observation is especially true in the field of neuropathy treatment. In contrast, Carney et al have shown that CET for peripheral neuropathy was 54% to 62% more effective than pregabalin in reducing discomfort and improving function, and was associated with nearly no side effects compared to at least 38% of those receiving pregabalin[6]. Furthermore, in an poster presentation from earlier this year, Carney et al have shown that EST reduced the need for opioids [7,8].

A recent article has taken the concept of electronic cell signaling one step further [9]. EST not only has salutary effects on the sensory nerves, but the motor nerves as well. Most treatment of motor nerves does not require the use of the chemical block, but rather parameter programming specific to motor function. We have used this approach in a

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variety of patients, including those with strokes. The treatment period will be lengthy and the number of required treatments can be greater than 50, but the every other day application of EST signaling assists the nerve cells in healing by sending signals which they normally process when healthy. As a further example, EST has even been shown to reduce bronchospasm in asthmatic patients.

A discussion of the mechanisms of action of this electronic cell signaling is beyond the scope of this review; however, two important concepts are emphasized: 1) the significance of frequency modulation and 2) the role of accommodation. The human body (as other biological systems) operates on the principles of frequency modulation; pain intensity in A-delta and c fibers is coded as a function of frequency. Moreover, the complexity of these signals makes it difficult for the nerve cells to "learn" how to defeat the physiologic effects of the signals. In this way accommodation is minimized.

The transcutaneous application of complex electrical cell signaling has the potential to help us solve many chronic disease states with minimal side effects. The author hopes that the more widespread use of this technology will usher in a new paradigm in the treatment of chronic disease in the United States and around the world.

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