The Effects of Treatment of an Interactive Cutaneous Neurostimulator on Recurrent Sinusitis

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Introduction:
Acute exacerbation of recurrent sinusitis is thought to be a biofilm mediated infection. The clinical presentation is thought to be one of headache and signs of sepsis. Currently, nasal decongestants and antibiotics are used but associated with recurrence in a large number of patients. The effects of an INS device in the treatment of people with this condition is described.

Method and Devices:
The INS device, a non-invasive, hand held devices that produces electrical current with normal skin as conduit by two stainless steel, concentric electrodes. The device produces a damped biphasic waveform with a frequency of 59.3 cycles per second, a pulse delivery between 15 and 360 pulses per second. Power, frequency, pulse grouping and waveform damping were varied with the patients treated.

The InterX 5002 is a hand-held battery operated, interactive neurostimulation device.

The Small Circular Electrode is attached to the main InterX 5002 device and provides easier treatment applications for smaller areas.

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No Skin Contact
High Impedance
Low Impedance

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Static waveforms are widely believed to allow nerve accommodation, reducing the effectiveness of treatment. The parameters of the dynamic INS waveform constantly adjust to changes within the tissue as treatment is applied. Due to the unique design of INS and the sensitivity of the interactive waveform, conductive gel is not required.

Treatment Protocols:
The treatment approach is driven by the area of complaint and associated symptoms of pain, discomfort and limitations of function. Therapists will determine the type or category of sinusitus based upon observation and clinical judgement. Treatment zones include frontal, maxillary and infra-orbital as well as other targeted nerve points for a period of 15 - 30 minutes. The patients selected had acute exacerbations of recurrent sinusitus.

Acute Exacerbation:
Frequency: 2X/Daily for 4-6 days
Duration: 15 minutes

Recurrent Sinusitus:
Frequency: 2X/Daily for 4-6 days
Duration: 15 minutes

Stimulate the primary exit points of the Trigeminal nerve as illustrated

Sinus Cavities
Trigeminal points

Sinus Cavities
Greatest Occipital
Greatest Auricular
Spinal Accessory

Provide stimulation to the Greater auricular and greater occipital supra-orbital and infra-orbital nerves.

Additional stimulation is applied to the spine for a centrally mediated response.

Results:
Ten patients were treated. The patients got immediate relief of headaches associated most commonly with a hissing sensation from decompression of the sinuses occurring during treatment. The patients also had purulent discharge shortly after the decompression of the sinuses.

Conclusion:
Chronic sinusitus has been used as a study model for biofilm growth on keratinized epithelial membranes. Chronic recurrent sinusitus is extremely disabling and not well treated with antibiotics. This pilot study demonstrates efficacy in the treatment of this disorder. The effects are thought secondary to prostaglandin mediated anti-inflammatory effects and possible disruptions of biofilms. Further studies are indicated.

References:
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