

Alpha-Stim®: Useful Tool for Refractory Bilateral Ear Pain?

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Introduction

- >100 million individuals in the US meet criteria for chronic pain¹
- Cranial electrotherapy stimulation (CES): non-invasive treatment using low-intensity electrical current to treat anxiety, depression and chronic pain²
- Alpha-Stim® is a handheld, portable CES device

Case Description

A 45-year-old female with a chief complaint of a six-year history of bilateral ear pain, unresponsive to multiple treatments including various nerve blocks. Additionally, she developed migraines and anxiety, for which she took Fioricet, Oxycodone, and Valium. An MRA revealed the right superior cerebellar artery abutting the root of the right trigeminal nerve. Initially offered microvascular decompression surgery, she sought a second opinion and tried CES treatment with Alpha-Stim®. After three treatments over two weeks, her pain score dropped to 0/10 after the first two sessions, and she experienced a 50% reduction after the third. She was approved for at-home Alpha-Stim® treatment, successfully weaning off opioids and continuing weekly treatments with continued pain relief.

References

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Key Findings:

CES is a **non-invasive, non-pharmacological** option for **chronic pain, anxiety, insomnia, and depression**

CES may be able to **reduce dependence on opioids**

Mechanism of Action

- Alters production of acetylcholine, norepinephrine, and serotonin resulting in increased alpha-waves³ (*Figures 1 and 2*)
- ‘normalize’ neurotransmitter homeostasis: increases IGF-1 and beta-endorphins production through the HPA axis⁴
- Mechanism of action is not fully understood

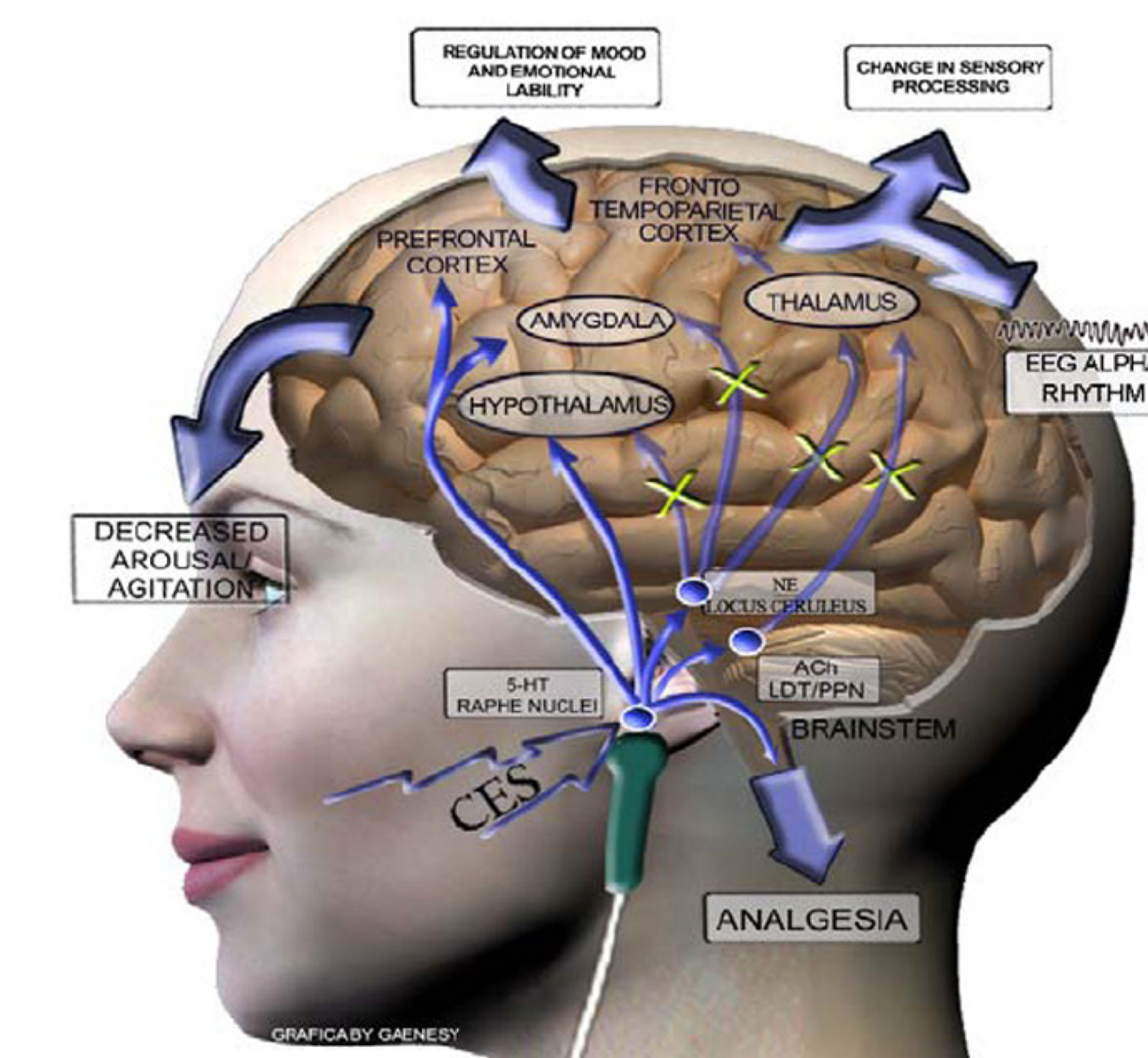


Figure 1: Diagram depicting the mechanism by which CES devices induce neuromodulation resulting in increased alpha-waves⁴

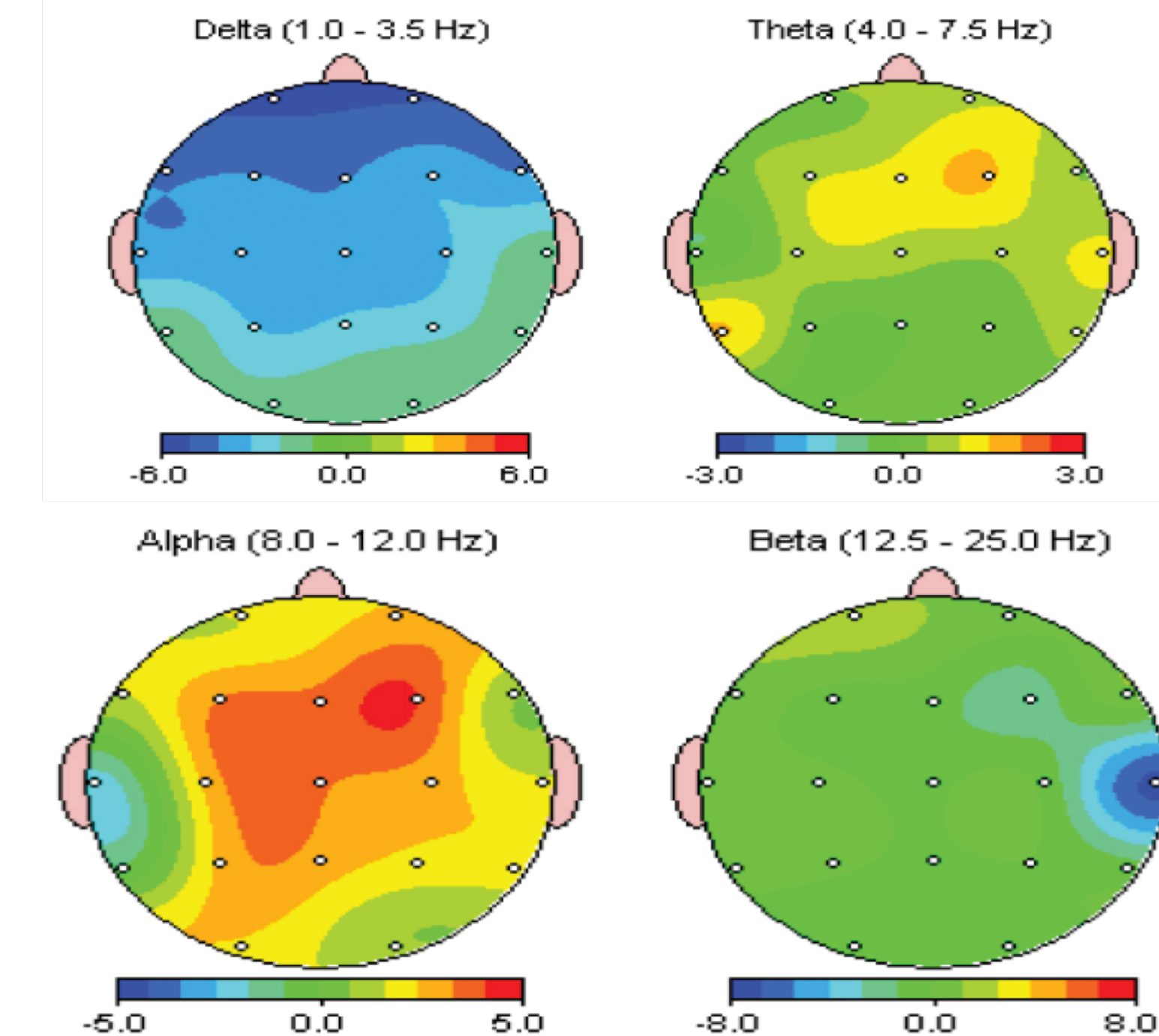


Figure 2: Mean QEEG changes in 30 participants following 20 min Alpha-Stim® session at 0.5 Hz

Advantages

- Sessions last 20 minutes to 1 hour
- Cumulative benefits are often seen overtime
- Advantages: small, compact, simple user interface (*Figures 3 and 4*)
- Non-invasive and adverse reactions are exceedingly rare⁵



Figure 3: Dr. Patterson demoing the Alpha-Stim® device in clinic

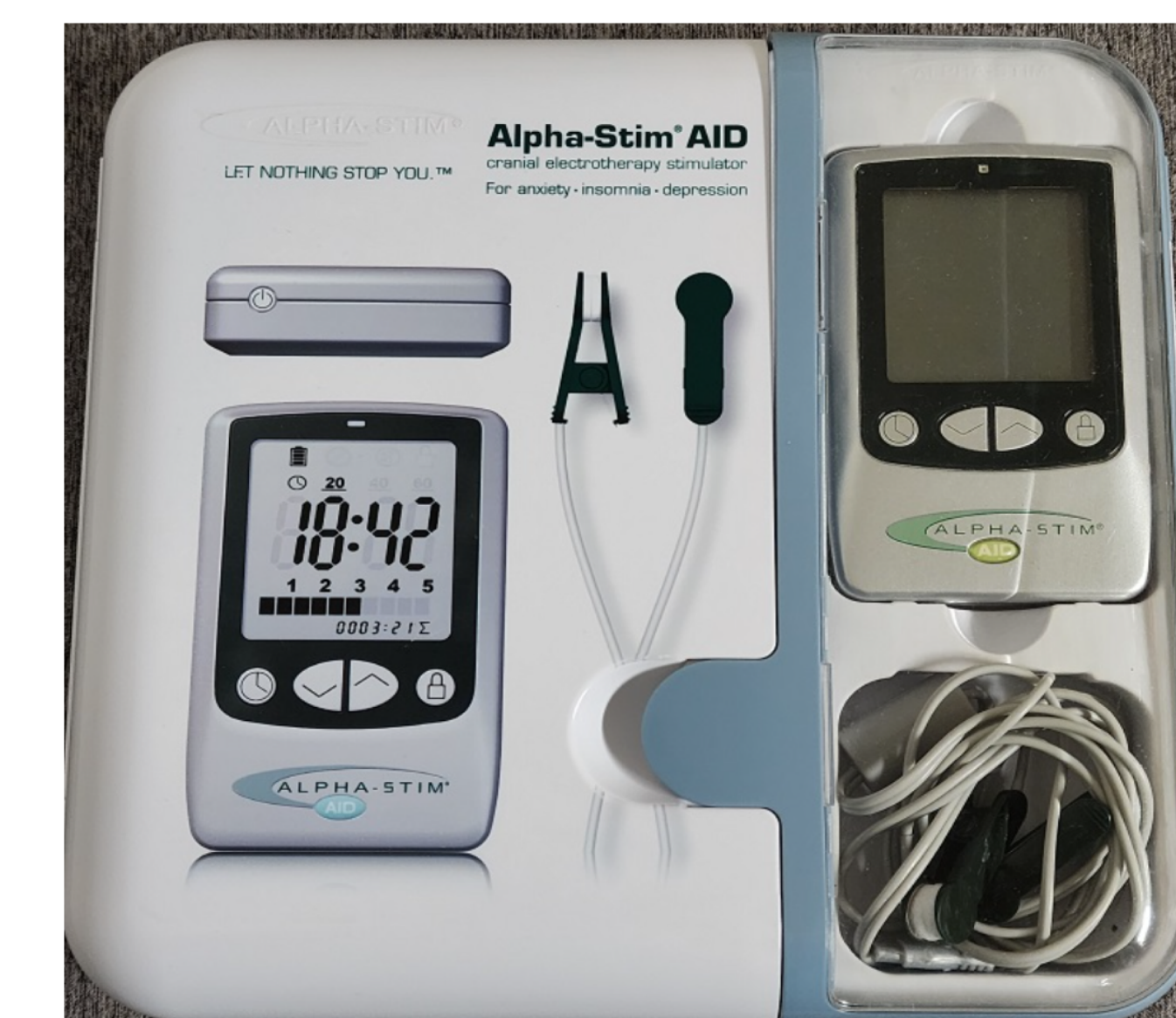


Figure 4: Alpha-Stim® device's simplistic packaging and design



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