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The efficacy of automated/electrical twitch obtaining intramuscular stimulation (atoims/etoims) for chronic pain control: evaluation with statistical process control methods.

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Abstract

INTRODUCTION:

Automated and/or electrical twitch-obtaining intramuscular stimulation (ATOIMS & ETOIMS) evoke twitches at/or near motor end plate zones to relieve muscle pain.

OBJECTIVES:

To demonstrate that pain levels recorded daily by patients enable statistical process control (SPC) analysis of ATOIMS & ETOIMS effects over time.

METHODS:

Four chronic fibromyalgic patients received ATOIMS & ETOIMS treatments to bilateral C3-C8 and L3-S1 myotomes and recorded daily pain on a visual analogue scale. Mechanical stimulation with ATOIMS involved a custom device to insert, oscillate and retract a monopolar needle (MN) at 2 Hz x2s. ETOIMS involved manual insertion of the MN and stimulating with 5 Volts, 0.5 ms pulse duration at 2 Hz for 2s to multiple sites. Positive outcome measures include two pain scales reduction.

RESULTS:

Patient 1-4 had 89, 38, 40, 36 treatments during a follow-up time of 625, 1018, 378, 466 days with 5.4 +/- 3.7, 8.0 +/- 4.9, 4.2 +/- 2.4 and 4.6 +/- 2.7 days between treatments (DBT) during the first 6 months and 4.7 +/- 3.0, 21.8 +/- 15.6, 6.2 +/- 4.4 and 4.3 +/- 2.5 DBT respectively in the latter phase of the therapy. The average pain level (APL) in 1st week of treatment for patient 1-4 were 6.4 +/- 1.1, 3.7 +/- 1.1, 6.6 +/- 2.8 and 7.5 +/- 0.4 and in the last week of treatment were 4.5 +/- 0.4, 1.2 +/- 0.1, 4.2 +/- 1.0 and 4.7 +/- 0.7 respectively. APL correlated negatively with time during the first 6 months for patients 2-4 and also after 6 months for patients 4 & 1 who had unchanged and reduced DBT respectively. APL correlated positively with time for patient 2 with no correlation for patient 3 (both had increased DBT) after 6 months.

CONCLUSIONS:

Patients will chronically record their pain scales daily enabling analysis by SPC. ATOIMS & ETOIMS applied periodically can be helpful in relieving fibromyalgic pain.