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CLINICAL APPROACHES

Cytokine changes with microcurrent treatment of fibromyalgia associated with cervical spine trauma

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Summary *Objective:* Patients who have fibromyalgia syndrome (FMS) associated with cervical spine trauma have distinct pain descriptors and physical examination findings. Currently, there is no effective treatment for fibromyalgia. Microamperage current provides physiologic current flow and has been used in the treatment of some pain syndromes. In this uncontrolled retrospective analysis of patients receiving microcurrent treatment for fibromyalgia following cervical spine trauma, subjective pain scores are utilized as a primary outcomes measure. Accompanying changes in inflammatory cytokines are examined in a subgroup of the same patient population to test the hypothesis that microcurrent treatment produces substantial measurable objective and subjective outcomes supporting the efficacy of this treatment.

Methods: A total of 54 consecutive patients meeting the ACR diagnostic criteria for fibromyalgia were treated with microamperage current. Blood samples on a subset of six patients were analyzed using a recycling immunoaffinity chromatography system to identify objective changes accompanying subjective pain scores.

Results: Five patients did not tolerate treatment. The remaining 49 patients reported reduction in pain on a 10-point visual analog scale (VAS) from an average baseline score of 7.3 ± 1.2 to 1.3 ± 1.1 with the first treatment ($P < 0.0001$). Thirty-one patients reported symptomatic relief from fibromyalgia following an average of eight treatments. Median time to improvement was 2 months and the actuarial recovery curve reached 100% at 4.5 months. Interleukin 1, interleukin 6 and substance P levels were all reduced from 330 to 80 pg/ml ($P = 0.006$), from 239 to 76 pg/ml ($P = 0.0008$), and from 180 to 54 pg/ml ($P = 0.0001$), respectively, in the first 90 min treatment. Tumor necrosis factor (TNF)-α was also reduced from 305 to 78 pg/ml ($P = 0.003$). During the same time period, beta-endorphin and cortisol both increased from an average of 8.2 to 71.1 pg/ml ($P = 0.003$), and 14.7 to 109.3 μg/ml ($P = 0.03$), respectively.

Conclusion: In a retrospective study based on analysis of subjective VAS pain scores for 54 patients, symptoms of fibromyalgia following cervical spine trauma were successfully

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