Thyroid Hormone (T3) Is Effective In Treating Fibromyalgia

! **Effectiveness and safety of T3 (triiodothyronine) therapy for euthyroid fibromyalgia: a double-blind placebo-controlled response-driven crossover study.** John C. Lowe, MA, DC, Richard L. Garrison, MD, Alan J. Reichman, MD, Jackie Yellin, BA, Mervianna Thompson, RN, MSN, APN, Daniel Kaufman, MD: *Clinical Bulletin of Myofascial Therapy*, 2(2/3):31-58, 1997.

Background. Clinical features of fibromyalgia syndrome (FMS) resemble those of hypothyroidism although some patients have normal thyroid function tests results. The hypothyroid-like FMS features of these patients may result from partial cellular resistance to thyroid hormone. We treated euthyroid FMS patients with T3 to see if they would respond as do patients with peripheral thyroid hormone resistance syndrome: significant therapeutic effects with supraphysiologic dosages, without target tissue responses typical of thyrotoxicosis.

Methods. Seven patients were alternately treated with T3 and placebo over an 8-month period.
Phase crossover was response-driven, based on changes in measures of mean tender point sensitivity by algometry, mean symptom intensity by visual analog scales, and mean pain distribution by the percentage method and the ACR criteria. Testing for adverse responses to supraphysiologic dosages of T3 was performed for heart, bone, muscle, and liver.

Results. Significant therapeutic effects were shown in T3 phases compared to placebo phases on all measures of FMS status. Effective T3 dosages were supraphysiologic, and ranged from 93.75-to-150 µg. Available patients had maintained improvement at 2-month follow-up. Tests showed no clinically significant cardiac, osseous, muscle, or hepatic adverse effects.

Conclusions. In this study, supraphysiologic dosages of T3 were safe and significantly effective in the treatment of euthyroid FMS. Though these dosages produced thyroid function test results indicative of hyperthyroidism, our patients had no clinically significant adverse target tissue effects. Results suggest that euthyroid FMS is a clinical phenotype of partial peripheral resistance to thyroid hormone. We recommend that further studies be done to answer the questions: Are euthyroid FMS patients partially resistant to thyroid hormone? And if so, what are the molecular mechanisms of the resistance? Further testing is also necessary to establish the long-term safety of T3 therapy.

! **The process of change during T3 treatment for euthyroid fibromyalgia: a double-blind placebo-controlled crossover study.** John C. Lowe, MA, DC, Alan J. Reichman, MD, Jackie Yellin, BA: *Clinical Bulletin of Myofascial Therapy*, 2(2/3):91-124, 1997.

Methods. Comparative effects of placebos and T3 were tested on four euthyroid fibromyalgia patients over a period of nine months. Each patient completed alternately two T3 phases and two placebo phases, the sequence depending on the medication with which each was randomly assigned to begin. The ABAB single subject crossover design enabled each patient to serve as her own control. Phase crossover was response-driven, based on changes in measures of mean tender point sensitivity by algometry, pain distribution by the percentage method, and mean symptom intensity by visual analog scales. Changes were evaluated by visual inspection of graphs and single subject statistical analyses. Traditional group comparison statistics were performed for changes on the Fibromyalgia Impact Questionnaire, the Zung's Depression Scale, and pain distribution according to the ACR criteria.

Results. Quantitative analysis of trends of repeated measures across phases showed significant improvement in fibromyalgia status in T3 phases compared to baseline and placebo phases. Testing throughout the 9-month study and at 4-month follow-up showed no clinically significant adverse target tissue effects. No patient met the diagnostic criteria for fibromyalgia by the end of the study.

Conclusion. Repeated administration and withdrawal of T3 corresponded to significant improvement and deterioration in fibromyalgia measures during this study. It is highly probable, then, that improvement in fibromyalgia status of our four patients was functionally related to their use of supraphysiologic dosages of T3 (effective range: 118.75-to-162.50 µg). These dosages were shown to be safe at 4-month follow-up. Further testing is necessary to establish long-term safety.

! **Triiodothyronine (T3) treatment of euthyroid fibromyalgia: a small-n replication of a double-blind placebo-controlled crossover study.** John C. Lowe, MA, DC, DC, Richard L. Garrison, MD, Alan Reichman, MD, and Jackie Yellin, BA: *Clinical Bulletin of Myofascial Therapy*, 2(4):71-88, 1997.

Background. In a previous study, T3 was found to be highly effective compared to placebos in the treatment of euthyroid fibromyalgia. In this replication study, the comparative effects of placebos and T3 were tested with 4 euthyroid fibromyalgia patients. A randomized double-blind placebo-controlled crossover design was used.

Methods. Patients completed alternately two T3 phases and two placebo phases. The sequence for each patient depended on the medication with which she was randomly assigned to begin. Crossover from one phase to another was response-driven, based on changes in 3 measures of fibromyalgia status: mean

tender point sensitivity by algometry, mean symptom intensity by visual analog scales, and pain distribution by the percentage method. Measurements taken repeatedly during each phase were used to determine when a patient's scores warranted a crossover. Patients also completed the Fibromyalgia Impact Questionnaire and Zung's Self-Rating Depression Scale at the end of each phase.

Results. Paired-samples *t*-tests showed a highly significant difference between scores in placebo and T3 phases. Serial ECGs throughout the 8-month study, and urine and serum calcium, phosphorus, creatinine, serum alkaline phosphatase, and bone densitometry at 6-month follow-up revealed no adverse effects from T3.

Conclusion. The highly significant difference between fibromyalgia measures in placebo and T3 phases, despite the small N, indicates a powerful therapeutic effect of supraphysiologic dosages of T3. Despite low TSH and free and total T4 levels, and high free T3 levels, there was no evidence of thyrotoxicosis. Long-term safety of T3 use by euthyroid fibromyalgia patients has not yet been established.