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## Thioctic acid and acetyl-L-carnitine in the treatment of sciatic pain caused by a herniated disc: a randomized, double-blind, comparative study.

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### Abstract

**BACKGROUND AND OBJECTIVE:** Sciatica is a painful condition characterized by radiating leg pain that most commonly originates from a herniated disc in the lumbar or sacral spine. Although sciatic pain is typically self-limiting, pharmacological analgesic therapy forms the mainstay of treatment. Acetyl-L-carnitine (levacecarnine; ALC) is a naturally occurring substance that promotes peripheral nerve regeneration and has been shown to have analgesic effects in patients with peripheral neuropathies of diabetic, HIV-related or chemotherapeutic origin. Thioctic acid, a key compound in oxidative metabolism, has antioxidant properties that may help the recovery of nerve functionality and decrease neuropathic pain. This study aimed to compare, for the first time, the efficacy of oral treatment with ALC or thioctic acid in patients with peripheral neuropathic (sciatic) pain associated with a herniated disc.

**METHODS:** This was a randomized, double-blind trial conducted in a hospital setting. A total of 64 consecutive patients (mean age 61 years; range 29-85) with acute backache and moderate sciatica were recruited. Patients in group 1 (n = 33) received ALC 1180 mg/day; patients in group 2 (n = 31) received thioctic acid 600 mg/day. The study period was 60 days. The primary efficacy endpoint was change in clinical signs and symptoms of sciatica, as measured on the Neuropathy Impairment Score in the Lower Limbs (NIS-LL) questionnaire, the Neuropathy Symptoms and Change in the Lower Limbs (NSC-LL) questionnaire, and the Total Symptom Score (TSS) questionnaire. The secondary efficacy endpoint was improvement in neurological deficit (as measured by electromyography) compared with baseline.

**RESULTS:** Both treatments produced significant improvements from baseline in neuropathy on electromyography at day 60, and greater mean improvements were observed with thioctic acid (-0.19 +/- 0.29 vs baseline) than with ALC (-0.09 +/- 0.40 vs baseline), although the between-group difference was not statistically significant. Thioctic acid produced significantly greater mean improvements than ALC from baseline for NIS-LL (-2.52 +/- 1.50 vs -1.48 +/- 1.37, respectively), NSC-LL (-2.16 +/- 1.37 vs 1.42 +/- 1.37, respectively) and TSS (-1.90 +/- 1.08 vs 1.18 +/- 1.01, respectively) scores (p < 0.05 for all comparisons). More patients receiving thioctic acid than ALC reported a decreased need for analgesia (71.0% vs 45.5%, respectively; p < 0.05) and neither treatment impacted significantly on sleep quality.

**CONCLUSIONS:** Thioctic acid 600 mg/day appears to be at least as effective as ALC in the treatment of sciatic pain caused by a herniated disc and may be associated with an improvement in symptom scores and reduced need for analgesia. However, because of the limited number of patients evaluated and the lack of a placebo control in this trial, further studies are warranted in order to provide more definitive results.

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