Abstracts

Articles appearing in the September 2017 issue

Lipoic acid in secondary progressive MS: A randomized controlled pilot trial

Objective To determine whether lipoic acid (LA), an endogenously produced antioxidant, slowed the whole-brain atrophy rate and was safe in secondary progressive multiple sclerosis (SPMS).

Methods Patients with SPMS aged 40–70 years enrolled in a single-center, 2-year, double-blind, randomized trial of daily oral 1,200 mg LA vs placebo. Primary outcome was change in annualized percent change brain volume (PCBV). Secondary outcomes were changes in rates of atrophy of segmented brain, spinal cord, and retinal substructures, disability, quality of life, and safety. Intention-to-treat analysis used linear mixed models.

Results Participation occurred between May 2, 2011, and August 14, 2015. Study arms of LA (n = 27) and placebo (n = 24) were matched with mean age of 58.5 (SD 5.9) years, 61% women, mean disease duration of 29.6 (SD 9.5) years, and median Expanded Disability Status Score of 6.0 (interquartile range 1.75). After 2 years, the annualized PCBV was significantly less in the LA arm compared with placebo (−0.21 [standard error of the coefficient estimate (SEE) 0.14] vs −0.65 [SEE 0.10], 95% confidence interval [CI] 0.157–0.727, $p = 0.002$). Improved Timed 25-Foot Walk was almost but not significantly better in the LA than in the control group (−0.535 [SEE 0.358] vs 0.137 [SEE 0.247], 95% CI −1.37 to 0.03, $p = 0.06$). Significantly more gastrointestinal upset and fewer falls occurred in LA patients. Unexpected renal failure (n = 1) and glomerulonephritis (n = 1) occurred in the LA cohort. Compliance, measured by pill counts, was 87%.

Conclusions LA demonstrated a 68% reduction in annualized PCBV and suggested a clinical benefit in SPMS while maintaining favorable safety, tolerability, and compliance over 2 years.

ClinicalTrials.gov identifier NCT01188811.

Classification of evidence This study provides Class I evidence that for patients with SPMS, LA reduces the rate of brain atrophy.

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Glucocorticoid-associated blood glucose response and MS relapse recovery

Objective To determine the relationship between multiple sclerosis (MS) relapse recovery and blood glucose (BG) response to IV methylprednisolone (IVMP) treatment.

Methods We retrospectively identified 36 patients with MS admitted for IVMP treatment of acute relapse who had adequate data to characterize BG response, relapse severity, and recovery. The relationship between glucocorticoid-associated nonfasting BG (NFBG) and relapse recovery was assessed.

Results Highest recorded nonfasting BG (maximum NFBG [maxNFBG]) values were significantly higher in patients with MS without relapse recovery compared with those with recovery (271 ± 68 vs 209 ± 48 mg/dL, respectively; $p = 0.0045$). After adjusting for relapse severity, patients with MS with maxNFBG below the group median were 6 times (odds ratio [OR] 6.01; 95% confidence interval [CI] 1.08–33.40; $p = 0.040$) more likely to experience relapse recovery than those with maxNFBG above the group median. In a multiple regression model adjusting for age, sex, and relapse severity, a 1-mg/dL increase in the maxNFBG was associated with 4.5% decrease in the probability of recovery (OR 0.955; 95% CI 0.928–0.983; $p = 0.002$).

Conclusions These findings suggest that higher glucocorticoid-associated NFBG values in acutely relapsing patients with MS are associated with diminished probability of recovery. This relationship could reflect steroid-associated hyperglycemia or insulin resistance, defects in non-steroid-associated (e.g., prerelapse) glucose metabolism, or both. This study included only those admitted for an MS relapse, and it is this subset of patients for whom these findings may be most relevant. A prospective study to evaluate glucose regulation and MS relapse recovery in a broader outpatient MS population is underway.

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