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ORIGINAL ARTICLE

Efficacy of Melatonin on Serum Pro-inflammatory Cytokines and Oxidative Stress Markers in Relapsing Remitting Multiple Sclerosis

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Multiple sclerosis (MS) is a chronic inflammatory disease, which leads to focal plaques of demyelination and tissue injury in the central nervous system (CNS). Neuroinflammation and oxidative stress are involved in the pathogenesis of MS, promoting tissue damage and demielinization. Current research findings suggest that melatonin has antioxidant and neuroprotective effects. The aim of this study was to evaluate the efficacy of melatonin on serum pro-inflammatory cytokines and oxidative stress markers in relapsing-remitting multiple sclerosis (RRMS). 36 patients diagnose with RRMS treated with Interferon β-1b (IFNβ-1b) were enrolled in a double bind, randomized, placebo controlled trial. The experimental group received orally 25 mg/d of melatonin for 6 months. After melatonin administration, we observed a significant decrease in serum concentration of pro-inflammatory cytokines and oxidative stress markers; 18% for TNF-α ($p < 0.05$), 34.8% for IL-1β ($p < 0.05$), 34.7% for IL-6 ($p < 0.05$), 39.9% for lipoperoxides (LPO) ($p < 0.05$) and 24% for nitric oxide catabolites (NOC) levels ($p < 0.05$), compared with placebo group. No significant difference in clinical efficacy outcomes were found between groups. Melatonin treatment was well tolerated and we did not observe significant differences in rates of side effects between the two groups. We concluded that melatonin administration during 6 months period is effective in reducing levels of serum pro-inflammatory cytokines and oxidative stress markers in patients with RRMS. These data support future studies evaluating the safety and effectiveness of melatonin supplementation in RRMS patients.

Key Words: Multiple sclerosis, Melatonin, Oxidative stress, pro-inflammatory cytokines, Depression.

Introduction

MS is a chronic, inflammatory disease of the central nervous system (CNS) (1), which affects approximately 2.3 million people worldwide (2). MS is caused by complex interactions between genetic susceptibility and environmental factors (3,4). Several patterns of MS remission exacerbation have been identified and described; in relapsing-remitting multiple

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