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EXERCISE AND SUPPLEMENTATION WITH TAURINE IN THE ELDERLY: EFFECTS ON IMMUNE AND BLOOD-BRAIN BARRIER INTEGRITY MARKERS

Matheus Uba Chupe¹; Guilherme Furtado¹; Luciele Minuzzi¹; Edith Filaire²; Ana Maria Teixeira¹

INTRODUCTION

The blood-brain barrier (BBB) does not allow any bulk flow of substances between the blood and the brain, and acts as a “gate” that protects the neurons. Dysfunctions in this structure are directly associated with the appearance of neurodegenerative diseases, mainly in the elderly⁽¹⁾. The widening of inflammation and oxidative processes that occur with aging decrease the BBB integrity and contribute to increased degeneration⁽²⁾. Both exercise and nutritional interventions have proven to be effective in promoting health benefits. However, their effects on the integrity of the BBB are still unknown. The objective of this work was to study the effect of exercise and supplementation with taurine on inflammatory cytokines and S100 β and NSE levels.

METHODS

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A total of 48 elderly women (age 83,58 $\pm$ 6,9 years) participated in the study and were divided into four groups: combined exercise training (CET: n=13), taurine supplementation (TAU: n=12), exercise associated with taurine (CET+TAU: n=11) and control group (CG: n=12). CET was done 3 times per week, at 60-65% of MHR intensity. Taurine supplementation was given (1,5g/day) during 14 weeks. Interventions lasted 14 weeks and all subjects were evaluated before (T0) and after (T1) this period. The CG did not undergo exercise or supplementation programs. Plasma and serum concentrations of S100 β , NSE, MPO, MMP-9, IL-10, IL1-ra, IL-1b, TNF- α and IL-17 were determined. RESULTS: Levels of IL-17 and S100 β

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correlated in both moments ($p < 0,01$). The CET group showed a subtle increase in IL-1ra and decrease in TNF- α and S100 β levels (+33%, -15%, and -53%, respectively). The TAU group showed a decrease in IL-1b, MPO and MMP-9 levels ($p < 0.05$), while no differences were observed for these variables in Ex+TAU between T0 and T1. S100 β levels tended to increase only in the CG (+26%), and differences in this marker were observed between groups at T1 ($p < 0,01$).

CONCLUSION

Exercise alone promoted an anti-inflammatory effect. Nevertheless, decrease in MPO concentration was only observed in the groups supplemented with taurine. Combination of exercise and taurine did not promote significant added changes in inflammatory or oxidative stress markers when compared to the isolated interventions probably due to a compensation mechanism. However, exercise and taurine (alone or associated) promoted the maintenance of the S100 β and NSE levels when compared to the CG, which suggests that, even in older ages, BBB structure may benefit from the exercise and taurine supplementation induced environment changes.

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