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Post-ischaemic treatment with melatonin and calpeptin exerts neuroprotective effects against ischaemia/reperfusion injury in a rat model of focal cerebral ischaemia

Y Feng, RTF Cheung
Department of Medicine, The University of Hong Kong, Queen Mary Hospital, Hong Kong

Introduction: Melatonin is a potent antioxidant. Previously, we have demonstrated beneficial effects of pretreatment with melatonin in rodent models of focal cerebral ischaemia. Cerebral ischaemia increases intracellular concentration of calcium ion and activates several calcium-dependent proteases such as calpain. Calpeptin is a novel calpain inhibitor. The aim of this study was to investigate the neuroprotective role of post-ischaemia treatment with melatonin and/or calpeptin in transient focal cerebral ischaemia.

Methods: Male Sprague Dawley rats underwent right-sided endovascular middle cerebral artery occlusion (MCAO) for 90 minutes following by 24 hours of reperfusion. An intracerebroventricular injection was initiated 10 to 15 minutes after the onset of reperfusion. Neurological behaviour was assessed using Neurological Deficit Scoring System (NDSS) test, and cerebral infarction volumes were evaluated using tetrazolium staining.

Results: Treatment with either melatonin or calpeptin reduced infarction volume and NDSS score in a dose-dependent manner. Nevertheless, only the high-dose calpeptin group (50 μg/kg) improved both infarction volume (P=0.046) and NDSS score (P=0.001); the combination treatments of the medium-dose calpeptin (15 μg/kg) and low-dose melatonin (50 μg/kg) exerted synergistic effects.

Conclusion: Our results suggest that post-ischaemia treatment with melatonin and calpeptin via intracerebroventricular route exerts neuroprotective effects against transient focal cerebral ischaemia.

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Cognitive function in systemic lupus erythematosus patients with a history of neuropsychiatric manifestations: a longitudinal study

Y Gao[1], Y Lo[1], J Wan[2], YY Lau[2], CS Lau[1], MY Mok[1]
Departments of [1]Medicine and [2]Psychology, The University of Hong Kong, Hong Kong

Background: Cognitive impairment is commonly reported in patients with systemic lupus erythematosus (SLE) and its associations with neuropsychiatric involvement (NPSLE) and psychiatric factors have been inconsistently reported in the literature.

Objective: To evaluate full neurocognitive function in relation to psychiatric factors including anxiety and depression in NPSLE patients longitudinally compared to matched controls.

Methods: Full neurocognitive battery was performed by trained psychologist at two time-points 12 months apart. Depressive and anxiety symptoms were measured by Hospital Anxiety and Depression Scale (HADS).

Results: A total of 18 NPSLE and 18 non-NPSLE patients matched to age, sex, and disease duration as well as 16 age- and sex-matched healthy subjects were recruited. NPSLE patients consistently reported more cognitive impairment and anxiety symptoms than non-NPSLE patients (both P=0.02) over both time-points. NPSLE patients had worse performance on three memory tests whereas non-NPSLE patients only showed significantly lower score for Auditory-Verbal Learning Test recognition compared with healthy subjects by post-hoc analysis. Applying age- and education-adjusted Chinese norms, NPSLE patients had significantly worse performance than non-NPSLE patients over five cognitive domains including simple and complex attention, memory, reasoning, and visuospatial function which remained significant when adjusted for HADS-A.

Conclusions: Compared to non-NPSLE patients, NPSLE patients reported more cognitive and anxiety symptoms and had significantly worse cognitive functions involving simple and complex attention, memory, reasoning, and visuospatial domains. Unlike non-NPSLE patients, they failed to demonstrate learning effect upon re-evaluation over 12 months.