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Poster Presentation

Neonatal Homocysteine Administration Induces Cerebellar Toxicity Via Oxidative Stress in Rats

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Abstract

Several in vitro studies have showed the neurotoxic effect of homocysteine (Hcy) to various neuronal types, including cerebellar Purkinje neurons. In this study, we investigated whether the Hcy has neurotoxic effects on the rat pup's cerebellum in the postnatal period that it continues to development. Pups rats divided into control and Hcy group. Hcy administration (0.3–0.6 mmol/g body weight) was initiated on postnatal day (PD) 4 and continued until PD 25 by subcutaneous injection twice on a day with 8 hours interval. On PD 25, the animals were decapitated and the cerebellums were removed. The body and cerebellum weight were measured and the cerebellum to body weight ratio was calculated by dividing the cerebellum weight by the body weight of pups at sacrifice. Level of lipid peroxidation, the glutathione peroxidase (GPx) activity in the cerebellum were determined. Also, caspase3 protein level was assayed by Elisa kit in the cerebellum. Our results demonstrated that chronic administration Hcy significantly decreased GPx activity and increased lipid peroxidation in the cerebellum. The cerebellum weight and the cerebellum to body weight ratio significantly reduced in Hcy treated rat compared with the control group. Moreover, Hcy increased caspase 3 protein levels in Hcy treated group. Our results showed systemic administration of Hcy induces cerebellar toxicity through oxidative stress.

Keywords: Homocystein, Oxidative Stress, Cerebellum

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