**Unilateral 6-hydroxydopamine (6-OHDA) Striatal Lesions Associated with Earlier Onset Parkinsonian Phenotype in Creatine Transporter Deficient Mice as compared to Wild Type Controls**

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**Objective:** Parkinson’s disease (PD) is a neurodegenerative disease that results from death of dopamine-generating cells in the substantia nigra. The etiology of PD may involve oxidative stress and mitochondrial dysfunction. Creatine has anti-oxidative properties and is currently in stage III clinical trials to test efficacy for PD treatment. Creatine Transporter (CrT) Deficiency (CTD) is an x-linked genetic disease in which patients lack creatine in the brain. A CTD mouse model, which also lacks creatine in the brain, was used to characterize the role creatine might play in PD.

**Methods:** CrT knockout (CrT-/y) and wild-type controls (WT) (n=5/genotype) received stereotaxic unilateral striatal 6-OHDA lesions. 6-OHDA is a neurotoxic compound that selectively destroys dopaminergic and noradrenergic neurons in the brain and is used to model Parkinson’s disease in murine models. Limb-use asymmetry, general motor control, and gait patterns were assessed in the mice 7 days before and 3, 7, 14, 21, 28 and 35 days post-surgery.

**Results:** Two weeks post-surgery, CrT-/y mice showed deficits in limb-use asymmetry tests compared with WT, who showed no changes. Both groups showed deficits in contralateral paw use three weeks following surgery; however no effects of gene were observed.

**Conclusion:** Creatine appears to have neuroprotective effects that attenuate the progression of PD. These data reinforce the role of Cr in PD that have been observed in the clinical trials of Cr. While more work is required, the results of this study suggest that CTD patients should be monitored for the early onset of PD.

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