

AS06-03 - LITHIUM: NEUROIMAGING EVIDENCE OF NEUROPROTECTION AND ITS IMPLICATION FOR BIPOLAR DISORDER

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Introduction: Neuroprotective effects of lithium have been well documented in tissue cultures and animal models. The evidence for lithium related neuroprotection in human subjects is limited and inconsistent, likely due to methodological heterogeneity.

Aims: To investigate the effects of lithium on brain chemistry and structure, we recruited bipolar patients selected for substantial illness burden and varied the exposure to lithium by using strict inclusion criteria.

Methods: We obtained 1.5T magnetic resonance imaging data from 27 bipolar patients with at least 2 years of ongoing lithium treatment (Li group), 16 subjects with < 3 months lifetime exposure to lithium >2 years ago (non-Li group) and 21 healthy controls. Patient groups had to have at least 10 years of illness and 5 episodes.

Results: The non-Li group had significantly lower hippocampal volumes ($t=4.68$, corrected $p < 0.05$) and prefrontal cortex N-acetyl aspartate (NAA) levels ($t=-2.91$, corrected $p < 0.05$) than controls, who showed comparable hippocampal volumes and NAA levels to the Li treated subjects. Duration of illness was negatively associated with NAA levels only in the non-Li, but not the Li group.

Conclusions: Among patients selected for substantial illness burden, only those with no or minimal lifetime Li exposure had significantly lower prefrontal NAA levels and hippocampal volumes than controls. Patients with at least 2 years of ongoing Li treatment showed no such changes, despite substantial burden of illness. These findings provide indirect support for neuroprotective effects of lithium and negative effects of illness burden on brain chemistry and structure in patients with bipolar disorders.