

Little, A.R. and O'Callaghan, J.P.: Treatment with corticosterone suppresses the early induction of MCP-1 after neuronal injury but does not prevent gliosis. Soc. Neurosci. Abstracts 26: 1944, 2000.

Cytokines are proposed to play a role in central nervous system responses to injury and disease. One such response is neuronal damage-induced glial activation (gliosis). Here, we used the neurotoxic organometal, trimethyltin (TMT), to damage hippocampal pyramidal cells and elicit a glial response. In contrast to ischemic or traumatic brain injury models, TMT-induced neuronal damage is not associated with a compromised blood-brain barrier, nor is it associated with an inflammatory response, as evidenced by a lack of induction in TNF-alpha or IL-1B. Other chemokines and cytokines however, have been implicated in neural degeneration/regeneration responses and in the induction of gliosis. We confirmed the injury-associated expression of the chemokine monocyte chemoattractant protein (MCP)-1, in the TMT injury model and evaluated the effects of immune suppression on MCP-1 in relation to injury-induced gliosis. Induction of MCP-1 mRNA was assessed using semi-quantitative and quantitative RT-PCR (Taqman) at 2,5,& 8 hrs and 1,2,3,5,7 & 21 days after TMT (8 mg/kg, i.p.). Corticosterone (CORT) was administered in the drinking water (200 µg/ml). MCP-1 was elevated 160% 5 days post TMT and increased until day 21. GFAP mRNA did not begin to increase until day 3, followed by an increase in GFAP (protein) at day 5. MCP-1 remained at control levels at all time points in the CORT/TMT group. These results demonstrate an involvement of MCP-1 in neural injury. MCP-1 and other inflammatory mediators do not appear to be required for glial activation because suppression of pro-inflammatory cytokines and chemokines by CORT does not alter the injury-induced glial response.