Presentation Abstract

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Program#/Poster#: 770.04/X16

Presentation Title: The effect of immunizing with neural-derived peptides on the expression of inflammatory genes depends on the severity of spinal cord injury.

Location: Hall F-J

Presentation time: Wednesday, Oct 17, 2012, 11:00 AM -12:00 PM

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Abstract: Several strategies have been explored in order to control the harmful effects of the inflammatory response seen after spinal cord injury (SCI). Protective autoimmunity (PA) is an innovative strategy, based on the modulation of the inflammatory response. PA is elicited by immunizing with neural-derived peptides such as A91 and Cop-1. Although the use of this therapy is neuroprotective, the mechanisms by which PA is exerting its beneficial effects are not completely clear. Studies demonstrate that immunizing with A91 or Cop-1 induces an anti-inflammatory Th2-type response. Therefore the effect of PA action could be through the downregulation of proinflammatory gene expression and upregulation of anti-inflammatory gene expression, which result in a modulated inflammatory response; preventing the neural destruction seen after SCI. In order to test this hypothesis, the expression of IL-10, IL-4, SOC3, IFN-γ and TNF-α were explored in SCI rats using quantitative RT-PCR. Animals were subjected to either a moderate or a severe SCI. After 60 min, animals were immunized with A91 or Cop-1 peptides (vehicle was used as a control). Gene expression was evaluated 7 days after injury in all groups. In the case of moderate SCI, the animals presented high anti-inflammatory expression levels. The neuroprotective effect observed in moderate SCI consisted of an increased IL-10 and IL-4 gene expression (anti inflammatory genes) and a decreased expression of the TNF-α. After severe SCI, there was a significant decrease in the expression of all tested genes, the expression was barely detected. Only the expression of SOC3 was significantly increased in peptide-immunized rats. Results suggest that the severity of the injury determines the neuroprotective effect caused by A91 or Cop-1 immunization. This response surely has a direct effect on other autodestructive mechanism such as nitric oxide production and lipid peroxidation. Studies published by our work group have demonstrated the effect of immunizing with neural-derived peptides on the previously mentioned processes in moderate SCI.

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SPINAL CORD INJURY

PROTECTIVE AUTOIMMUNITY

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