

Microglia Activity and Induction of Mechanical Allodynia after Mincle Receptor Ligand Injection in Rat Spinal Cord

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Abstract : Mincle is expressed in macrophages and is members of immunoreceptors induced after exposure to various stimuli and stresses. Mincle receptor activation promotes the production of these substances by increasing the transcription of inflammatory cytokines and chemokines. Cytokines, which play an important role in the initiation and maintenance of such inflammatory pain diseases, have a significant effect on sensory neurons in addition to their enhancement and inhibitory effects on immune and inflammatory cells as mediators of cell interaction. Glial cells in the central nervous system play a critical role in development and maintenance of chronic pain states. Microglia are tissue-resident macrophages in the central nervous system, and belong to a group of mononuclear phagocytes. In the central nervous system, mincle receptor is present in neurons and glial cells of the brain. This study was performed to identify the Mincle receptor in the spinal cord and to investigate the effect of Mincle receptor activation on nociception and the changes of microglia. **Materials and Methods:** C-type lectins (Mincle) was identified in spinal cord of Male Sprague-Dawley rats. Then, mincle receptor ligand (TDB), via an intrathecal catheter. Mechanical allodynia was measured using von Frey test to evaluate the effect of intrathecal injection of TDB. **Result:** The present investigation shows that the intrathecal administration of TDB in the rat produces a reliable and quantifiable mechanical hyperalgesia. In addition, The mechanical hyperalgesia after TDB injection gradually developed over time and remained until 10 days. Mincle receptor is identified in the spinal cord, mainly expressed in neuronal cells, but not in microglia or astrocyte. These results suggest that activation of mincle receptor pathway in neurons plays an important role in inducing activation of microglia and inducing mechanical allodynia.

Keywords : mincle, spinal cord, pain, microglia

Conference Title : ICPMM 2018 : International Conference on Pain Medicine and Management

Conference Location : London, United Kingdom

Conference Dates : May 14-15, 2018