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Intrathecal siRNA against Toll-like receptor 4 reduces nociception in a rat model of neuropathic pain

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Abstarc :

Background: Neuropathic pain is characterized by hyperalgesia, allodynia and spontaneous pain. It often occurs as a result of injury to peripheral nerves, dorsal root ganglions (DRG), spinal cord, or brain. Recent studies have suggested that Toll-like receptor 4 (TLR4) might play a role in neuropathic pain. **Methodology/Principal Findings**: In this study, we investigated the role of TLR4 in a rat chronic constriction injury (CCI) model and explored the feasibility of treating neuropathic pain by inhibiting TLR4. Our results demonstrated that intrathecal siRNA-mediated suppression of TLR4 attenuated CCI-induced mechanical allodynia and thermal hyperalgesia through inhibiting the activation of NF-?B p65 and production of proinflammatory cytokines (e.g., TNF-? and IL-1?). **Conclusions/Significance**: These findings suggest that suppression of TLR4 mediated by intrathecally administered siRNA may be a new strategy for the treatment of neuropathic pain.

Key Word :
Toll-like receptor 4, neuropathic pain, NF-?B, RNA interference, IL-1?, TNF-?

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