통증 및 근골격재활
발표일시 및 장소 : **10 월 27 일(토) 14:20-14:30 Room B(5F)**

OP1-3-3

CδG Attenuates Allodynia in Chronic CRPS by Inhibiting Spinal Astrocyte-Mediated Neuroinflammation

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Complex regional pain syndrome (CRPS) is a painful, disabling, and often chronic condition with an estimated incidence rate of 26.2 per 100,000 per person-years. Although CRPS is described as a single disease, it is usually categorized into two distinct phases: an acute stage of CRPS and a chronic stage of CRPS. Although the mechanisms supporting the chronic phases of CRPS are still very poorly understood, reactive astrocyte-mediated neuroinflammatory responses in the spinal dorsal horn have been identified as one of the major causes of central sensitization, and has been regarded as one of the causes of the chronic stage of CRPS in previous studies. CδG, which belongs to the lipocalin family, seems to act as an inhibitor of sphingosine-1 phosphatase (S1p) receptor. Here, we explored the anti-allodynia effects of CδG on a model of chronic CRPS induced and investigated the levels of the GFAP protein and the mRNA and protein levels of pro-inflammatory cytokines in the spinal cord, including interleukin-6 (IL-6) and tumor necrosis factor-α (TNF-α), C-C motif chemokine ligand 2 (CCL2). Chronic CRPS model using limb fracture and cast immobilization significantly induced mechanical allodynia. Intrathecal administration of CδG remarkably reversed the mechanical allodynia and reduced the mRNA levels of IL-6, TNF-α, and CCL2 in the spinal cord. And in immunohistochemistry (IHC) of the lumbar spinal cord, intrathecal administration of CδG remarkably reduced the level of GFAP protein compared with the control group. (Figure 1) Additionally, according to the in vitro data, the CδG treatment inhibited S1p-induced increases in the mRNA and protein levels of IL-6, TNF-α, and CCL2 and suppressed the NF-κB pathway by inhibiting the phosphorylation of NF-κB/p65 and the degradation of inhibitor of NF-κB (IκB) in astrocytes without toxicity to astrocytes. (Figure 2) Overall, the analgesic effect of CδG correlated with the inhibition of spinal reactive astrocyte-mediated neuroinflammation through the NF-κB pathway in a mouse model of chronic CRPS.

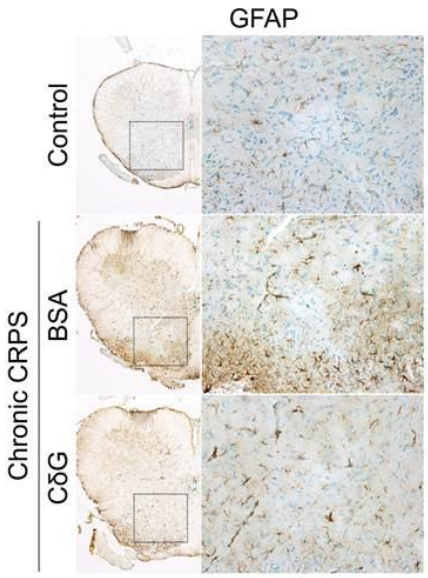

fig 1. Immunohistochemistry (IHC) of the lumbar spinal cord. Astrocyte activation is decreased by intrathecal administration of CδG

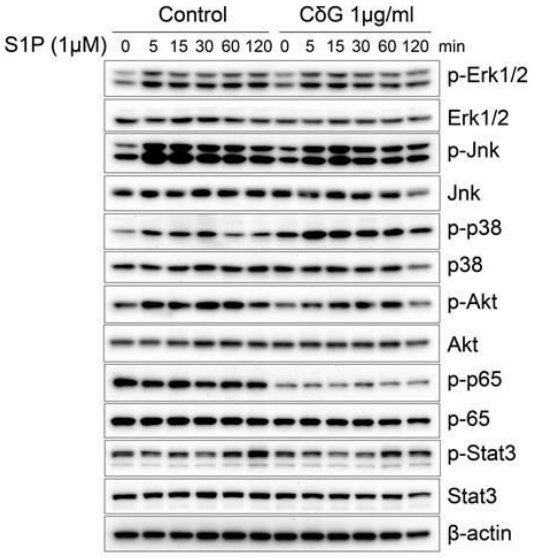

fig 2. In vitro data, the CδG treatment inhibited S1p-induced increases in the mRNA and protein levels of IL-6, TNF-α, and CCL2 and suppressed the NF-κB pathway by inhibiting the phosphorylation of NF-κB/p65