

Effects of Scolopendrid Water-Alcohol Extract Injection Applied to the Acupuncture Point on the Neuropathic Pain in Rats

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Abstract

Objective: In the present study, the effect of Scolopendrid Water-Alcohol Extract(SWAE) applied to acupuncture point BL23(Shinsu) on the neuropathic pain was examined. A common source of persistent pain in humans is the neuropathic pain. Anti-convulsant drugs are used to treat the neuropathic pain. In the oriental medicine, Scolopendrid was used for long time to treat convulsant syndrome and back pain, etc.

Methods: On the bases of the Scolopendrid clinical application, the effect of SWAE applied to the acupuncture point was tested in the rat model of neuropathic pain. Neuropathic pain was induced by tight ligation of L5 spinal nerve. When rats developed pain behaviors, One hundred microliter of SWAE was applied into the ipsilateral BL23 point at a dose of 10 mg/ml under enflurane anesthesia. The foot withdraw latency of the hind limb was measured for an indicator of pain level after each manipulation.

Results: SWAE injection increased the mechanical threshold of the foot in the rat model of neuropathic pain significantly for the duration of 4h, suggesting a partial alleviation of pain. SWAE applied to BL23 point produced a significant improvement of mechanical sensitivity of the foot lasting for at least 4h. However, neither contralateral BL23 point, ST25(Chonchu) point, nor LR3(Taechung) point produce as much increase of mechanical sensitivity as ipsilateral BL23 point. And, this increase of mechanical sensitivity was dose-dependent. The improvement of mechanical threshold was interpreted as an analgesic effect. In addition, the analgesic effect of Scolopendrid 4mg/kg injection is equivalent to that of gabapentin 50mg/kg injection. The relations between SWAE-induced analgesia and endogenous nitric oxide(NO), inducible NO synthase(iNOS)/neuronal NO synthase(nNOS) were also examined. Results were turned out that both NO production and nNOS/iNOS protein expression which are increased by nerve injury were suppressed by SWAE injection applied to BL23 point.

Conclusions: The data suggest 1) that SWAE produces a potent analgesic effect on the neuropathic pain model in the rat and 2) that SWAE-induced analgesia modulate endogenous NO through the suppression of nNOS/iNOS protein expression.

Key words: Neuropathic pain, Scolopendrid, NO, BL23, Analgesiameridians to Bonghan corpuscles and ducts is relevant to acupuncture's therapeutic mechanism. Further investigation is required to show physiological function and other specific histological features of Bonghan corpuscle.