

عنوان مقاله:

STUDY THE EFFECT OF ULTRA-LOW DOSE NALOXONE ON KCC2 COTRANSPORTER EXPRESSION IN MORPHINE TOLERANT AND HYPERALGESIC RATS

محل انتشار:

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خلاصه مقاله:

Background and Aim : Long-term administration of morphine downregulates the KCC2 expression within neurons through the activity of microglia. It has been shown that ultra-low dose naloxone could reduce the activity of microglia. There is no evidence about the effect of ultra-low dose of naloxone on KCC2 expression in situations that KCC2 downregulation decreases morphine analgesia. So the aim of this study is to investigate the effect of simultaneous injection of Ultra-low dose of naloxone and morphine on the spinal KCC2 expression during chronic morphine administration. **Methods :** 4 groups were included in the study (n=6). Morphine sulfate (10 mg/kg), saline, ultra-low dose of naloxone (15ng/kg) with saline and with morphine were injected intraperitoneally for 8 consecutive days and then stop for 48 hours. Development of morphine tolerance examined from day 1 to 8 by tail flick and thermal hyperalgesia by paw withdrawal test on day 10. After behavioral tests, spinal cords were removed on day 8 and 10 and KCC2 expression was investigated by immunohistochemical technique. **Results :** Behavioral experiments indicated development of morphine tolerance from day 5 to 8 and thermal hyperalgesia developed on day 10. Injection of morphine along with ultra-low dose of naloxone decreased morphine tolerance and thermal hyperalgesia. Immunohistochemical analysis showed increasing in KCC2 expression in spinal cord. **Conclusion :** Our finding suggests that KCC2 could have a important role in developing of morphine tolerance and hyperalgesia.

کلمات کلیدی:

Morphine tolerance, Hyperalgesia, Ultra-low dose naloxone, KCC2

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