Magnesium sulfate as analgesics in a rat model of somatic pain

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INTRODUCTION

N-methyl-D-aspartate (NMDA) receptors are ligand-gated receptor complexes that have been associated with learning and memory, pain transmission, depression, schizophrenia and neurodegenerative disorders. Magnesium, noncompetitive NMDA receptor antagonists, has been demonstrated analgesic efficacy against neuropathic pain (1), but results on inflammatory pain are controversial. This study aimed at evaluating the systemic and local effects of magnesium sulfate (MS) in carrageenan (Carr)-induced mechanical hyperalgesia using von Frey anesthesiometer test.

MATERIALS AND METHODS

- In male Wistar rats hyperalgesia was induced by the 0.5% Carr (0.1 ml) into the paw.
- MS was given subcutaneously 5 min before the injection of Carr or co-injected with Carr.
- Hind paw withdrawal threshold to mechanical stimuli was measured next six hours after intraplantar injection of Carr.

RESULTS

- Subcutaneous MS at doses of 0.5, 5, 15 and 30 mg/kg, reduced the hyperalgesia by 44.4 ± 8.8, 68 ± 8.4, 24.6 ± 6.9 and 45.3 ± 6.7% respectively.
- MS at doses of 0.05, 0.1 and 0.5 mg/paw, co-injected with carrageenan had no influence on hyperalgesia.

CONCLUSION

- The present study revealed that magnesium sulfate is effective against inflammatory pain after systemic, but not after local peripheral administration.
- The findings suggest that low doses of systemic MS may be useful analgesic in the therapy of somatic inflammatory pain.

REFERENCE

(1) Begon S, Pickering G, Eschalier A, Dubray C. Magnesium and MK-801 have a similar effect in two experimental models of neuropathic pain. Brain Res. 2000;887(2):436-9.

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