



Neuroprotective effect of ketamine on acute spinal cord injury in rats

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Genet. Mol. Res. 14 (2): 3551-3556 (2015)

Received May 7, 2014

Accepted December 8, 2014

Published April 17, 2015

DOI <http://dx.doi.org/10.4238/2015.April.17.4>

ABSTRACT. The aim of this study was to investigate the neuroprotective effects of ketamine during acute spinal cord injury in rats. Sprague Dawley (SD) rats (N = 70) were randomly divided into three groups: sham-operated (N = 10), control (N = 30), and treatment (N = 30) groups. The moderate spinal cord injury model was established. After injury, the sham-operated group received no drug, the treatment group received intraperitoneal ketamine injections, and the control group received intraperitoneal normal saline injections. Serum levels of tumor necrosis factor- α (TNF- α), interleukin-6 (IL-6), and spinal cord malondialdehyde (MDA) were assessed, and nerve cell apoptosis was evaluated in each group at varying time points. After spinal cord injury, TNF- α , IL-6, and MDA levels, and the number of TUNEL-positive cells among 2500 cells significantly increased ($P < 0.05$). Further, compared with the control group, the treatment group showed significantly lower TNF- α , IL-6, and MDA levels, and fewer TUNEL-positive cells among 2500 cells at each time point ($P < 0.05$). Our data indicate that ketamine exerts a neuroprotective effect on injured spinal cord.

Key words: Ketamine; Rats; Acute spinal cord injury; Tumor necrosis factor- α ; Interleukin-6; Malondialdehyde