



The 2nd International Neuroinflammation Congress and 2nd Student Festival of Neuroscience

Shefa Neuroscience Research Center, Tehran, Iran, 17-19 April, 2018

The Neuroscience Journal of Shefaye Khatam

Volume 6, No. 2, Suppl 1

Poster Presentation

Dose-Dependent Delay of Wallerian Degeneration Induced by Dexamethasone after Sciatic Nerve Transection in Rat

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Published: 17 April, 2018

Abstract

Wallerian degeneration is an innate immune response which occurs after some kinds of nerve damages such as neurodegenerative disease and acute axonal injury. In clinic, dexamethasone as an anti-inflammatory drug has been used for many years to treat nerve injuries. In present study, we aimed to study the effects of various doses of dexamethasone on the Wallerian degeneration in rat. Twentyseven male Wistar rats were divided into three experimental groups; A, B and C (n=9). Right sciatic nerve was transected and animals in groups A and B were received intraperitoneally low dose (0.2 mg/kg/day) and high dose (2 mg/kg/day) of dexamethasone, respectively. The group C was considered as control (saline, 1ml/day). Five, 7 and 10 days after surgery, 3 rats in each group were sacrificed, the distal stump of sciatic nerves were collected and semi-thin sections were sampled for histological assessment. Morphometric analysis showed a significant increase in the number of myelinated nerve fibers and a significant decrease in the diameter of nerve in group B when compared with group C ($P < 0.05$ at days 5, 7 and 10), whereas there was no significant difference between groups A and C. Our findings suggest that dexamethasone treatment, in a dose dependent manner, reduce the severity of Wallerian degeneration and delay the clearance of myelin debris after peripheral nerve injury.

Keywords: Sciatic Nerve, Dexamethasone, Rat

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